

Annexures to the Report of
The Task Force for Implementation
of
NEP 2020
in
Maharashtra

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1. Restructuring

Report of Sub-Group on Restructuring of the Structure of the Higher Education.

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Introduction

The New Education Policy envisions a complete overhaul of the higher education system in the country Among other aspects of higher education system ,the policy proposed significant Restructuring of the structure of the higher education system .The Sub Committee on “Restructuring “(of Task Force II) has include selected aspects of higher education structure in the “Restructuring” for the recommendation to the Ministry of Education ,Maharashtra .These aspects of higher education structure include the changes in following spheres .

- (a) Changes in the duration of the Undergraduate and post –Graduate digress and undergraduate degree in education, with multiple entry and exist and Academic Credit Bank ,and thus proposed degree with multiple duration
- (b) Shift away from the present Affiliating State universities to Unitary Public Universities,(with at least one in or near every district) , by using the method of cluster universities and degree awarding rights to selected institutions

(c) Changes in Curriculum that involve multidisciplinary, and also inter-disciplinary courses in universities and colleges

- (c) Mainstreaming of vocational education at undergraduate level
- (d) Introduction of Value Education
- (e) Setting up foreign universalities campuses

We discuss the main features of the proposed changes in the structure of the higher education, highlight the positive aspects, limitations and the risk involve in adoption by the State.

1.1. Change of Undergraduate and Post –Graduate structure and duration, including B.Ed. Program–

The New Education Policy has suggested a major change in duration of the undergraduate and postgraduate degree. It proposed the under graduate, Post graduate and PhD degree of multiple duration .The new duration is as follow

- (1) The undergraduate degree will be of 3 years and also of 4-years duration, It introduced multiple exist and entry and award of certificate, diploma and degree

- (2) Bachelor with Certificate to those who exit after one year of undergraduate
- (3) Bachelor with **Diploma to those who** exist after two years of undergraduate
- (4) **Bachelor degree with** who exit after 3 years of graduation
- (5) Bachelor degree to those who complete full **4-years of graduation**
- (6) **Five year** integrated Bachelor degree

Master's programmes:

Master degree will be of two duration, which is as under

- (a) **One Year Master Degree** :For students completing 4-year Bachelor's Degree with Research,
- (b) **Two year Master Degree** : For students completing a 3 year Bachelor's Degree ,
- (c) **Two year Master Degree** : Two year Master Degree for those who possess an integrated five-year Bachelor degree.

(c) **Ph.D.** shall require either a Master's degree or a 4-year Bachelor's degree with Research.

Regarding B.Ed. Programme

- (1) **The 4-year integrated B.Ed:** The 4-year integrated B.Ed offered by such multidisciplinary higher education Institute HEIs will, by 2030, become the minimal degree qualification for school teachers. The 4-year integrated B.Ed. will be a dual-major holistic Bachelor's degree, in Education as well as a specialized subject such as a language, history, music, mathematics, computer science, chemistry, economics, art, physical education, etc.
- (2) **2 year B.Ed** :The Higher Education Institutions offering the 4-year integrated B.Ed. may also run a 2-year B.Ed., for students who have already received a Bachelor's degree in a specialized subject.
- (3) A 1-year B.Ed. may also be offered for candidates who have received a 4-year undergraduate degree in a specialized subject.

Thus the undergraduate degree will be of either 3 or 4-year duration, with multiple exit options within this period, with appropriate certifications, e.g., a certificate after completing 1 year in a discipline or field including vocational and professional areas, or a diploma after 2 years of study, or a Bachelor's degree after a 3-year programme. The 4-year multidisciplinary Bachelor's programme, the 4-year programme may also lead to a degree 'with Research' if the student completes a rigorous research project in their major area(s) of study as specified by the HEI.

As mentioned above there will be flexibility to offer different designs of Master's programmes: (a) there may be a 2-year programme with the second year devoted entirely to research for those who have completed the 3-year Bachelor's programme; (b) for students completing a 4-year Bachelor's programme with Research, there could be a 1-year Master's programme; and (c) there may be an integrated 5-year Bachelor's/Master's programme.

Undertaking a Ph.D. shall require either a Master's degree or a 4-year Bachelor's degree with Research. The M.Phil. Programme shall be discontinued.

Activity / Activities to be undertaken for implementing these changes (Change Management)-

Universities to undertake extensive survey for preparing prospective plan to decide UG programmes with 3 and 4 years duration in various subjects . The need based UG programmes with 3 or 4 years durations with details of curriculum and outcomes considering the global employment opportunities in industry, academic, research fields are to be designed. Presently 4 years UG programmes are run in professional education and these students find opportunity for higher education in foreign university .The prospective plan need to be approved by the State Government as per MPU ACT 2016.

The credit structure and research areas in major area(s) of study need to be specified by the HEI.

HEIs to design and develop PG programmes in thrust, interdisciplinary and innovative areas to develop advance knowledge and specific skills among the learners suitable for furtherance of industrial processes, research and entrepreneurship .The course structure , curriculum contents and programme outcomes need to be specified along with the entry qualification .The PG study and research should form the basis for developing doctoral work .

University to plan for extensive training programmes for teachers with suitable duration as per the need including 4 years B.Ed. programme.

It is recommended to form

- 1) We recommend that the government should set up a Committee to prepare a Plan and Implementation of Central government policy, with respect to the UG and PG PhD structure, B.Ed programmes,if it is binding .

Implementing Agency (state / centre) (which agency will bring about this change?)-

Central Government, State Government, State Universities and HEIs

Expected Timeline-

1-2 Years for planning, procedural completion and starting of implementation in phase manner

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

Apparently there is risk involved in the proposal of Bachelor and post graduate degrees with multiple duration. The system may affect the access to students from weaker section and SC/ST/OBC/VJNT students .The proposed Bachelor degree of 3 year duration, and 4 year duration, and Master degree of 1 year duration and 2 year duration will create gradation and hierarchy in Bachelor and Master Degree and affect the student with degree with different duration differently in employment and other matter. The employer may prefer the graduate students with 4 year duration compared with 3 year duration .So multiple duration Bachelor degree with multiple degree may turn out to be discriminatory to the students with 3 years Bachelor and 2 year Master. Creating Bachelor and post graduate degree of various duration will affect the poor students more , as more of them are likely to end up with 3 year Bachelor degree .The students with 4 year bachelors or one year post graduate may be preferred in employment in the market compared with 3 year bachelors or two year post graduate .

Beside the increase in the duration of bachelor degree from 3 to 4 years will raise the cost of 4 years degree which will be valued more .This will affect the weaker section more .Presumably the 4 years Bachelor degree is proposed for the convenience of the students who want to pursue Master

in foreign universities like those in USA, which require 4 year graduation. It seems proper that State retain the 3 years Bachelor degree, and those who want to pursue Master degree in foreign universities may still get admission after doing one year preparatory courses to get in Master program –the way it is being presently .

There is also risk in proposal of degree with multiple duration through Exit and Entry .There is need that the “exit”is allowed with due care .As far as possible the students should be encouraged to complete Bachelor degree. For those who want to exit for special reasons, the benchmark should be kept at reasonable level for an “exit “after first, second and third year. Encouragement for exit may result in to high dropout particularly among the students from weaker sections .The enrolment rate in higher education of poor and SC/ST/OBC/VJNT and the Muslim student is low .Our purpose should be to increase the enrolment rate among these weaker sections . The unreasonable exit after one or two years will not improve the enrolment of weaker sections in higher education, which is already low

Resources Required (Financial / Systemic / Change in rules & regulations)-

Increased number of teachers for 4 year UG and 5 year PG programmes along with their qualification and recruitment rules and service conditions . Clustering of expert teachers would help in optimising the resources.

Is any capacity building of Stakeholders required? –

Research competency of teacher need to be developed with well planned programmes in association with industry, research institutions and foreign university

2.0 Academic Bank of Credits (ABC)-

The provisions proposed in the policy regarding this point are-

As mentioned above the undergraduate and post graduate degree will be of various duration, with multiple exit options within this period,

An Academic Bank of Credit (ABC) is proposed to be established which would digitally store the academic credits earned from various recognized HEIs so that the degrees from an HEI can be awarded taking into account credits earned.

Activity / Activities to be undertaken for implementing these changes (Change Management)-

A plan to establish An Academic Bank of Credit (ABC) uniform for all state universities be framed including details on credit structure , programme specific weightage , equivalence , contact hours , validity , mechanism of credit and debit of earned credits , transfer of credits , etc . The organizational structure of the proposed Bank, it’s functioning, digitalization need to be elaborated.

Implementing Agency (state / centre) (which agency will bring about this change ?)-

Central Government , State Government , State Universities and HEIs

Expected Timeline-

1 Year for planning , procedural completion and starting of implementation in phase manner . The complete implementation may take 5 years of duration .

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

The existing education institutions will be protected till new system comes in force.

Resources Required (Financial / Systemic / Change in rules ®ulations)-

Necessary budget provision based on detail plan is to be made for implementation.

Is any capacity building of Stakeholders required? –

Training programmes need to be organised for building capacity of experts in the areas of credit transfer , ranking of institutes , autonomy and academic leadership.

1.2 Unitary Universities, Cluster Universities and Degree Awarding Colleges

One of the significantly important suggestions of the New Education Policy is conversion of present day Affiliating State public university system by a large Unitary universities, which carry undergraduate ,post graduate and PhD program including other degrees and diplomas under one umbrella. At present in Maharashtra, there are multiple structures of universities. Table 1 present type of universities in the state in 2018/19

In 2018/19 there are 62 universities and Degree awarding Institutions of National Importance. Of this about 35.5 percent or 22 are State public universities with 4340 affiliating collages. About 9.7 percent or 6 institutions are degree-awarding institutions, and the rest 45.2 percent or 34 are state public and private state and Deem universities which are unitary in character.

Table 1: Number of universities by types, Maharashtra, 2018-19

Types	Number	Share
Central University	1	1.6
Institute of National Imp	6	9.7
State Public University	22	35.5
State Open University	1	1.6
Deemed Public	7	11.3
Total Public	37	59.7
State Private	11	17.7
Deemed Aided	2	3.2
Deemed Private	12	19.4
Total Private	25	40.3
Total	62	100

Source: AISHE, 2018-19

Table 2 : Number of colleges by types, Maharashtra, 2018-19

Types	Colleges	%
Private Unaided	2562	59.0
Private Aided	1027	23.7
Total Private	3589	82.7
Government	751	17.3
Total	4340	100

Source: AISHE, 2018-19

The NEP favoured large unitary universities with multi discipline with a minimum of about 3000 students with undergraduate, post graduate and PhD program –all teaching and degrees under one shed .Thus as per the policy 22 state universities will have to be converted in Unitary state universities with graduate ,post graduate and PhD program under one shed. The NEP proposed that state public universes will be converted into unitary universities by de- affiliating the 4340 government, private aided and private unaided collages. It laid down the road map for this conversion from affiliating universities to unitary universities. After de- affiliating the colleges the state universities will be required to undertake under graduate degree awarding program in addition to post graduate and PhD Program which is already there .This is how the state public universities will be made Unitary universities awarding graduate, post graduate and PhD and diploma under one umbrella .The next step which is proposed is the setting up of cluster universities from the afflicting collages in each district , which will award graduate , post graduate , PhD degrees and diplomas. The third step towards Unitary universities is giving degree awarding right to selected academically excellent collages , such as Autonomous collages and collages with high NCK grade , with power to award undergraduate , post graduate and PhD degrees .,Thus mega transformation from affiliating state public universities to Unitary universities will happen through de- facilitation of collages from state universities ,forming cluster universities from de-affiliated collages in each district and finally by awarding a degree awarding right to selected academically excellent collages .

Thus by 2030 or 2040 entire higher education system will move towards large multidisciplinary unitary universities comprising state Public universities, Private universities, Cluster universities and degree awarding institutions. There is a suggestion that these universities will be developed in to two segments, namely

Research-intensive Universities, Teaching-intensive Universities. The NEP proposed that there shall, by 2030, be at least one large multidisciplinary university/institute in or near every district. Gross Enrolment Ratio in higher education including vocational education shall increase from 26.3% (2018) to 50% by 2035. Single-stream HEIs will be phased out over time, and all will move towards becoming vibrant multidisciplinary institutions or parts of vibrant multidisciplinary HEI clusters, in order to enable and encourage high-quality multidisciplinary and cross-disciplinary teaching and research across fields

Activity / Activities to be undertaken for implementing these changes (Change Management)-

A state level academic plan is required to be prepared with details on need of number and category of human resources with research background, skill and subject knowledge to be generated considering the requirement of industry, employment growth rate, economic progress ,global trends , etc. This will form the basis of deciding number of Research Intensive Universities, Teaching Intensive Universities and Autonomous Degree Granting Colleges. The necessary structure with supporting legal framework need to be developed for all three types of the Institutes.

Some of the existing Universities can be designated in these category depending on their plans, core competency and accomplishments.

- 1) It is recommended to form Sub Committee to study the current status and the work on the ecosystems required to build Unitary universities, Cluster universities and multidisciplinary degree awarding colleges, including guidelines and eligibility norms for identifying and awarding the status of Teaching intensive universities and Research intensive universities

Implementing Agency (state / centre) (which agency will bring about this change?)-

Central Government, State Government, State Universities and HEIs

Expected Timeline-

1 Year for planning, procedural completion and starting of implementation in phase manner. The complete implementation may take 10 years of duration.

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

Apparently, the Unitary system of education institutions seems to be good system. However there are issues, particularly related to access and quality involved in the process of conversion of afflicting university system to unitary university/institution system .The NEP proposed that developing a unitary state university necessarily involve locating universities at district places and in the process may even involve closing down some collages in large villages, small and medium towns, which lack in quality .(*The MPU Act, 2016 has provision for withdrawal of affiliation or recognition and closure of affiliated colleges due to noncompliance of the norms by following the prescribed procedure*).*The present collage* Affiliating system in the state is regionally scatter in district , tahsil , small and medium town and large large villages .It has its unique .The regionally spread collage system facilitate essay and cheap access to higher education to the students from the villages who are also from economically weak background . Therefore the proposed unitary cluster universities located in district places with under graduate ,post graduate and PhD program (as is proposed by NEP) will reduce the essay and cheap access to the students from rural area and small towns .Therefore while we should adopt the idea of unitary universities which offered all degrees , one shade , this need to be adopted with some modification to ensure equal and essay access to the students from rural and small town. The colleges which are located at places other than district in small and medium towns and large villages should retained so that essay and cheap access to the students from rural and small towns is maintained. In Maharashtra half of its population still live in rural area and the students from the rural area need easy access .Unlike the suggestion made by NEP, the State should try to locate cluster universities in medium and small towns, than district place.

There is another risk which the state will have deal with in the process of formation of cluster universities and awarding the degree awarding status to good collages .This issue relates to ensuring quality education .As mentioned above the NEP hinted at closing down of colleges with unsatisfactory quality in the process formation of cluster college universities . The 2017/18 data on the NCK grade brings out the status of quality in the collages in the state . In 2018 , about 39 percent of colleges were accredited. The percentage of accredited government colleges is 76.6 percent for government , 87 percentage aided colleges and only 9.5 percentage for non aided collages. It may be mentioned that in 2018 the percentages of non aided colleges in total collages is about 62 percent . Most important point is that out of the total re-accredited colleges only 32 percent received "A "great ,63 percent "B" grade and 4.4 percent "C" grade .It must be mentioned that only about hundred colleges are Autonomous. Thus the colleges which are located in large villages, small and medium collages suffered from low quality .The Clustered universities formed by bringing together collages from small and medium towns and large villages will have low quality .Therefore if the Cluster universities is to serve the goal of Equity and inclusiveness with quality education , then the government will be required to improve the quality of the colleges located in the large villages, and small and medium towns . This is

an important task before the government. Further since bulk of these colleges are unaided, the government will have to developed a policy to support them for quality improvement.

Table 3 : number total, accredited, reaccredited colleges, Maharashtra, 2018

	Aided	Non-aided	Govt	Partial Aid	Total
Numbers					
Total colleges	1183	1998	28	2	3211
Accredited	1033	190	22	2	1247
Reaccredited	777	36	21	1	835
Colum percentage					
Accredited	87.3	9.5	78.6	100	38.8
Row Percentage					
Total	36.8	62.2	0.87	0.06	100
Accredited	82.8	15.2	1.8	0.16	100
Reaccredited	93.1	4.3	2.5	0.12	100

Source: compiled by Department of higher education, MIS, Maharashtra

Table 4 : Number and share of reaccredited colleges by reaccreditation status, 2018

	A	B	C	Total
Number	269	530	37	836
Share	32.2	63.4	4.4	100

Source: compiled by Department of higher education, MIS, Maharashtra

The quality of the education in collages is low due to poor infrastructure including libraries. However, the most important factor is the chronic shortage of teachers in universities and colleges. We are aware about the problem related to scarcity and poor quality of teachers in the colleges. There is high inter-collage disparities in number of teachers and their quality .Out sourcing of teaching to Post – Doctoral students, system of contact teachers with low salary or period wise salary is known to all. This has affected the quality and brought disparities in teaching and quality in education among the collages .Therefore there is need to ensure quality teaching though qualified teachers in collages and also universities where there is shortage of teachers.

The government has to find out the way .It is unlikely that government will cover up the backlog of teachers in colleges. The Cluster universities however offered an opportunity. In the Cluster universities, the sharing of teaching for subject would be easy .But till the colleges are clubbed into cluster universities, government may develop a new method of inter-college sharing of teachers for teaching. The teachers from the state universities could also used for sharing of teaching by teachers from collages. First step will be to develop the Department for each subject from the affiliating colleges. Once the Departments are developed, the teachers from different collages in a subject could be used together for teaching .So collages will be only a teaching places, which will used the services of the teachers from various collages and from present state universities for each individual subject. This will provide for teaching by a best teachers in a subject and improve quality .Thus this reform will meet dual objective, namely of ensuring equity and inclusiveness and also of quality education.

It is necessary to mentioned that ,this process will be greatly facilitates by distance mode teaching technology .The student will have access to knowledge from best of the teachers in the subjects from affiliating university and best collages . In fact distance mode will provide an opportunity to access the services of best colleges from any university and college in the state .This is the best way to overcome the problem of scarcity of teachers, which has been there for several decade despite promise to correct it.

NETF in association with state to develop the required IT infrastructure on priority basis

To put in brief, for putting this system into practice we should follow following three steps.

First we accept the method of inter-collages teaching in affiliating colleges.

Second we should adopt the concept of Department and create departments in each individual subject from different collages (such as department of economic, politics, sociology, and similarly for sciences and humanities and other subjects).All collages teaching one subject like economics will constitute a Department of economics.

And thirdly once Departments are formed in each subject, teaching will be shared by the teachers in each subject in the department from all collages where such department exit .This will involve sharing of teachers from the collages in located at different places and also in new cluster universities in a district .

It may mentioned that ,this process of sharing teaching by teachers located at different places will be facilitated by the availability of distance mode teaching technology and enable to use teachers as resources from anywhere in the state . This will serve double purpose, namely it will ensure equal and easy access to the students to higher education (by retaining the collages in small and medium towns and large villages) and quality education by sharing the resources of the teachers from various collages and state universities in a district. Thus, the risk of poor access to students from rural area and to quality education in the process of forming Cluster universities will be reduce a great deal.

Clustering of colleges For Cluster University:

Activity / Activities to be undertaken for implementing these changes (Change Management)-

State Government need to develop policy and plan for clustering of the institutions along with the detail guidelines considering the competency, compatibility and interest of institutes , regional needs , viability of clustering , etc . This should lead to sharing of strengths and overcoming weakness of institutes for mutual benefits so as to utilise the resources effectively for quality improvement. The exercise of developing Cluster universities will have to be operationalized in a manner such that it meet the goal of essay and affordable access to students from rural area to quality education.

Maharashtra Public University Act , 2016 provides for establishment of cluster university under sub-section (6) of section 3 of the Act comprising of a cluster of affiliated or autonomous colleges or institutions of a university .Further Section 124 of the Act provides for establishment of Empowered autonomous cluster institutions based on the norms and procedure prescribed by the statutes.

Implementing Agency (state / centre) (which agency will bringabout this change ?)-

Central Government, State Government, State Universities and HEIs

Expected Timeline-

1 Year for planning, procedural completion and starting of implementation in phase manner . The complete implementation may take 10 years of duration .

Phased de-affiliation and future of exiting University–

The provisions proposed in the policy regarding these points are-

The new regulatory system envisioned by this Policy will foster this overall culture of empowerment and autonomy to innovate, including by gradually phasing out the system of ‘affiliated colleges’ over a period of fifteen years through a system of graded autonomy, and to be carried out in a challenge mode.

All colleges currently affiliated to a university shall attain the required benchmarks over time to secure the prescribed accreditation benchmarks and eventually become autonomous degree-granting colleges.

Activity / Activities to be undertaken for implementing these changes (Change Management)-

A plan is to be framed to reduce burden of affiliated colleges on the Universities, which may include provisions for creating large number of autonomous institutions. Each existing affiliating university will develop plan for mentoring its affiliated colleges so that they can develop their capabilities and achieve minimum benchmarks in academic and curricular matters; teaching and assessment; governance reforms; financial robustness; and administrative efficiency. The plan should include provision and norms for establishment of viable clusters of institutions as all affiliated colleges may not attain graded autonomy status .

Further Universities to implement technology driven system for affiliation process , examination, and student support system for affiliated colleges so as to it’s conserve resources and minimise the burden of affiliated colleges . Establishment of new Universities may incur big cost .

In future university as Unitary University may opt for school concepts to develop excellence in research and teaching in specialised areas of study from multidisciplinary education .

This will be achieved through a concerted national effort including suitable mentoring and governmental support for the same.

Implementing Agency (state / centre) (which agency will bringabout this change ?)-

Central Government, State Government, State Universities and HEIs

Expected Timeline-

1 Year for planning, procedural completion and starting of implementation in phase manner. The complete implementation may take 15 years of duration.

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

The existing education system will be protected till new system comes in force.

Resources Required (Financial / Systemic / Change in rules ®ulations)-

Necessary budget provision for implement is required depending upon the number of the institutions .

Is any capacity building of Stakeholders required? –

Taring programmes need to be organised for building capacity of experts for accreditation, autonomy and academic leadership.

1.8 Future of institutes which may be de affiliated due quality of education

The MPU Act, 2016 has provision for withdrawal of affiliation or recognition and closure of affiliated colleges due to noncompliance of the norms by following the prescribed procedure . However as suggested above the government should develop a plan for these collages, as they serve the rural area .A definite plan may be developed by the government to improve the infrastructure and number and quality of teachers. The institutes also need to prepare development plan to get graded accreditation in due time utilizing support from University, State and Central Government as provided in the policy.

Mentor / Mentee Institute –

The provisions proposed in the policy regarding these points are-

HEIs will have other crucial responsibilities, in addition to teaching and research which they will discharge through appropriate resourcing, incentives, and structures. These include supporting other HEIs in their development, community engagement and service, contribution to various fields of practice, faculty development for the higher education system, and support to school education.

. Each existing affiliating university will be responsible for mentoring its affiliated colleges so that they can develop their capabilities and achieve minimum benchmarks in academic and curricular matters; teaching and assessment; governance reforms; financial robustness; and administrative efficiency.

This will be achieved through a concerted national effort including suitable mentoring and governmental support for the same.

. A National Mission for Mentoring shall be established, with a large pool of outstanding senior/retired faculty – including those with the ability to teach in Indian languages – who would be willing to provide short and long-term mentoring/professional support to university/college teachers.

A detailed plan with time line by the affiliating university for capacity building of non accredited colleges

Activity / Activities to be undertaken for implementing these changes (Change Management)-

There exists scheme of Share and Mentor Institutions (Margdarshan and Margadarshak) by AICTE for mentoring to institutes (Mentee) by a well performing institute (Mentor) . UGC Scheme for mentoring NAAC Accreditation aspirant institution to promote quality assurance in higher education – PARAMARSH is in force .In Maharashtra Public University Act, 2016, Section 77 provides for cooperation, coordination and interaction among all educational institutions for sharing of academic and other support infrastructure for efficient use. The Lead College concept is being practiced by some university . A State level policy for this scheme is required to be framed.

These schemes can be expanded in the state .

Implementing Agency (state / centre) (which agency will bring about this change ?)-

Central Government , State Government , State Universities and HEIs

Expected Timeline-

1 Year for planning, procedural completion and starting of implementation for all institutions.

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

Identity of individual institute will be maintained.

Resources Required (Financial / Systemic / Change in rules ®ulations)-

Necessary budget provision for implement is required depending upon the scope of the scheme.

Is any capacity building of Stakeholders required? –

Taring programmes need to be organised for building capacity of experts and institutions for working as Mentor.

1.6 Autonomy and Graded Autonomy –**The provisions proposed in the policy regarding this points are-**

Moving towards faculty and institutional autonomy; an Autonomous degree-granting College (AC) will refer to a large multidisciplinary institution of higher learning that grants undergraduate degrees and is primarily focused on undergraduate teaching though it would not be restricted to that and it need not be restricted to that and it would generally be smaller than a typical university.

A stage-wise mechanism for granting graded autonomy to colleges, through a transparent system of graded accreditation, will be established.

Activity / Activities to be undertaken for implementing these changes (Change Management)-

The existing regulation for granting Autonomy to the institutions by UGC and State Government may be modified to accommodate parameters and criteria of Graded Autonomy .The MPU Act, 2016 has provision in section 122, 123,and 124 for granting autonomy to university departments or institutions, college or recognised institution , empowered autonomous colleges and empowered autonomous cluster institutions . It is to be planned for number of institutions to be granted graded autonomy along with predetermined criteria. Universities need to prepare perspective plan to this effect .

State level Accreditation council be established to facilitate the programme .

Implementing Agency (state / centre) (which agency will bring about this change ?)-

Central Government , State Government , State Universities and HEIs

Expected Timeline-

1 Year for planning, procedural completion and starting of implementation in phase manner . The complete implementation may take 10 years of duration .

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

The existing education system will be protected till new system comes in force.

Resources Required (Financial / Systemic / Change in rules & regulations)-

Necessary budget provision for implement is required depending upon the number of the institutions.

Is any capacity building of Stakeholders required? –

Training programmes need to be organised for building capacity of experts for accreditation.

1.9 Internationalization-

The provisions proposed in the policy regarding this point are-

Courses and programmes in subjects, such as Indology, Indian languages, AYUSH systems of medicine, yoga, arts, music, history, culture, and modern India, internationally relevant curricula in the sciences, social sciences, and beyond, meaningful opportunities for social engagement, quality residential facilities and on-campus support, etc. will be fostered to attain this goal of global quality standards, attract greater numbers of international students, and achieve the goal of ‘internationalization at home’.

India will be promoted as a global study destination providing premium education at affordable cost.

An International Students Office at each HEI hosting foreign students will be set up to coordinate all matters relating to welcoming and supporting students arriving from abroad.

Research/teaching collaborations and faculty/student exchanges with high-quality foreign institutions will be facilitated, and relevant mutually beneficial MOUs with foreign countries will be signed.

High performing Indian universities will be encouraged to set up campuses in other countries, and similarly, selected universities e.g., those from among the top 100 universities in the world will be facilitated to operate in India.

A legislative framework facilitating such entry will be put in place, and such universities will be given special dispensation regarding regulatory, governance, and content norms on par with other autonomous institutions of India.

Furthermore, research collaboration and student exchanges between Indian institutions and global institutions will be promoted through special efforts. Credits acquired in foreign universities will be permitted, where appropriate as per the requirements of each HEI, to be counted for the award of a degree.

Activity / Activities to be undertaken for implementing these changes (Change Management)-

A State plan be framed for internationalization of the education in the state considering the core competency and potential of individual university and institution .The programmes, institutes and partner countries be identified and MOUs be made. The plan should include development of infrastructure, expertise of international standards with time line. The provision for student and faculty exchange , credit transfer , internship , dual degree ,joint research project and publication be made in the plan .Special efforts on accreditation from international agency , Institutional Ranking and academic reputation of University be made .

Implementing Agency (state / centre) (which agency will bring about this change?)-

Central Government, State Government, State Universities and HEIs

Expected Timeline-

1 Year for planning, procedural completion and starting of implementation in phase manner. The complete implementation may take 10 years of duration.

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

The existing education institutions will be protected from severe competition. The foreign universities proposed to be set up being costly, it will provide less access to meritorious students from weaker section. So the government will have to develop a scheme of financial assistance to these students through scholarship and other means.

The state may follow an alternative way of entry to foreign universities. This model is to permit foreign universities through collaboration with Indian universities /institutions. This will involve collaboration in teaching, exchange of faculties for teaching and student exchanges between Indian institutions and global institutions. Credits acquired in foreign universities will be permitted, where appropriate as per the requirements of each HEI, to be counted for the award of a degree. The dual degree will be followed. The advantage of this way of entry to foreign universities is that it will encourage capacity enhancement of collaborating Indian/Universities/Institutions.

Resources Required (Financial / Systemic / Change in rules ®ulations)-

Substantial budget provision based on detail plan is to be made for implementation.

Is any capacity building of Stakeholders required? –

Training programmes need to be organised for building capacity of experts in the areas of international accreditation, ranking of institutes, autonomy and academic leadership and international relations.

2.1 Appointment of Teachers–

The provisions proposed in the policy regarding this point are-

HEIs will have clearly defined, independent, and transparent processes and criteria for faculty recruitment. Whereas the current recruitment process will be continued, a 'tenure-track' i.e., suitable probation period shall be put in place to further ensure excellence. There shall be a fast-track promotion system National Education Policy 2020 41 for recognizing high impact research and contribution. A system of multiple parameters for proper performance assessment, for the purposes of 'tenure' i.e., confirmed employment after probation, promotion, salary increases, recognitions, etc., including peer and student reviews, innovations in teaching and pedagogy, quality and impact of research, professional development activities, and other forms of service to the institution and the community, shall be developed by each HEI and clearly enunciated in its Institutional Development Plan (IDP).

Activity / Activities to be undertaken for implementing these changes (Change Management)-

The MPU Act, 2016 has provisions for selection and appointment of university teachers, principal of conducted colleges , principal and teachers of affiliated colleges along with statutes for prescribing service conditions , career advancement based on norms and guidelines given by UGC time to time .

A detail state level plan based on institutional development plan is to be framed for amendments of provisions as per the recommendations of the policy to ensure the quality in education .This will include performance assessment parameters , probation , promotion, service to institute , society ,etc

Implementing Agency (state / centre) (which agency will bring about this change?)-

Central Government, State Government, State Universities and HEIs

Expected Timeline-

1 Year for planning , procedural completion and starting of implementation in phase manner . The complete implementation may take 5 years of duration .

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

The existing system will be protected till new system comes in force .

At present the critical problem is of shortages of teachers in collages and universities which has affected the quality .It is proposed that the State government should estimate the shortage of faculty in universities and collages (aided and government) taking teacher :student ration prescribed by the University Grant Commission , and then develop a medium term plan by allocating resources to appoint and increase the faculties in colleges and universities as per the student: Teacher ratio proposed by UGC .The central government should also supplement the expenditure by contribution funds for at least ten year through transfer under Finance Commission and other channels .

Resources Required (Financial / Systemic / Change in rules ®ulations)-

Necessary budget provision based on detail plan is to be made for implementation .

Is any capacity building of Stakeholders required? –

Training programmes need to be organised for building capacity of teachers in the areas of research, teaching, ranking of institutes, autonomy and academic leadership.

2.2 Infrastructure and it's optimal utilization –

The provisions proposed in the policy regarding this point are-

There shall, by 2030, be at least one large multidisciplinary HEI in or near every district.

A number of new institutions may be developed to attain these goals; a large part of the capacity creation will be achieved by consolidating, substantially expanding, and also improving existing HEIs.

Multidisciplinary HEI clusters,

all HEIs will be equipped with the basic infrastructure and facilities, including clean drinking water, clean working toilets, blackboards, offices, teaching supplies, libraries, labs, and pleasant classroom spaces and campuses. Every classroom shall have access to the latest educational technology that enables better learning experiences.

Activity / Activities to be undertaken for implementing these changes (Change Management)-

Institutional Development plan is to be framed for expansion, consolidation and diversification which includes infrastructure development and its optimal utilization based on norms and guidelines of Apex bodies .Special attention is to be given for barrier free learning environment by providing necessary prescribed infrastructure .Sharing of facilities for maximum utilization for number of programmes in shifts be planned .IT infrastructure be developed for strengthening learning process .

Implementing Agency (state / centre) (which agency will bring about this change?)-

Central Government , State Government , State Universities and HEIs

Expected Timeline-

1 Year for planning , procedural completion and starting of implementation in phase manner . The complete implementation may take 5 years of duration .

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

The existing system will be protected till new system comes in force .

Resources Required (Financial / Systemic / Change in rules ®ulations)-

Necessary budget provision based on detail plan is to be made for implementation .

Is any capacity building of Stakeholders required? –

Training programmes need to be organised for building capacity of university engineers and institute leadership .

2.3 Dual Degree Issue-

Activity / Activities to be undertaken for implementing these changes (Change Management)-

A plan is to be framed to institute dual degree programme offered by the same institute or jointly by two institutes which should include the identification of programme, structure , credit allocation , utility , employability , expertise , infrastructure , etc .

Implementing Agency (state / centre) (which agency will bring about this change ?)-

Central Government , State Government , State Universities and HEIs

Expected Timeline-

1 Year for planning , procedural completion and starting of implementation in phase manner . The complete implementation may take 5 years of duration .

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

The existing system will be protected till new system comes in force .

Resources Required (Financial / Systemic / Change in rules ®ulations)-

Necessary budget provision based on detail plan is to be made for implementation .

Is any capacity building of Stakeholders required? –

Training programmes need to be organised for building capacity of teachers in the areas of research, teaching, ranking of institutes, autonomy and academic leadership

1.5.Reform in Curriculum associated with change in structure

Under the reform of syllabus the NEP proposed changes in four areas. These include

- (a) Multi-disciplinary and holistic curriculum
- (b) Mainstreaming of Vocational education
- (c) incorporating Sanskrit knowledge system in the syllabus and emphasis on teaching of Sanskrit language as one of the national languages.

Multidisciplinary and holistic curriculum:

The most important reform proposed by the Committee is **Multi-disciplinary Syllabus**. The New Education Policy mentioned that: "A holistic and multidisciplinary education, as described so beautifully in India's past, is indeed what is needed for the education of India to lead the country into the 21st century. Even engineering schools, such as the IITs, will move towards more holistic and multidisciplinary educations with more arts and humanities, while arts and humanities students will aim to learn more science - while all will make an effort to incorporate more vocational subjects and soft skills. India's rich legacy in the hearts".

The most important suggestion of the committee is the multi-disciplinary courses. This is not a new suggestion. The system of multi-disciplinary courses has been used in many universities and other education institutions. For instance in IITs there are separate departments in social sciences and students are required to take courses. In some universities the multi-disciplinary courses are opted by the students from other departments. Sometimes these courses are modified to suit the requirements of students from the social sciences and languages. The committee seems to suggest a course which is mixed of arts, languages, social sciences, and sciences.

While the multidisciplinary approach is welcome, the courses outside the main discipline should be offered wherever necessary; they should be limited in number and voluntary. The special courses should be prepared to suit the requirements and level of the students both from social science and science background. Compulsory learning of multidisciplinary subjects may lead to failure particularly among the students from rural, and poor background. So the learning of multi-disciplinary courses should be voluntary and optional, otherwise it may result in drop out.

Vocational Education

The New Education Policy considered Vocational education very important. This policy requires that ALL education institutions - schools, colleges and universities - integrate vocational education programmes into mainstream education in a phased manner, beginning with vocational exposure at early ages in schools, quality vocational education through middle and secondary school and smoothly into higher education.

It suggests that, by 2025, at least 50 percent of learners through the school and higher education system shall have exposure to vocational education. Vocational education will be *integrated in the educational offerings of all secondary schools* in a phased manner over the next decade. Towards this, secondary schools will collaborate with ITIs, polytechnics, local industry etc.

The B.Voc. Degrees introduced in 2013 will continue to exist, but vocational courses will also be available to students enrolled in all other Bachelor's degree programs, including the 4-year multidisciplinary Bachelor's program. Higher education institutions will also be allowed to conduct

short-term certificate courses in various skills including soft skills.

Vocational education will be integrated into all school and higher education institutions in a phased manner over the next decade. These are some of the suggestions of the committee.

Activity / Activities to be undertaken for implementing these changes (Change Management)-

It is recommended to form a Committee to work out the details of curriculum restructure for vocational and value education

Implementing Agency (state / centre) (which agency will bring about this change ?)-

Central Government, State Government, State Universities and HEIs

Expected Timeline-

1 Year for planning, procedural completion and starting of implementation in phase manner. The complete implementation may take 5 years of duration.

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

The vocational education is important .The UGC has a scheme under which, it provide financial support to collages to run vocational courses for certificate or diploma along with regular course in social science, science or languages.Presently t he vocational education is offered in different ways at various level .We have vocational courses being offered in collages, then we have B.Voc , ITI and poly techniques .Beside several certificate or short term diploma are offered by private sectors ,including the skill education . It seem the committees made a blanket suggestion of mainstreaming of the vocational education without fully studying the present system of vocational educations .The implications of their suggestion , in term of requirement of physical infrastructure like labs and teachers in schools and colleges is not assessed .The suggestion of mainstreaming of vocational education in schools and collages seems to be drawn from German pattern where vocational education is highly integrated at school level .

The suggestion of mainstreaming need to be introduced with proper study of the present system in the state. Also while mainstreaming, the burden on students should not unduly increase .In the proposed system the number of courses at 11 and the 12 th have been increased in significant way .The main streaming may increase the burden on the students in schools and affect their performance in regular course .The government should study the working of multiple system first and make suggestion based on the experience in State .

Value and moral Education

Value based education is the third and most important component of reform of curriculum. The New Education Policy has brought a main focus on 'Value based Education, or Moral Education ". In *higher education*, under holistic and multidisciplinary education, the Committee proposed the value education. The Value-based education will include the *development of humanistic, ethical, Constitutional, and universal human values of truth (satya), righteous conduct (dharma), peace (shanti), love (prem), nonviolence (ahimsa), scientific temper, citizenship values, and also life-skills; lessons in seva/service and participation in community service. This will be considered an integral*

part of a holistic education.

At other place it refer to *ethics and human & Constitutional values* , that is , *empathy, respect for others, cleanliness, courtesy, democratic spirit, spirit of service, scientific temper, liberty, responsibility, pluralism, equality, and justice.*

In school section it mentioned, *“Students will be taught at a young age the importance of “doing what's right”, and will be given a logical framework for making ethical decisions: “Will this hurt somebody? Is that a good thing to do?” In later years, this would then be expanded along themes of cheating, violence, plagiarism, littering, tolerance, equality, empathy, etc., with a view to enabling children to embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. As consequences of such basic ethical reasoning, traditional Indian values and all basic human and Constitutional values such as seva, ahimsa, swachhata, satya, **nishkam karma**, shanti, sacrifice, tolerance, diversity, pluralism, **righteous conduct**, gender sensitivity, respect for elders, respect for all people and their inherent capabilities regardless of background, respect for environment, helpfulness, courtesy, patience, forgiveness, empathy, compassion, patriotism, democratic outlook, integrity, responsibility, justice, liberty, equality, and fraternity will be developed in all students.”*

Further ,as we will see later the teaching of Sanskrit language is proposed to be taught both at school and higher education level .*The Report mentioned that all curriculum and pedagogy, from the foundational stage onwards, will be redesigned to be strongly rooted in the Indian and local context and ethos – in terms of culture, traditions, heritage, customs, language, philosophy, geography, ancient and contemporary knowledge, societal and scientific needs, etc. – in order to ensure that education is maximally relatable, relevant, interesting, and effective for our students. Thus along with the teaching of Sanskrit as language , it will also involve teaching of values .It will also involve reading of the Hindu religious texts including manuscripts, which will also impart Vedic or Brahmanical religious knowledge to the students .*

Activity / Activities to be undertaken for implementing these changes (Change Management)-

It is recommended to form a Committee to work out the details of curriculum restructure for vocational and value education

Implementing Agency (state / centre) (which agency will bringabout this change ?)-

Central Government , State Government , State Universities and HEIs

Expected Timeline-

1 Year for planning , procedural completion and starting of implementation in phase manner . The complete implementation may take 5 years of duration.

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective?)-

It appeared that Value education will be governed by traditional ancient Indian teaching and culture, although it does not spell out the name of any religions in so many words .We know that

the traditional ancient teaching and culture comprises of multiple traditions, Vedism or Vedic Brahmanism, Buddhism, Jainism and other ancient thoughts. If we take modern time, it will include Sikhism, Islam and Christianity. There was suggestion by Radhakrishna Commission and Kothari Commission that teachings of these religions could form the base for preparing a common values or what is called "natural morality". However this alternative did not receive support. The teaching of a particular religion also was not accepted, therefore the Indian Constitution prohibit the teaching of any single religion for moral education.

However, despite these restrictions, in this policy there is evidence that the proposed value education is likely to be influenced by ancient Vedic or Brahminical teaching. For instance while referring to "value" of Karma, it refer to "Nishkam Karma", which is the concept of Karma proposed by Bhagwat Geeta. The policy also refer to "inner inherent qualities" which is again is the Bhagwat Geeta's concept, which form the base for the Varna system. Most importantly when it talk about "righteous conduct" among the students, it mentioned "Dharma". The Dharma carry different meaning, including Vedic or Brahmanical Dharma. The Policy also indicate that children will be taught values from the original stories of the Panchatantra, Jataka, Hitopadesh, and other fun fables and inspiring tales from the Indian tradition. If this the case then the value education proposed by Education policy 2020 is going to be based on teaching of single religious tradition. This goes against the provision in The Article 28 (1) of Constitution, which opposed the religious instructions of a single religion in educational institutions.

The issue of value education, particularly the teaching of values from religion has been a subject of intense discussion and debate. The debate has not resulted in consensus. Hence the provision in Constitution maintained that "*in State and State aided institutions there shall be no religious instructions*". The issue of Value education later become a subject of several Committee. Radhakrishna Commission was the first to discuss the issue of moral and spiritual education and role of religious education in 1949. Later the Committee on Religious and Moral Instruction (also known as the Sri Prakasa Committee) 1960 also dealt with the issue. Report of the Kothari Commission in 1966, distinguished between "religious education" and "education about religions". None of these recommendations were followed. One more Committee looked in to the Value Based Education (also called the SB Chavan Committee) of 1999. In the end what we have is the provision in the constitution which was stated by B.R Ambedkar quite clearly. In this context three points are important. (a) one is that there is official banishment of preaching or teaching of a particular religion, (b) second that teaching and research in religious philosophy – comparative religion is allowed, and (c) that moral education which preach human rights supportive of Constitutional right or citizenship right was allowed. Finally in the Constitution the following provision was made.

Article 28(1) read "*No religious instructions shall be provided in any educational institutions wholly maintain out of state funds*". The minorities institutions are exempted from this provision. In the course of the discussion Ambedkar distinguished between "religious instruction" and "study of religions", and stressed that it was only the former, which was prohibited. Report of the Kothari Commission in 1966, also distinguished between "religious education" and "education about religions". This means that the teaching and research of various religions in department of Religious studies or religious philosophical studies is permitted, but the teaching (or preaching) of a particular religion in education institution is not allowed.

Thus it is obvious that "value Education or moral education" is necessary. but it should be based on the principles enshrine in f Constitution. The value education should promote among the students importance of equality, (social, economic and political) liberty, fraternity, national unity, national integration, secularism, rights and duties of citizens. In fact the policy does refer to the constitutional values, but does not bring it at the centre of value education. The Value education should be necessarily "Citizenship Education" based on values contained in our Constitution.

Sanskrit Education

The another feature of the NER policy is the “Teaching of Sanskrit language” which is an important aspect the holistic curriculum for school and higher education . The 2020 Policy place greatest emphasis on teaching of Sanskrit language,making part of school and higher education. The document mentioned,

“Sanskrit will be mainstreamed with strong offerings in school -- including as one of the language options in the three-language formula -- as well as in higher education, and will be taught not in isolation,-- and connected to other contemporary and relevant subjects such as mathematics, astronomy, philosophy, linguistics, dramatics, yoga, etc.---thus, in consonance with the rest of this policy, Sanskrit Universities too will move towards becoming large multidisciplinary institutions of higher learning; Departments of Sanskrit that conduct teaching and outstanding interdisciplinary research onSanskrit and Sanskrit Knowledge Systems will be established/strengthened across the new multidisciplinary higher education system. Sanskrit will become a natural part of a liberal arts higher education if a student so chooses.

”It goes on to add

“Sanskrit teachers in large numbers will be professionalised across the country in mission mode through the offering of 4-year integrated multidisciplinary B.Ed. dual degrees in education andSanskrit.”

The Sanskrit is emphasised to such an extent that, the student will have option to take Sanskrit language in place of Hindi or English, thus giving national language status to Sanskrit .

In the end the Report mentioned that all curriculum and pedagogy, from the foundational stage onwards, will be redesigned to be strongly rooted in the Indian and local context and ethos – in terms of culture, traditions, heritage, customs, language, philosophy, geography, ancient and contemporary knowledge, societal and scientific needs, etc. – in order to ensure that education is maximally relatable, relevant, interesting, and effective for our students.

Activity / Activities to be undertaken for implementing these changes (Change Management)-

A detailed prospective plan based on survey and data is to be made.

Implementing Agency (state / centre) (which agency will bring about this change?)-

Central Government, State Government, State Universities and HEIs

Expected Timeline-

1 Year for planning, procedural completion and starting of implementation in phase manner. The complete implementation may take 5 years of duration.

Safeguards / Potential Threats (What are the pre-requisites /essential conditions for these changes to be effective

The Sanskrit should be taught as one of the optional language, like any other classical language,such as Pali ,Prakrut and other classical regional languages.The three language formula comprising Regional language, Hindi and English should continue without any change .The option of replacement of either Hindi as link language and English as link language by Sanskrit should not be permitted in any case .The Sanskrit should be taught only as one of the language , and not as substitute to Hindi and English .Other point is that we need to draw distinction between Sanskrit as a language , and ,Sanskrit knowledge system (or knowledge contain in Sanskrit language) .The Sanskrit as language should be taught like any other language .The knowledge (written in Sanskrit

language) in sciences and social science may be taught in each of the discipline in the respective department . The teaching and research of religious philosophy of Ancient Religion like Vedism or Buddhism, Jainism ,Sikhism ,Christianity or Islam should be confined to Department of Religion and Department of Philosophy . Same should be the case for other languages like Pali ,Persian .Further the teaching of religious philosophy contained in sanskrit should not be “mainstream” as proposed under the Education policy.If this happen ,it would mean teaching of one religion in educational Institutions which is prohibited by Constitution under article 28 (1) .Teaching of one religion under the protection of teaching of language would be unconstitutional In other language the Committee mentioned Persian but exclude Arabic and Urdu .Both of this language should be included in teaching of languages.

The Bachelor of Education degree should be only in education and should not be combined with Sanskrit , (a ducal degree) , as proposed by 2020 Education Policy

The government may consider the suggestion made by the Committee about the Curriculum and language education

2. Curriculum Framework

Curriculum Framework to be adopted by the Government of Maharashtra in the Light of NEP 2020

I am indeed grateful to you for the opportunity to be a part of this esteemed committee and specifically steer the sub-committee on curriculum development in the light of New Education Policy 2020. As per the terms of reference of the sub- committee, I am happy to submit the recommendation of the committee.

As a Chairman of the sub-committee appointed by the government of Maharashtra for the curriculum, I appreciate the contribution of the members of the committee:

1. Dr. G. D Yadav
2. Dr. Vijay Chavan
3. Dr. B.B Ahuja
4. Dr. Shefali Pandya
5. Dr. Suresh Ukrande
6. Dr. Nitin Pujar
7. Dr. Mrudul Nile

Regards,

Dr. Rajan Welukar

Chapter 1

Recommendations on Curriculum- NEP 2020

The following recommendations are drawn from a detailed note on curriculum, assessment and research in the following chapter.

1. Curriculum framework for three/four years multidisciplinary UG and PG programme.

- 1.1 A broad curriculum framework for the four year under graduate programme should be developed under Maharashtra Deans Consultative Committee (MDCC). So as to formally interact with each other to create a broad framework for the state of Maharashtra from time to time. They should meet at least twice a year.
- 1.2 Maharashtra Deans Consultative Committee shall be established.
- 1.3 E-Board of Studies Forum (E-BoSF) to be represented by the chairperson of BoS of respective subjects of all the universities should be established (E-BoSF) so as to interact formally with each other to share the best practices and resources, to enhance the quality of education etc. They should meet at least twice a year.
- 1.4 The universities in the state of Maharashtra may adopt three year or four year Bachelor's degree programme having multidisciplinary approach (Liberal Arts). However, those who would be adopting four years bachelor's degree programme will have to spend the last year completely on research component. The learner will have to undergo extensive research during his/her academic career.
- 1.5 The committee also recommends multiple entry and multiple exits during three year and four years bachelor's degree programme.
- 1.6 Though the research component may be specifically dealt with in the fourth year of the bachelor's degree, the training in that direction shall begin from the first year of the bachelor's degree by inculcating research methods/writing training.
- 1.7 The programme should be structured in a semester mode with a multiple exit options wherein student may be awarded different certificates, diplomas and bachelor's degree (general) as and when they complete the required number of credits as follows,
 - a. **First Year** – the student will be awarded a Certificate on the successful completion of 44-48 Credits which includes (Ist and IInd Semester)
 - b. **Second Year** – Diploma will be awarded at the successful completion up to fourth semester 88-96 credits
 - c. **Bachelor's Degree (General)** will be awarded for the successful completion of six semesters 132-144 credits

- d. **Bachelors with Hons.** Fourth year (176-192 credits)
- 1.8 The four year UG Hons degree holders with research component in the final year having obtained more than 55% marks (50% for reserved category) should be made eligible to enter doctoral (Ph.D) programme in a relevant discipline or they should be allowed to enter one year (two semesters) master's degree programme.
- 1.9 The student shall be able to synthesis their own degrees. Synthesising degree is now an international standard adopted by all the universities all across the world. Maharashtra has a legacy of providing quality education to its pupil, in order to maintain the higher standards of such education the committee recommends that the degree be synthesised as per the choices of the individual learner. While synthesising their degrees, there shall be no bar or restriction on the subjects/courses across the disciplines.
- 1.10 The academic curriculum should have six prime components
- Core of the discipline (Core Competence in Certain Discipline)
 - Applied of Core component (Interdisciplinary)
 - Multidisciplinary component
 - Skill based courses component
 - Foundation component
 - Internship.
- 1.11 Co-curricular and extra-curricular activities must be integral part of the curriculum.
- 1.12 For holistic development, **Integral Education** which creates and develops a strong character in learners rather than just honing their outer personality should be part of the foundational component/courses.
- 1.13 While developing a curriculum, 21st Century Curriculum Design Framework based on Design Thinking should be used.
- 1.14 As graduate attributes reflect the particular quality and feature or characteristics of an individual, including the knowledge, skills, attitudes and values that are expected to be acquired by graduate student, universities/colleges should define it and communicate to students and teachers.
- 1.15 Initially, the permission to run four year degree programme shall be given to all the universities and to the colleges/institutions including autonomous colleges having adequate infrastructure, willingness to recruit additional faculty, having at least 50% of the faculties completed their Ph.D degrees and stable financial resources. The college or institution shall have compulsorily accredited from the NAAC with A Grade, or College with Potential for Excellence etc.

2. Post-Graduate Programmes

- 2.1 The PG programme should be of purely theoretical or in applied research or combination of both or purely by research in nature.
- 2.2 Post-graduate programme should integrate internship.
- 2.3 Students' who wish to join a PG programme in the discipline other than the discipline in which he has acquired UG degree will have to take additional courses in the new discipline.
- 2.4 The universities may also start parallelly five year integrated Masters Degree Programme with exit option.

3. Doctoral (Ph.D.) and Post-Doctoral Programmes:

- 3.1 Doctoral research should match the international standards in the state universities. All the doctoral thesis should have at least one professor from institute of excellence to evaluate the thesis.
- 3.2 Doctoral students should engage in teaching as a substantial part of their learning experiences. They should take a one semester course/seminar on teaching
- 3.3 Not many universities in Maharashtra have postdoctoral programmes. All the State universities must encourage researchers to undertake research in postdoctoral programmes. The government and the universities should roll out scholarships and fellowships for such studies.

Time-Line

- a. Four year degree programme and Ph.D. programmes immediately after the four year degree programmes could be implemented after we receive the implementation plan from the Higher Education Council of India.
- b. All other recommendations can be implemented from the next academic year .i.e. 2021-22.

Cost Involved:

- a. For grant-in-aid institutions- there may be a financial burden on the State Government if it is a aided programme.
- b. For unaided programmes the burden to be borne by the individual institutions.
- c. There may be one year additional burden on the students' for tuition and hostel fee.

4. Teaching Learning Process

- 4.1 Less classroom based teaching: developing customised and activity based learning eventually leads to a situation where people can learn most of what is now taught in college level through digital devices, anytime and anywhere. Shared knowledge and competencies that are becoming the part of modern learning and expertise and professional work will also become part of universities/colleges and traditional classrooms. Less teaching can actually lead to more student learning if the circumstances are right and the solutions are smart.
- 4.2 More personalised learning: it is important for each young person to require certain basic knowledge in the discipline in which he or she is learning. Today the students have alternative ways to learn these basic things. Today's students are learning in the universities/colleges through media, internet and different social network to which they belong. As a result, they are finding teaching in universities and colleges irrelevant because they have already learned what is meaningful for them elsewhere. And therefore we need to rethink universities/colleges so that learning relies more on customised individual learning plans and less on teaching from a standardised curriculum.
- 4.3 Setting a clear but flexible framework for university/college based curriculum planning using individualised learning plans who have special educational needs.
- 4.4 Focus on holistic development: Teaching and learning should focus on deep, broad learning, giving equal value to all aspects of a group or individuals personality, moral character, creativity, knowledge, ethics, social skills, empathy and leadership. The aim of the universities/colleges should be to find each students talent.
- 4.5 Collaboration among university/colleges. The basic assumption is that educating people is a collaborative process and that cooperation, networking and sharing ideas among universities/colleges will eventually raise the quality of education. When universities/colleges collaborate, they help one another and help teachers create a culture of cooperation in their classrooms.
- 4.6 Pedagogy for teaching learning processes can be drawn from 1-4.
- 4.7 The emerging disruptive technologies and tools will be extensively used by teachers in teaching learning process.
- 4.8 Every university should establish Centre of Excellence in Teaching and Learning through which teacher should be continuously trained.

Time-Line:

It can be implemented from academic session 2021-22

Cost Involved:

RUSA should give grants to establish these Centre of Excellence in Teaching and Learning.

5. Assessment and Evaluation:

5.1 The universities should move mostly towards assessment based on reflection (Assessment as learning).

5.2 The universities/colleges should move from traditional way of thinking to contemporary ways of thinking about assessment. For example,

Traditional Approach to Assessment	Contemporary Approach to Assessment
Planned and implemented without consideration of learning goals if any even exist.	Carefully aligned with learning goals. The most important things we want the students to learn.
Often focus on memorised knowledge	Focused on thinking and performance skills
Often poor quality, simply because faculty and staff have had few formal opportunities to learn how to design and use effective assessment strategies and tools.	Developed from research and best practices on teaching and assessment methodologies.
Used only to assess and grade individual students, with decisions about changes to curricula and pedagogies often based on hunches and anecdotes rather than solid evidence.	Used to improve teaching learning and student success as well as to assign grades and otherwise assess individual students
Used only in individual course sections; not connected to anything else.	Viewed as a part of an integrated, collaborative learning experience
Not used to tell story of our successes; stories are told through anecdotes about star students rather than broader evidence from representative students.	Used to tell our story: what makes our college or programme distinctive and how successful we are in meeting societal and student needs.

5.3 The purpose of assessment as leaning should be Self-monitoring, self-regulation of learning and self-correction or adjustment.

5.4 The data analysis at a micro level should be done by the universities.

5.5 The scientific assessment and evaluation methodology should be used by the universities.

- 5.6 The digital media and ICT including artificial intelligence should be used extensively in examination, assessment and evaluation by the universities as has/is been used by (ETS) Education Testing Services by Pearson.
- 5.7 The teachers needs to be given training in the modern and scientific assessment and evaluation methods.
- 5.8 Universities should follow continuous assessment system.
- 5.9 Universities should create learning portfolio of every student.
- 5.10 Blooms Taxonomy Hierarchy should be used in assessment and evaluation.

Time-Line:

It can be implemented from academic session 2021-22.

Cost Involved:

To be borne by the individual university.

6. Scoring and Grading:

- 6.1 All the universities must shift from absolute to relative grading system.
- 6.2 Convert Raw scores to T-scores which is universally accepted.
- 6.3 Universities should follow Ten Point grading as per the UGC recommendations in effect.
- 6.4 With the grade sheet, universities should also provide competency mapping in grade sheet to the students.

7. Choice-Based Credit System:

- 7.1 All the universities should implement Choice Based Credit System in Maharashtra.
- 7.2 The same terminologies should be used by all the universities in the state of Maharashtra.
- 7.3 The universities may launch courses with 1-5 credits depending upon the importance of the course.
- 7.4 Students should also be given credit for their unseen academic work. For example peer guidance.

A] At the Programme level

- i. Specify for each academic programme considered at the Certificate / Diploma / Degree level (Undergraduate or Post-graduate level), the programme structure (core courses, optional courses, etc and their year wise distribution if applicable), entry level requirements, minimum and maximum duration for successful completion, programme objectives, teaching-learning strategies (number of teaching hours/lecture hours, tutorial hours, practical conduct hours, etc

involved) and evaluation components (nature and number of assignments, tutorials, tests, etc.) for the entire programme. Identify also the modules / courses that may be studied either as part of the programme or may be taken up independently.

- ii. Given the syllabus to be considered under each course included in a given programme, specify the objectives of each course.
- iii. Break up the syllabus of each course into smaller components called 'Units' and state the Specific Learning Outcomes (SLO) for each Unit.
- iv. By and large, in a given year consider that on an average a learner may undertake courses totalling between 36 to 40 Credit Points (Taking into consideration that 1 Credit Point is equal to approximately 30 hours of study).
- v. Considering the nature of content to be studied for each course, number of lectures / practical's to be conducted and the evaluation components to be completed under each course, distribute the credit points among the different course components of the programme to be completed in a given year. As a thumb rule, each course should normally be in the range of 4 to 6 Credit Points.
- vi. Allocate the course wise credits based on an estimate of the number of hours that would be required by an average learner to fulfill the basic requirements of the course including time spent on attending lectures, preparing for all the evaluation components, etc. (Learning hours).
- vii. Credits should also be allocated to all the units included within a given course - for compulsory or core courses as well as elective courses.
- viii. Credits should also be allocated to project work, thesis, industrial placements, etc where these components are a part of a degree programme.

B] At the institutional level

- i. Programme wise catalogues should be prepared in detail for all the academic programmes offered by the institution. Apart from basic information regarding admission procedure, fees to be paid, eligibility criteria, academic calendar and overall programme structure, each catalogue should contain other details like course choices available, course wise syllabi, course wise learning outcomes (what learners are expected to know, understand and be able to do after studying a given course) and workload (the time learners typically need to achieve the learning outcomes), expressed in terms of credits.
- ii. The programme wise catalogues thus prepared should be published in print form as well as made available on the web for open and transparent dissemination of information to all.

- iii. In addition to programme wise catalogues, certain other key documents will also be required viz. the Learning Agreement and the Transcript of Records in order to assist the process of Credit accumulation and Credit Transfer from one programme to another or from one institution to another [Specimen Formats of a Learning Agreement as well as Transcript of Records are provided in the Appendix and have been adapted from the European Credit Transfer System (ECTS) that has been accepted as a model by many countries across the globe].

When the three parties involved - the learner, the home institution and the host institution - agree about offering Credit Transfer facilities for a certain academic programme (especially in cases where in the learner completes some amount of course work in an overseas institution), they should sign a Learning Agreement which should be attached to an application form submitted by the learner. Such a Learning Agreement should specify that the learner agrees to undertake the programme of study at another 'host' institution as an integral part of his or her higher education. The 'home institution' according to this Agreement will also provide an assurance to the learner that the home institution will give full academic recognition in respect of the courses listed in the agreement. Ideally, the host institution should also explicitly state as to how exactly the academic recognition will be executed while confirming that the programme of study does not conflict with the host institution's rules. A copy of the signed learning agreement should be given to all parties involved, the home institution, the host institution and the learner.

A Transcript of records should describe the learning achievements of the concerned learner prior to and after the period of study in another institution. Every course taken by the learner should be recorded on the transcript of records with the corresponding credits and the grade/marks awarded. A signed copy of the transcripts of records should be given to all parties involved, the home institution, the host institution and the learner.

An internal Coordination Committee should be established to handle all matters related to the implementation of the Credit System. Apart from assisting in inter-departmental coordination, this Committee should also look into matters like inter-institutional credit transfer arrangements and course equivalence with the assistance of the concerned departments/officials from the university.

General Recommendations for Use of CBCS

There are general recommendations for the development and implementation of a Choice Based Credit System as follows

- i. It is always advisable that credits are allocated on a "top-down" basis. The starting point should be the full programme taken into account and then one should move on to assigning credits to

the constituent courses. Allocating credits to individual course units on a “bottom-up” basis may result in complications that are difficult to handle.

- ii. The use of decimals in course wise credit allocations (e.g. 4.85 credits) should be avoided. To the extent possible, unit wise credit allocations should be limited to the use of half credits.
- iii. Although credits may be allocated on a unit wise basis for computational purposes, they should only be awarded to learners who successfully complete the qualifying criteria for an entire course. In other words, learners should not be given credits for partial work completed for a given course like submission of assignments or attendance at tutorials, etc.
- iv. The mere existence of a facility for credit transfer should not by itself be a sufficient condition for making it available to the learner. The learner wanting to avail such a facility should apply for the same in a prescribed form with a certain ‘processing fee’ and also with adequate substantiating and properly authenticated documents accompanying his application.
- v. In cases where in two or more institutions desire to give joint degrees/ diplomas, a Memorandum of Understanding should be signed specifying the particular responsibility of each partner in the Alliance and the operational modalities involved properly documented.
- vi. On the lines of European credit transfer system, the state should establish Maharashtra State Credit Transfer System.

8. Maharashtra State Responsible Research and Innovation Council (MSRRIC)

The committee is of the view that the State government shall establish the Maharashtra State Responsible Research and Innovation Council. This council shall be the apex body to oversee, guide, mentor, fund, incentivize, build capacity for quality research across all disciplines and direct the research activities in the State universities by framing a broad policy. This council shall be established through an Act by the State government as an autonomous body of the State of Maharashtra.

8.1 Objectives of the MSRRIC

- 8.1.1 Enabling dialogue about research priorities by facilitating an open and collective approach to investing in multidisciplinary research and training. The State departments of Maharashtra should define their priorities and encourage research for their own departments by giving at least 5 Crores per department for disbursement to the **Maharashtra State Responsible Research and Innovation Council (MSRRIC)**.
- 8.1.2 Fund competitive, peer-reviewed grant proposals of all types and across all disciplines.

- 8.1.3 Seed, grow and facilitate research at academic institutions, particularly at universities and colleges where research is currently in a nascent stage, through mentoring of such institutions by eminent research scholars, hiring excellent, young research students and faculty, and strengthening and recognising existing high quality programmes at such institutions.
- 8.1.4 Act as a liaison between researchers and relevant branches of government as well as industry, so that research scholars are constantly made aware of the most urgent research issues of the day so that policy makers are constantly made aware of the latest research breakthroughs so as to make appropriate policies for the State.
- 8.1.5 Recognise outstanding researchers in the State.
- 8.1.6 Facilitating cooperation between the research councils and external stakeholders by promoting dialogue, collaboration, and partnership.
- 8.1.7 Communicating the activities and views of the research councils to increase policy influence and collective visibility.
- 8.1.8 Collaborating with industries and other funding agencies to reduce bureaucratic red-tapeism for researchers and university administrators.
- 8.1.9 Incubating industry research projects in the universities.
- 8.1.10 Live projects like the Poverty Action Lab to deal with problems of development to be set up.
- 8.1.11 Improving operational performance by capacity building and sharing best practices.

8.2 Composition of the Council

MSRRIC shall be composed of eminent scholars and researchers.

- 8.2.1 One Padmavibhushan/ Padmabhushan/ Padmashree/ Eminent globally known scientist – Chairperson
- 8.2.2 The Chief Secretary of the State – Member
- 8.2.3 Two eminent researchers of international repute from the faculty of science and technology – Member
- 8.2.4 Two eminent researchers of international repute from the faculty of social sciences and humanities – Member
- 8.2.5 One eminent researcher from Research and Development (Industry) – Member
- 8.2.6 One eminent globally known innovator – Member
- 8.2.7 The secretary Higher and Technical Education, Government of Maharashtra as the Member Secretary

8.3 Other than the ex-officio members

All other chairperson/members shall be nominated by the chief minister on the recommendation of the Higher & Technical Education Department of Government of Maharashtra.

8.4 Tenure of the Council: The tenure of the Council shall be five years.

The Council may appoint divisional standing committees for effective implementation of the Responsible Research and Innovation Policy.

Time Line:

August 2021

Cost Involved:

Operational Budget - Five Crore per annum

Research Grant- 100 Crores per annum.

Chapter 2

Detailed Notes on Curriculum Framework for NEP 2020

Introduction

It suggests the approach of creating multidisciplinary environments. For liberal education to become the norm and truly to thrive, higher education must move into multidisciplinary institutions.

It points out that even within the multidisciplinary universities, there is currently little interaction among different disciplines. Students are streamed into narrow areas such as science, commerce, arts, engineering, professional or vocational subjects, and are generally mandated to take almost all if not all courses only within their stream. This is a very harmful practice that prevents students from having the flexibility to develop their own individual interests and talents; develop cross disciplinary capabilities; and develop both the creative and analytical side of their brains. In other words, they are not allowed to synthesis their own degree programme.

These silos must be broken in order to develop true liberal education for all students, and to encourage cross-disciplinary collaborative research and study among faculty as well. And therefore it is suggested to move away from single stream to multidisciplinary studies.

It further suggests that higher education institutions must offer flexibility in curriculum, and novel and engaging course options to students. Pedagogy for courses should strive for significantly less rote learning and increased emphasis on communication, discussion, and opportunities for cross disciplinary and interdisciplinary thinking (NEP 2020 page 375).

1. Curriculum Framework

1.1. Flexible Bachelor's Degree Options:

To facilitate the above perspective so as to attain the above ideal attributes of liberal education, it suggests four year Bachelor of Liberal Arts or Bachelor of Liberal Education degree with research which will be offered by the institutions ready to run such programmes consisting of a broad based liberal education together with rigorous specialization in field/fields. The three year BA, B.Sc. as well as B.Voc. degrees will continue for those institutions who wish to continue such programmes, but all bachelor's degrees will move towards taking a more comprehensive liberal education approach.

1.2. Curriculum Definition:

It consists of the totality of experience that a learner receives through the manifold activities that go on in the college, in the classroom, library, laboratory, workshops, sports-ground as well as through the learning experiences provided to students through curricular, co-curricular and extra-curricular activities and in the numerous interactions and communications between the teachers and students. It is neither inflexible nor uniform/standardised in its form, pattern and structure. It is characterised by variety and flexibility and it is tailored to the needs of the students in accordance with their age level. It is something which is related to the life and the needs of students. It includes both what they should learn and also what they need to learn.

1.2.1 A framework of **assumptions about the learners and the society** such as learners' capacity and ability (e.g., whether intelligence is fixed or can be enhanced), aptitudes and potential for learning, motivation, needs, interests and values as well as society's orientation to nurturing or using the individual gainfully. (Society's needs: employability, inclusiveness, access, internationalization, quality enhancement etc.). This may require design thinking.

1.2.2 **Aims and objectives** i.e. why education should be provided and towards which direction? Any curriculum usually determines its instructional objectives at the beginning of the course (e.g. Objective Based Education, specifying programme objectives, programme learning outcomes and course learning outcomes).

1.2.3 **Content-matter** with selection of what is to be taught and learnt, scope of the subject-matter and its sequence.

1.2.4 **Modes of transaction** which deals with the process of teaching-learning and includes methodology of teaching, **learning experiences** both within the institution and outside, learning environments, teachers' material as well as students' material.

1.2.5 **Evaluation** methods and techniques for students.

1.3. Three /Four Year Degree Programme

1.3.1 The universities in the state of Maharashtra may adopt three year or four year Bachelor's degree programme having multidisciplinary approach (Liberal Arts). However, those who would be adopting four years bachelor's degree programme will have to spend the last year completely on research component. The learner will have to undergo extensive research during his academic career.

1.3.2 Though the research component may be specifically dealt with in the fourth year of the bachelor's degree, the training in that direction shall begin from the first year of the bachelor's degree by inculcating research methods/writing training.

1.3.3 The committee also recommends multiple entry and multiple exits during three year and four years bachelor's degree programme.

1.3.4 The student may be awarded different certificates and diplomas depending upon the semester they are able to pass in-tune with the multiple entry and exit principles. The scheme suggested is as follows;

- a. First Year – the student will be awarded a Certificate on the successful completion of 44-48 Credits which includes (Ist and IInd Semester).
- b. Second Year – Diploma will be awarded at the successful completion up to fourth semester 88-96 credits.
- c. Bachelor's Degree (General) will be awarded for the successful completion of six semesters 132-144 credits.
- d. Bachelors with Hons. Fourth year (176-192 credits)

Initially, the permission to run four year degree programme shall be given to all the universities and to the colleges/institutions including autonomous colleges having adequate infrastructure, willingness to recruit additional faculty, having at least 50% of the of the faculties having completed their Ph.D. degrees and stable financial resources. The college or institution shall have compulsorily A accredited from the NAAC, or College with Potential for Excellence etc.

1.4. Post-graduate Programme:

Post Graduate programme shall be with and integrated internship. The programme shall be designed in such a way that it meets the standards of rigorous training in the given discipline. While those students undergoing post-graduate programmes, shall mandatorily have large research component to prepare them for industrial innovation which they intend to enter upon after the completion of the course.

- a. Theoretical
- b. Applied Research /PG by research to be introduced. The orientation has to be of research.

1.5. Six Component Curriculum:

The edifice of the education rests on the strong foundation of the curriculum. The design of the curriculum affects not only the thought process of the learner but also the development of

overall competency of the student. Keeping this in mind, The committee recommends five components choice based credit system for the learners.

The academic curriculum therefore shall mandatorily have six prime components.

- a. Core of the discipline (Core Competence in Certain Discipline)
- b. Applied of Core component (Interdisciplinary)
- c. Multidisciplinary component
- d. Skill based courses component
- e. Foundation component
- f. Internship.

Although mandatory, the five components should have enough flexibility. That is to say, that under each component there should be ample choice of the subject/courses to cater to the needs of the individuals.

The curriculum shall aim at synthesising degrees. Synthesising degree is now an international standard adopted by all the universities all across the world. Maharashtra has a legacy of providing quality education to its pupil, in order to maintain the higher standards of such education the committee recommends that the degree be synthesised as per the choices of the individual learner. While synthesising their degrees, there shall be no bar or restriction on the subjects/courses across the disciplines.

The integral education shall be the part of foundational skills. The concept of integral education is as follows.

1.6. Integral Education :

A shift in paradigm, from education's failure, to education's potentials through Learner Centric Pedagogy

We are nearing the end of 2020 which shook us in all ways possible. In the middle of this turmoil we are seeing a new dawn of an age of transformation, which opens up new opportunities, awakens us to grow and bring change in our ways of thinking, doing and being. This kind of situation or crisis is forcing us to evolve - our consciousness, our culture, our behaviour and our system. And this change and transformation can come only through education.

The current education system needs a paradigm shift of thinking from education's failure to education's potentials. Establishing education's potential is a dire need of the present time where there is a change in the overall educational program from content-centric to learner-centric pedagogy, and from fragmented learning to holistic and Integral learning where learners recognize their own inner strength through self-observation, self-management of mind, emotions and body through self-reflection and achieving self-mastery.

The Integral Education system is not discipline or subject specific, it gives a lens to learners to explore and work in any kind of knowledge society, life and work scenario in a manner that they grow to their fullest potential.

It is an inclusive and pluralistic study of human experience, knowledge, potentials and development.

1.6.1 Integral Approach to Education

Integral Education is a unique education system that uses a learning approach which focuses on a self-paced growth and development of learners through a new learning environment where all four faculties: Physical, Emotional (Vital), Mental and Self (psychic) can be developed.

The Learner's Core Faculties



The teacher approaches a learner like a seed whose potential is to grow into a tree, and the aim is to shift the focus on realizing the innate unique potential of each learner, rather than to focus on expecting certain academic performance/product from them.

In this approach learners get the opportunity to make conscious choices about the way they want to lead their life, not forced by parents or society or by any system.

Teachers have to create a warm and non-judgmental environment to invoke knowledge through stimulating materials, teaching aids and freedom of choice in learning activities instead of just relaying subject matter.

Teachers become co-learners in this process. This approach helps learners reach the truth which is based on a value system instead of common values defined by the society. These kinds of learning experiences bring an inner change in learners. It promotes self-evaluation, self-reflection, self-corrections.

So, in integral education learning experiences focus on process rather than product. And for this, teachers create differentiated activities by keeping in mind the learner's interest, level of receiving or assimilating, processing information as well as application in real life situations. Integral education approach focuses on questioning (Socratic methods) to reach to conclusion rather than readymade pre-decided or expected answers.

This kind of approach creates and develops a strong character in learners rather than just honing their outer personality. It allows their integral growth – physical, mental and emotional.

Integral Education Learner Wheel



1.6.2 Pedagogical Basis of Integral Education

The approach of Integral Education is learner centred and driven from learning theories like constructivism, gestalt, holistic, meta-learning, deep-learning, differentiated learning and community based experiential learning. It gives space to reach both internal realities such as values, visions, feelings, motivations, relationships and external realities, such as physical health, interrelationships, connection to ecology among others. These approaches express themselves spontaneously in learning experiences.

1.6.3 Rationale for Using Integral Education

Today's milieu really highlights the need to take the Integral education approach seriously, especially in higher education, as this is when learners fully realize their potential and adapt to a rapidly changing world. Integral education can provide support to students where they can recognize their own self by inquiring, realizing and developing their physical, mental and emotional aspects and how they work together. Integral Education works further to hone and develop physical, mental and emotional aspects of being. The potency of integral education lies in its ability to bring a higher consciousness into play in its educational process.

Technology, today, has created an ever widening gulf between have-s and have not-s through economic divide, digital divide, social divide but the divide which has the highest potential to damage humanity is the divide of values. The section of the society which is void of values is growing faster than ever before. The set of our heroes/leaders, who lead value based lives is shrinking. Values at educational campuses seem to be diminishing. Global rise in corporate frauds, eroding the shareholder values is the reflection of lack of values in business conduct. When greed becomes the driving force of the world, then threat to human potential is not restricted to war zones only, but it swamps every walk of life from society to economy to mental health.

In today's world, intelligence centric education system might not be as relevant for the next generation which will live in the era of artificial intelligence. The need of the hour is to carve out some unique human advantage unlike intelligence, which cannot be replicated by technology. This unique advantage in the future, would involve higher human consciousness, which calls to bring in Integral Education. Integral Education would help individuals grow their awareness through attention and encourage them to practice

their Values in daily life leading to Nation building and wealth creation in harmony with the environment.

The integral approach embraces connections, rather than differences between traditionally aloof academic disciplines such as arts and sciences, and between various subjective and objective epistemologies and methods of inquiry. This kind of education works for being adaptive and flexible in a profound, multi-faceted and complex world.

The multidisciplinary aspects of integral education open up not only different worldviews but also lead to co-invention which becomes the source of compassionate thinking process. Because it is experiential and inquiry based in nature, this type of education opens up scope of understanding of relationship with the self, with the world and our perception of reality, our purpose of existence.

1.6.4 Implementing Integral Education

One of the recommendations of NEP is to integrate multidisciplinary learning in higher education, and in this, integral education has the best process and pedagogical approach for implementation. The aim of the teacher is to prepare a student to be able to see beyond the obvious.

An example illustrating this is that during a session on developing a vision statement in a MBA class, learners could be taught using definitions and explaining what a vision statement is. However, if the same concept is taught using hands-on activity of envisioning and making a sculpture, the multi-sensory, multi-faceted and transdisciplinary activity would help learners understand the process of visioning and implementing. This co-teaching session between an art teacher and Business Administration teacher would include sharing knowledge and simultaneously developing basic skills to create a vision statement. This process helps a learner to grow not only mentally but also emotionally and it helps learners to recognise their own self expression.

If we make a deep study of the experiments in integral education such as the example discussed above, it may be said that the most important feature that comes to the forefront and which may help us to define what may be called Integral Education is the search for meaning and unity of knowledge for the learner.

1.7. Twenty-first Century Curriculum Design Framework

We won't meet the needs for more and better higher education until professors become designers of learning experiences and not teachers.

Larry Spence

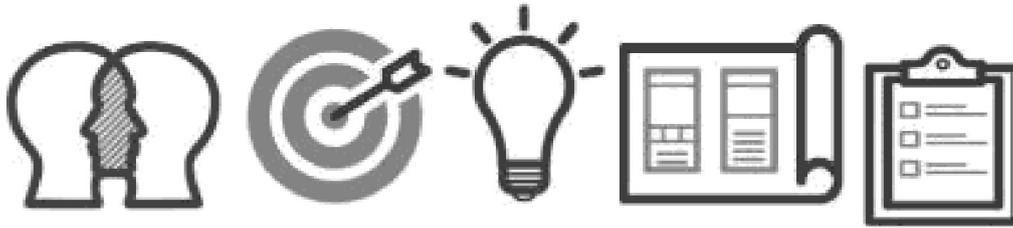
We suggest three layered framework for design thinking. The first one is **Design Thinking**. The second is **Backward Thinking** and the third layer is KSSL™ Framework. (Knowledge-Skills-Self Awareness and -Learn to Learn). While using this three-layered framework, the faculty changes their role from that of a teacher to a designer. This completely changes the quality of outcome and the mindset. Faculty should consider themselves to the designers, a much-needed shift in thinking. Understanding each of the layers and their importance in the curriculum design process is a paramount if one is keen to adopt this framework.

1.7.1 Design Thinking

Computer scientist and Noble Laureate Herbert A Simon was the first to mention design as a science or a way of thinking in his 1969 book, *Science of the Artificial*. Design thinking was popularised by IDEO, the design firm. Tom Brown, the founder of IDEO has explained how design thinking can be used to come up with innovative solutions in his book *Change by Design*.

Design thinking is a human centred approach. It is a systematic process which helps us develop an understanding of our user learner needs. It helps to redefine and understand problems in depth and find compelling solutions. It is thus a solution-based approach. Brands like Apple and Google have adopted Design Thinking successfully, so have many Universities. Stanford University has a well-defined course on Design Thinking. The Stanford design school has proposed a five phase model for Design Thinking as follows:

EMPATHISE DEFINE IDEATE PROTOTYPE TEST



Five step process of design thinking process

Source – <https://www.interaction-design.org/iterature/article/what-is-design-thinking-and-why-is-it-so-popular>

The phases of the Design Thinking process are restated below with reference to higher education

i. Empathise:

Empathise with your learners. Understand their needs, their interests, their aspirations, what do they feel, see, hear. Why do they want to take up a programme or course? What do they expect from the programme?

Understand Stakeholders' Needs: What does the industry expect; what must students be able to do when they join the workforce; what is the expected knowledge, skills, abilities and attitudes that are expected as a working professional; and what does society expect from students who graduate from specific courses?

Designers create user or consumer personas in the 'Empathise' phase. For learning to be purposeful and relevant, we must create learner personas. Learner personas are learner profiles which we will cater too. When we create a detailed picture of who our learners are, it helps us to design a course which will be engaging and relevant for our learners.

ii. Define:

Define learner and stakeholder needs. What are the insights from the Empathise phase? Are the learner and stakeholder needs aligned with the purpose of the programme or course?

iii. Ideate: *Question existing assumptions of course design. Think of innovative and engaging ideas and strategies to make learning compelling and purposeful.*

iv. Prototype: *Design the curriculum. Design representative units applying pedagogy and strategies which will engage learners and make them an active participant in the learning process.*

v. Test:

Test the curriculum. When units are taught note what works and what can be enhanced.

Design thinking is an iterative process. It is an ongoing, continuous process of quality improvement.

It is important to understand that the five phases are not sequential. They can overlap and iterations can be done to keep improving understanding of the needs and thus the design of the curriculum.

1.7.2 Backward Design

When designing curriculum, usually the first consideration is the content — how to teach it, then the materials or the textbooks that are to be referred to, the assessment and then the alignment with the outcomes or objectives.

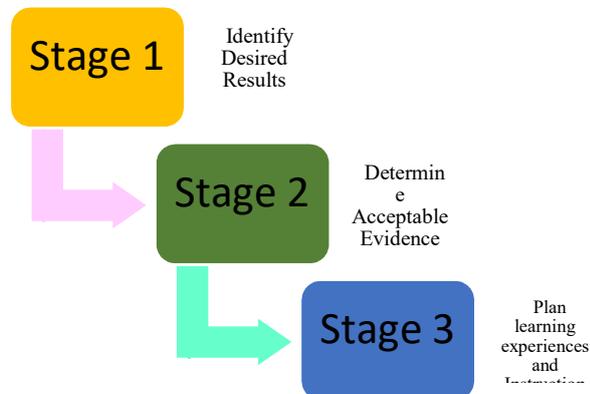
Backward Design is a framework for curriculum design proposed by Grant Wiggins and Jay McTighe in their book *Understanding by Design*. They propose a reverse process to the usual curriculum design. Thus, we begin with the end in mind as Steven Covey says. When we know our destination, we can think of where we are and then plan the steps to reach where we want to go. This reverse process ensures alignment between outcomes, learning content or activities and the assessment. Backward Design goes through three stages

Stage One — Identify Desired results: What should students know, understand and be able to do?

Stage Two— Determine acceptable evidence: How will we know if students have

achieved the desired results and met the standards?

Stage Three - Plan learning experiences and instruction: With clearly identified results and appropriate evidence, the learning activities can now be planned.



Backward Design Stages

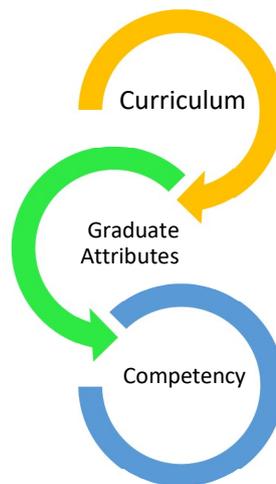
The process of Backward Design is well articulated for Higher Education by Mackh in his book Higher Education by Design as a course planning flowchart



- **Competency among the students**

Curriculum design is an intervention towards higher competency of the learners. The curriculum designed using the above components (Core, Applied of Core (interdisciplinary) Multidisciplinary, Foundational and Skill based) aspires to generate core competency among the student. It is therefore important to index or measure the competencies among the students. This is generally evaluated through an scientific and effective assessment methods. This can be done using some attributes. These attributes may be called as Graduate Attributes. While the evaluation of the student is undertaken in the college/university, a student must be measured on such attributes that may be designed while designing the course. The board of studies must identify broad attributes while a student will acquire when he undergoes a particular course. Further, at the

institutional level such attributes can be used to measure the competency of the student which can be one of the important aspect of evaluation of the learner.



- **Outcomes**

As we begin with the end in mind, defining the outcome is the first stage of the curriculum design process. Outcomes are the knowledge, skills and abilities students should possess when they complete a programme or a course.

If the programme outcomes are defined (as per specified standards) the next step is to define the course outcomes. Fink's (2003) questions on curriculum design are a great way to start when writing the outcomes: What is it I hope that students will have learnt, that will still be there and have value, several years after the course / {programme) is over (outcomes)'.

- **Objectives**

Objectives are specific and define the skills or knowledge that students will acquire or demonstrate at the end of completing a learning activity or lesson or session. This is usually a confusion between what outcomes are versus what objectives are? Most of the time they are used interchangeably. Iowa State University's Center for Excellence in Teaching and Learning have a practical and useful definition of outcomes and objectives: "Outcomes are where we want to be; and Objectives are steps needed to get there." This definition equips the curriculum designer with a powerful tool — define the outcomes and for every outcome define a set of objectives — the steps that will take the learner towards the outcome. This way the outcomes and objectives are

consistent and align with each other. Objectives and Outcomes must be measurable. Using action verbs from Blooms Taxonomy to define them makes them specific.

- **Assessments**

Going back to Fink (2003) the next question to be asked is, “What would students have to do to convince me that they have achieved the defined outcomes?” Traditionally, assessments are considered at the end of the unit and are largely summative — a final examination. However, in backward design, assessments are designed as soon as the objectives are defined. This helps to structure a learning experience which will ensure attainment of the objective. For example, the objective is to ‘Justify the use of solar panels’, then the learning activity must be pitched at a higher level so that students justify the need and not just ‘explain’ how solar panels can be used. ‘Justify’ is a higher order action verb than ‘Explain’. Because we defined the assessment first, we know at what level to pitch the content or learning activity. If we had not done that then after defining the objective, we would have thought of the learning activity and the content that was suitable, not necessary the level that it has to be pitched and then the assessment would have followed at the end of the unit which would not have aligned with the objectives at all.

Another point of consideration is that ongoing and continuous assessment checks understanding for every objective, thus making it easier for in-flight corrections to the strategies that are being used. Students also get interim feedback on their progress and have a much better sense of what they have understood, what they must work upon when formative assessments are conducted. Higher education must give importance to formative assessments in order to improve the quality of the teaching-learning process.

It is important to note that after defining the assessment type, the mechanism— marks, rubrics and checklists for grading the assessment must also be chosen.

Defining assessment after the objective helps in scheduling them in the learning process

- **Instructional Plan**

An instructional plan can begin with dividing the course into modules and further topics or sub-topics. Choosing appropriate instructional strategies which enable active learning is the next step. These include: interactive lectures, project-based learning, case study, flipped classroom, debates, demonstrations, group work, group discussions, paired learning all can make learning interesting. A detailed session plan gives faculty a

guideline and the same can be worked upon as it is implemented. Ensuring that the instructional plan aligns with the objective and the assessment is paramount. Creating a session plan requires involvement and preparation. Gaining attention at the start of the session is most important and specific strategies must be used to appeal to students. Enriching and extending learning at the end of the session is equally important. When students can apply their learning in newer contexts, learning transcends beyond the classroom.

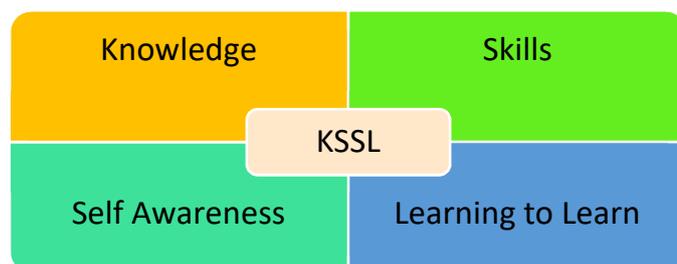
Reflection is yet another strategy which can be a powerful learning tool. Getting students to reflect on the problem at hand, the experience, the situation and the learning has a deep impact on understanding of one's own thinking, progress and gaps in learning.

- **Materials**

Choosing materials in the form of textbooks, web references, videos, real life situations etc. are done in the last in the Backward Design process.

1.7.3 The KSSL Framework

The third layer of the three layered 21st Century Curriculum Design Framework is the KSSL Framework (Knowledge — Skills — self-awareness and — learn to learn)



- **Knowledge**

Traditionally, curriculum has always been content heavy. What is required though is a connect with the real world make learning deliver to requirements stated by the

industry and society of making students employable and the knowledge that they gain is relevant.

For students to be employable, performance objectives are the key. They must know what to do (perform) than just know what it is (concept understanding). When performance is the focus, concept understanding is given. Thus, the focus of the knowledge component is on:

- Connecting content to real life and bringing in the required relevance.
- Redesign from a topic-based (knowing what it is) to a performance based (knowing what to do) curriculum.

- **Skill**

Skills are psychomotor as well as cognitive. They are about the abilities that students develop to perform various tasks. The 4Cs — Creativity, Critical Thinking, Communication and Collaboration — are known as the 21st century skills, which are important for students to survive and work in a local-global workplace. So is the ease of using technology. Thus, the focus of the knowledge component is on.

- Encouraging abilities to apply knowledge in real world situations.
- Enhancing the 4C Skills
- Awareness and skills of using technology for change.

- **Self-Awareness**

Self-awareness means knowing your true feelings, thoughts, abilities and actions. It is also about knowing that your actions affect others. In today's demanding world being self-aware is critical. Self-awareness can be developed. It is a process of tuning in, reflecting, introspecting. Knowing what you are feeling, labelling that feeling is the most important aspect. Understand ourselves builds positive self-esteem. It helps to recognise strengths and gives us insights to overcome challenges.

A 21st century curriculum is not just about building knowledge and skills; it is also about making students aware of the benefits of being self-aware. Thus, the focus of the self-awareness component is on:

- Practicing Mindfulness — Mindfulness is paying attention in a conscious way without judging to the present moment
- Developing confidence

- The right mindset
 - Emotional intelligence
-
- **Learning to Learn**

Awareness of one's own learning—and cognitive ability, managing own learning, building on previous knowledge, thinking about thinking (metacognition) are all essential to **building competence and lifelong learning skills. In today's world, technology is evolving at such great speed, new jobs and roles not heard of before are emerging. Learning to Learn skills** will enable students to cope up with the ever changing and demanding work challenges. Thus, the focus of the Learning to Learn component is on:

 - The awareness of one's own learning abilities
 - Reflection on each aspect of: knowledge, Skills, Self-awareness
 - Learning from reflection

1.7.4 Correlation Between the Three Layers of the 21st* Century Curriculum Design Framework

Table gives the correlation between the three layers of the 21st century curriculum design framework.

Design Thinking	Backward Designs	KSSL Framework
Empathise and Define- Creates learner personas and provides insights on the needs	Outcome Objectives- Use insights from the Empathise and Define phase. Cater to the learner personas created.	Define- the KSSL components for the identified learner person as and the expected needs that are to be met.
Ideate- Think of innovative strategies that will make learning interesting	Instructional and Assessment Plan- Use of engaging strategies for both to make learning enjoyable	Design- Connecting KSSL to real life and bringing in the relevance. Bringing in skills on Creativity, Critical Thinking, Communication and Collaboration in the design of learning activities.
Prototype- Designing representative units	Design of the curriculum map using the five states: Competency-Outcome-Objective-Instructional plan-materials	Design- Integrating the KSSL components in the curriculum map.

The teachers teaching at the undergraduate level will be given an extensive training in designing the 21st century curriculum using the Design Thinking. This training shall be undertaken by the Centre for Excellence in Teaching and Learning.

It is imperative to define graduate attributes for each programme so that it becomes easy to measure achievement/progress of individual students.

1.7.5 Graduate Attributes:

The graduate attributes reflect the particular quality and feature or characteristics of an individual, including the knowledge, skills, attitudes and values that are expected to be acquired by a graduate through studies at the higher education institution (HEI) such as a college or university. The graduate attributes include capabilities that help strengthen

one's abilities for widening current knowledge base and skills, gaining new knowledge and skills, undertaking future studies, performing well in a chosen career and playing a constructive role as a responsible citizen in the society. The graduate attributes define the characteristics of a student's university degree programme(s), and describe a set of characteristics/competencies that are transferable beyond study of a particular subject area and programme contexts in which they have been developed. Graduate attributes are fostered through meaningful learning experiences made available through the curriculum, the total college/university experiences and a process of critical and reflective thinking. The learning outcomes-based curriculum framework is based on the premise that every student and graduate is unique. Each student or graduate has his/her own characteristics in terms of previous learning levels and experiences, life experiences, learning styles and approaches to future career-related actions. The quality, depth and breadth of the learning experiences made available to the students while at the higher education institutions help develop their characteristic attributes. The graduate attributes reflect both disciplinary knowledge and understanding, generic skills, including global competencies that all students in different academic fields of study should acquire/attain and demonstrate.

Some of the characteristic attributes that a graduate should demonstrate are as follows:

- i. **Disciplinary Knowledge:** Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.
- ii. **Intellectual Rigour :** Intellectual rigour is the commitment to excellence in all scholarly and intellectual pursuits, including critical judgement, clarity in thinking and an ability to think carefully, deeply and with rigour when faced with new knowledge and arguments, engaging constructively and methodically when exploring ideas, theories and philosophies, the ability to analyse and construct knowledge with depth, insight and intellectual maturity.
- iii. **Creativity and Innovativeness :** Capable of always looking for opportunities to continue to learn, reflect and apply new knowledge and skills in a positive sustainable way, with both a local and world perspective, find new ways to address problems sustainably, answer questions or expressing meaning, reflect and see the deeper meaning or significance; the “bigger picture” or patterns emerging and evaluate and draw

- conclusions from information, to find sustainable solutions to complex problems and make decisions.
- iv. **Critical Thinking Skills** : Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development.
 - v. **Problem Solving Skills** : Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, rather than replicate curriculum content knowledge; and apply one's learning to real life situations.
 - vi. **Analytical Reasoning**: Ability to evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyse and synthesise data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints.
 - vii. **Research-related Skills**: A sense of inquiry and capability for asking relevant/appropriate questions, problem specification, synthesising and articulating; ability to recognise cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation.
 - viii. **Communication Skills**: Ability to express thoughts and ideas effectively in writing and orally; Communicate with others using appropriate media; confidently share one's views and express herself/himself; demonstrate the ability to listen carefully, read and write analytically, and present complex information in a clear and concise manner to different groups.
 - ix. **Social Intelligence** : Ability to communicate openly and honestly and listen in a way that creates mutual understanding with others from diverse cultures, perspectives and backgrounds, proactively seek the diverse thoughts, feelings and perspectives of others' and taking these into account, work productively with others, no matter their culture, perspective or background, and complete joint projects. To work in partnership and lead and support others by inspiring them with a clear vision and motivating them to achieve goals.
 - x. **Co-operation/Team Work**: Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group, and act together as a

group or a team in the interests of a common cause and work efficiently as a member of a team.

- xi. Scientific Reasoning: Ability to analyse, interpret and draw conclusions from quantitative/qualitative data; and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective.
- xii. Reflective Thinking Skills : Critical sensibility to lived experiences, with self-awareness and reflexivity of both self and society.
- xiii. Information/Digital Literacy: Capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources; and use appropriate software for analysis of data, Ability to use the devices, applications and software commonly used in the discipline and in general use (e.g. Microsoft Office 365) effectively and to adapt to new developments in digital technology, interpret, critically analyse and represent information in different settings, understand the legal, ethical and security requirements around using and collecting data, create new digital artefacts, use digital evidence to solve problems and use digital technology to develop new ideas, projects or opportunities and communicate and collaborate effectively in digital media and spaces and build digital networks, while managing digital identity, reputation, wellbeing and safety on platforms such as LinkedIn.
- xiv. Self-directed Learning: Ability to work independently, identify appropriate resources required for a project, and manage a project through to completion.
- xv. Multicultural Competence: Possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups.
- xvi. Moral and Ethical Awareness : Ethical practice is a key component of professionalism and needs to be instilled in curricula across courses. It includes the ability to embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. Capable of demonstrating the ability to identify ethical issues related to one's work, avoid unethical behaviour such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights; appreciating environmental and sustainability issues; and adopting objective, unbiased and truthful actions in all aspects of work. When operating ethically, graduates are aware that we live in a diverse society with many competing points of view. Ethical behaviour involves tolerance and responsibility. It includes being open-minded about cultural diversity, linguistic

difference, and the complex nature of our world. It also means behaving appropriately towards colleagues and the community, and being sensitive to local and global social justice issues. One of the keys skills is to listen well and to be thoughtful and respectful in action.

- xvii. Leadership Readiness/Qualities: Capability for mapping out the tasks of a team or an organization, and setting direction, formulating an inspiring vision, building a team who can help achieve the vision, motivating and inspiring team members to engage with that vision, and using management skills to guide people to the right destination, in a smooth and efficient way.
- xviii. Lifelong Learning: Ability to acquire knowledge and skills, including “learning how to learn”, that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to changing trades and demands of work place through knowledge/skill development/reskilling.
- xix. Cultural Competency : Cultural Competency refers to the ability to engage with diverse cultural and Indigenous perspectives in both global and local settings.

	Academic	Personal	Professional
Universal	Critical Thinking Scientific Thinking Intellectual Rigour Research-related Skills Creativity and innovation	Cultural Competency	Life Long Learning Moral and Ethical Awareness Team work
Work-Ready	Problem-Solving Knowledgeable Information and Digital Literacy	Multicultural Competence Social Intelligence Communication Skills	Leadership Qualities Co-operativeness/Team Readiness
Successful	Autonomous Innovative Insightful Reflective Thinking	Analytical Reasoning Self-directed Learning	

2. Implementation of Choice Based Credit System:

The Choice based credit system will be followed in all the universities/institutions. As per the Maharashtra Credit Transfer System (MCTS) on the lines of European Credit Transfer System. Maharashtra Deans Consultative Committee (MDCC) will be responsible for creating a broad framework of credit transfer system so as to facilitate students to deposit their credits earned in the Academic Bank of Credit. (ABC)

2.1 Rationale for introduction of CBCS

The UGC while outlining the several unique features of the Choice-Based Credit System (CBCS) has, in fact, given in a nutshell, the rationale for its introduction. Among the features highlighted by the UGC are: Enhanced learning opportunities, ability to match learners' scholastic needs and aspirations, inter-institution transferability of learners (following the completion of a semester), part-completion of an academic programme in the institution of enrolment and part-completion in a specialized (and recognized) institution, improvement in educational quality and excellence, flexibility for working learners to complete the programme over an extended period of time, standardization and comparability of educational programmes across the country, etc. Some of the specific advantages of using the Credit system as outlined in the available literature on the topic are as listed below:

2.2 Advantages of the Credit System

- i. Represents a much-required shift in focus from teacher-centric to learner-centric education since the workload estimated is based on the investment of time in learning, not in teaching.
- ii. Helps to record course work and to document learner workload realistically since all activities are taken into account - not only the time learners spend in lectures or seminars but also the time they need for individual learning and the preparation of examinations etc.
- iii. Segments learning experience into calibrated units, which can be accumulated in order to gain an academic award.
- iv. Helps self-paced learning. Learners may undertake as many credits as they can cope with without having to repeat all the courses in a given semester if they fail in one or more courses. Alternatively, they can choose other courses and continue their studies.
- v. Affords more flexibility to the learners allowing them to choose inter-disciplinary courses, change majors, programmes, etc.
- vi. Respects 'Learner Autonomy'. Allows learners to choose according to their own learning needs, interests and aptitudes.

- vii. Makes education more broad-based. One can take credits by combining unique combinations. For example, if a learner is studying music, he/she can also simultaneously take a course in Business Management.
- viii. Facilitates Learner Mobility. Offers the opportunity to study at different times and in different places. Credits earned at one institution can be transferred to another.
- ix. Helps in working out twinning programmes.
- x. Is beneficial for achieving more transparency and compatibility between different educational structures.
- xi. A credit system can facilitate recognition procedures as well as access to higher education for non-traditional learners.

2.3 Scientific Approach to Implementation

Any institution desirous of working out a comprehensive Credit system needs to adopt a systematic approach that handles most, if not all the aspects that need attention. Introducing the Credit system without adequate policy formulation and clear implementation guidelines is quite likely to encounter problems that are dealt with through ad hoc decisions. Such decisions may have long-term consequences which cannot easily be set right. Care has to be taken to see that the learner who must be the ultimate beneficiary of the system, does not suffer academically because of absence of procedures or lack of adequate attention to detail when evolving the system. Apart from the fact that any form of injustice caused to the learner - the ultimate 'consumer' in the educational process – can lead to legal issues, the lack of a comprehensive approach may affect the key features like curricular flexibility, learner autonomy and learner mobility that are central to the system. The following major steps should, therefore, be taken by any higher education provider wanting to introduce the Credit System. The steps given herein apply both to the annual pattern as well as the semester pattern. These have been grouped into two categories viz. steps to be taken at the programme level, involving a micro-approach and steps to be taken at the institutional level, involving a somewhat macro approach.

A] At the Programme level

- i. Specify for each academic programme considered at the Certificate / Diploma / Degree level (Undergraduate or Post-graduate level), the programme structure (core courses,

optional courses, etc and their year wise distribution if applicable), entry level requirements, minimum and maximum duration for successful completion, programme objectives, teaching-learning strategies (number of teaching hours/lecture hours, tutorial hours, practical conduct hours, etc involved) and evaluation components (nature and number of assignments, tutorials, tests, etc.) for the entire programme. Identify also the modules / courses that may be studied either as part of the programme or may be taken up independently.

- ii. Given the syllabus to be considered under each course included in a given programme, specify the objectives of each course.
- iii. Break up the syllabus of each course into smaller components called 'Units' and state the Specific Learning Outcomes (SLO) for each Unit.
- iv. By and large, in a given year consider that on an average a learner may undertake courses totalling between 36 to 40 Credit Points (Taking into consideration that 1 Credit Point is equal to approximately 30 hours of study.)
- v. Considering the nature of content to be studied for each course, number of lectures / practical's to be conducted and the evaluation components to be completed under each course, distribute the credit points among the different course components of the programme to be completed in a given year. As a thumb rule, each course should normally be in the range of 4 to 6 Credit Points.
- vi. Allocate the course wise credits based on an estimate of the number of hours that would be required by an average learner to fulfill the basic requirements of the course including time spent on attending lectures, preparing for all the evaluation components, etc.(Learning hours).
- vii. Credits should also be allocated to all the units included within a given course - for compulsory or core courses as well as elective courses.
- viii. Credits should also be allocated to project work, thesis, industrial placements, etc where these components are a part of a degree programme.

B] At the institutional level

- i. Programme wise catalogues should be prepared in detail for all the academic programmes offered by the institution. Apart from basic information regarding admission procedure, fees to be paid, eligibility criteria, academic calendar and overall programme structure, each catalogue should contain other details like course choices available,

- course wise syllabi, course wise learning outcomes (what learners are expected to know, understand and be able to do after studying a given course) and workload (the time learners typically need to achieve the learning outcomes), expressed in terms of credits.
- ii. The programme wise catalogues thus prepared should be published in print form as well as made available on the web for open and transparent dissemination of information to all.
 - iii. In addition to programme wise catalogues, certain other key documents will also be required viz. the Learning Agreement and the Transcript of Records in order to assist the process of Credit accumulation and Credit Transfer from one programme to another or from one institution to another [Specimen Formats of a Learning Agreement as well as Transcript of Records are provided in the Appendix and have been adapted from the European Credit Transfer System (ECTS) that has been accepted as a model by many countries across the globe].

When the three parties involved - the learner, the home institution and the host institution - agree about offering Credit Transfer facilities for a certain academic programme (especially in cases where in the learner completes some amount of course work in an overseas institution), they should sign a Learning Agreement which should be attached to an application form submitted by the learner. Such a Learning Agreement should specify that the learner agrees to undertake the programme of study at another 'host' institution as an integral part of his or her higher education. The 'home institution' according to this Agreement will also provide an assurance to the learner that the home institution will give full academic recognition in respect of the courses listed in the agreement. Ideally, the host institution should also explicitly state as to how exactly the academic recognition will be executed while confirming that the programme of study does not conflict with the host institution's rules. A copy of the signed learning agreement should be given to all parties involved, the home institution, the host institution and the learner.

A Transcript of records should describe the learning achievements of the concerned learner prior to and after the period of study in another institution. Every course taken by the learner should be recorded on the transcript of records with the corresponding credits and the grade/marks awarded. A signed copy of the transcripts of records should be given to all parties involved, the home institution, the host institution and the learner.

An internal Coordination Committee should be established to handle all matters related to the implementation of the Credit System. Apart from assisting in inter-departmental coordination,

this Committee should also look into matters like inter-institutional credit transfer arrangements and course equivalence with the assistance of the concerned departments/officials from the university.

2.4 General Recommendations for Use of CBCS

The general recommendations for the development and implementation of a Choice Based Credit System as follows

- i. It is always advisable that credits are allocated on a “top-down” basis. The starting point should be the full programme taken into account and then one should move on to assigning credits to the constituent courses. Allocating credits to individual course units on a “bottom-up” basis may result in complications that are difficult to handle.
- ii. The use of decimals in course wise credit allocations (e.g. 4.85 credits) should be avoided. To the extent possible, unit wise credit allocations should be limited to the use of half credits.
- iii. Although credits may be allocated on a unit wise basis for computational purposes, they should only be awarded to learners who successfully complete the qualifying criteria for an entire course. In other words, learners should not be given credits for partial work completed for a given course like submission of assignments or attendance at tutorials, etc.
- iv. The mere existence of a facility for credit transfer should not by itself be a sufficient condition for making it available to the learner. The learner wanting to avail such a facility should apply for the same in a prescribed form with a certain ‘processing fee’ and also with adequate substantiating and properly authenticated documents accompanying his application.
- v. In cases where in two or more institutions desire to give joint degrees/ diplomas, a Memorandum of Understanding should be signed specifying the particular responsibility of each partner in the Alliance and the operational modalities involved properly documented.

Some Key Terms

2.5.1 Program:

A Program is a set of courses that are linked together in an academically meaningful way and generally ends with the award of a Certificate or Diploma or Degree depending on the level of knowledge attained and the total duration of study. For example, Certificate in office Computing, Diploma in Journalism, BA and BSc , etc. would be called 'Programs' at the Certificate, Diploma and Degree level respectively. Over the years, most universities have been using the term 'Course' to indicate what is meant here by 'Program'. In order to use common nomenclature, therefore, let us refer to BA, B.Sc and B.Com as Programs, not Courses.

2.5.2 Course:

A 'course' in simple terms corresponds to the word 'subject' used in many universities. A course is essentially a constituent of a 'program' and may be conceived of as a composite of several learning topics taken from a certain knowledge domain, at a certain level. All the learning topics included in a course must necessarily have academic coherence, that is, there must be a common thread linking the various components of a course. A number of linked courses considered together are in practice, a 'program. For instance,

- i. 'Compulsory English', 'General Marathi', ' Micro-Economics', etc. included under the BA program would be called 'Courses'
- ii. Chemistry, Physics, Mathematics, Zoology, Botany, Microbiology, Computer Science etc. included under the B.Sc. Programme would be called 'Courses' for single major. Microbiology and Bio-Chemistry, Mathematics and Statistics, Zoology and Bio-Chemistry would be included under the B.Sc. program would be called 'Courses' for double major.
- iii. A B.Sc. program in Mathematics (as a single major) will include 18 courses from Mathematics, 10 courses from Computer Science, 4 courses from Physics, 4 courses from Applied component and 4 courses from Foundation Course and practical courses.

2.5.3. Module and Unit:

A course which is generally an independent entity having its own separate identity, is also often referred to as a 'Module' in today's parlance, especially when we refer to a 'modular curricular structure'. A module may be studied in conjunction with other

learning modules or studied independently. While it is a common practice to treat a single course as an independent module, there are instances where in a single 'Unit' or a Topic within a course is treated as a Module. For instance,

- i. One Topic in a course on 'Compulsory English' could be 'Reading Skills'. Such a topic would be called a 'Unit'. If this Unit can operate as a single separate entity, it may be called a 'Module'.
- ii. One Topic in a course on 'Mathematics' could be 'Double integral'. Such a topic would be called a 'Unit'. If this Unit can operate as a single separate entity, it may be called a 'Module'.
- iii. One paper in mathematics will be called one course. Thus in Mathematics at FYBSC level (Semester I and semester II) paper I will be called one module. Every paper in each subject under science faculty will be separate entity and hence it is a course.
- iv. Structuring the entire curriculum of a program in terms of independent modules helps to provide a lot of flexibility and choice for the learner. He/she can then work out his own combination of courses as per his/her own inclinations.

2.5.4 Credit Point:

This has a reference to the 'Workload' of a learner and is an index of the number of learning hours deemed for a certain segment of learning. These learning hours may include a variety of learning activities like reading, reflecting, discussing, attending lectures/counselling sessions, watching especially prepared videos, writing assignments, preparing for examinations, etc.. Generally, a system of assigning Credit Points (CP) for a single course is practiced in most countries across the globe. Credits assigned for a single course always pay attention to how many hours it would take for an average learner to complete a single course successfully. The fallacy of assigning credits to a course purely based on how many lectures (teaching hours) are conducted for a learner at a certain level needs to be avoided. Although there is no hard and fast rule regarding how many credit points a single course should have, by and large a course may be assigned anywhere between 2 to 8 credit points wherein 1 credit is construed as corresponding to approximately 30 to 40 learning hours.

2.5.5 Credit Completion and Credit Accumulation:

Each module of an academic program that has been assigned specific credit points also has a certain scheme of learner evaluation as well as certain specific criteria defining

successful completion. Credit completion or Credit acquisition may be considered to take place after the learner has successfully cleared all the evaluation criteria with respect to a single course. Thus, a learner who successfully completes a 4 CP (Credit Point) course may be considered to have collected or acquired 4 credits. His level of performance above the minimum prescribed level (viz. grades / marks obtained) has no bearing on the number of credits collected or acquired. A learner keeps on adding more and more credits as he completes successfully more and more courses. Thus he 'accumulates' course wise credits.

2.5.6 Credit Bank:

The process of accumulating Credits over a period of time, leads to the idea of a 'Credit Bank'. Conceptually, a Credit Bank in simple terms refers to stored and dynamically updated information regarding the number of Credits obtained by any given learner along with details regarding the course/s for which Credit has been given, the course-level, nature, etc. In addition, all the information regarding the number of Credits transferred to different programs or credit exemptions given may also be stored with the individual's history. In short, like a regular Bank, this would involve maintaining all the Credit-related transactions of an individual. Credit Banking, when practiced would go a long way in facilitating credit transfers and learner mobility.

2.5.7 Credit Transfer:

Apart from maintaining an account of credits acquired by a learner over a period of time for a wide range of courses, the main idea behind implementing the credit system is to make provision for learner mobility. Credit Transfer means that credits earned at one institution for one or more courses under a given program are accepted under another program either by the same institution or another institution. In practice this means that it is accepted that a certain chunk of learning has already been successfully completed by a learner. This acceptance of earlier acquired credits may be reflected in one of two ways:

- **Direct Performance Transfer or Course exemption.**
- **Performance transfer:**

When a learner who has successfully completed a certain academic program, is allowed to transfer his past performance to another academic program having some

common courses, performance transfer is said to have taken place. In such cases, the grades or marks obtained by the learner in the common courses of the earlier completed program are reflected unchanged in the new program. Thus for example, if two academic programs have 3 common courses, the grades (or marks) in each of them would be reflected in the same way when considering the new academic program. For example B.A. and B. Sc. programme in Mathematics at FYBA and FYBSc has two courses in common, four courses in SYBA and SYBSc and eight courses in TYBA and TYBSc.

2.5.8 Course Exemption:

Occasionally, two academic programs offered by a single university or by more than one university may have some common or equivalent course-content. The learner who has already completed one of these academic programs is then allowed to skip these 'equivalent' courses when registering for the new program. He is then 'exempted' from 're-learning' the common or equivalent content area and from re-appearing for the concerned examinations. It is thus taken for granted that the learner has already collected in the past the credits corresponding to the exempted courses.

2.5.9 Block Transfer:

This refers to a group of courses, such as a completed certificate or diploma program that are accepted for transfer of credit into a degree program.

2.5.10 Shelf Life:

This has a reference to the time duration for which the content of a given course is relevant and is directly linked with the obsolescence of knowledge in a certain field. Some institutions have time limits for granting credit transfer. Courses with a short 'shelf life' are most common in areas such as Computer Science and Information Technology where dynamically updated curriculum is essential.

2.5.11 Transfer Agreement:

This is an agreement that must be made between two institutions (a sender and a receiver) that specifies how the sending institution's course or program will be accepted (for transfer of credits) at the receiving institution.

2.5.12 Dimensions of Credit Transfer

Credit Transfer may be conceived of as operating along two planes: lateral (or horizontal) and vertical. When an individual having successfully completed the courses included in an academic program at a certain level, is allowed to transfer his achievement in some of these courses to another same-level academic program having these courses in common, this may be referred to as 'Horizontal or Lateral credit transfer'. This would mean in practice that credit transfer takes place between two certificate level programs, two diploma level programs, two degree-level programs or two post-graduate level programs. For example, a learner completing his B. Sc (Computer Science) degree from Mumbai University may seek Horizontal / Lateral Credit Transfer for the common courses while securing admission to the B.Sc (Bachelor in Information Technology) program in the same University. 'Vertical credit transfer', sometimes referred to as 'Career Laddering' may be said to occur when an individual's performance in some courses within a certain academic program at a particular level is carried over to a higher-level academic program having these or equivalent courses in common. Making a provision for 'upward mobility' of the learner is the rationale behind this dimension of credit transfer. An example of this would be when in a conventional university, a learner completing a Diploma program in Engineering gets direct admission to the Second Year in the Science degree program.

2.5.13 Types of Credit Transfer

Besides the fact that credit transfer may operate along either of the two above-mentioned planes, it may also be seen as being of one of two types: intra-institutional and inter-institutional. When the process of credit transfer takes place within a university or institution, it may be called intra-institutional credit transfer; on the other hand, when the credit transfer process operates across two or more institutions, this may be viewed as inter- institutional credit transfer. Both inter-institutional / intra-institutional credit transfer may operate across levels – vertical or horizontal. Thus, the following four possible combinations of credit transfer emerge:

- **Intra-institutional Lateral Credit Transfer:**

This would be illustrated if there is movement from one Diploma/Degree to another at the same level in the same or related field within the same university.

- **Intra-institutional vertical credit transfer:**

An example of this is seen in the case of a learner from Mumbai University who

after completing a 3-year Diploma in Computer Technology from MSBTE gets admission directly to the Second year of the B. Sc. programme (Refer to Ordinance)

- **Inter-institutional lateral credit transfer:** This would be illustrated in all cases of learners moving from one university to another for doing academic programs at the same level viz. two different Diplomas or two different Degrees, etc.
- **Inter-institutional vertical credit transfer:** This is best illustrated if a learner who completes one year of the Bachelor of Arts /Science program at say, Babasaheb Ambedkar Marathwada University, Aurangabad gets admission directly to the Second year of the degree program at University of Mumbai.

By and large, when implementing the different types of Credit Transfer as stated above, a simple thumb rule would be to directly reflect the grades/marks obtained for one or more courses that have been successfully completed for all cases of Intra-institutional Credit Transfer. On the other hand, a convenient way to handle cases of Inter-Institutional Credit Transfer would be to grant Course Exemptions for the common or equivalent courses.

2.5.14 Issues to be addressed

Even though there are institutions as well as universities in the country that have implemented a Choice-Based Credit System, it must be recognized that there are issues that need to be handled through appropriate policy guidelines so as to ensure smooth implementation. Some of these are stated in the following.

- i. Need for using a common nomenclature e.g. 'Program', 'Course', for all the academic offerings of the university.
- ii. Arriving at a common meaning of the term Credit in strict numerical terms.
- iii. Extent of content equivalence expected between two or more courses before considering them for credit transfer arrangements.
- iv. Amount of permissible time lapse between the successful study of certain courses and the admission to courses/ programs for which transfer is sought.
- v. Need for a separate mechanism (e.g. Entrance test / Skill test) to ascertain whether after having completed a certain course sometime in the past, the learner has retained the minimum required level of knowledge / conceptual understanding / skill level before granting 'credit transfer'.
- vi. Degree of 'openness' vs 'restricted entry' (like for instance, stipulating a minimum achievement level) to be exercised when considering vertical credit transfer.

- vii. Need to evolve uniform definitions of terms like 'Certificate', 'Diploma' and 'Degree' level programs, both in terms of hours of study generally required as well as depth of content to be covered.
- viii. Proportion of the total number of courses to be studied under a new program that may be given the benefit of past collection of credits. (i.e. maximum number of credit points that may be considered under Credit Transfer at any given point of time for a given program level.
- ix. Role of contextual variables like learning facilities offered, teaching-learning approach adopted, evaluation strategy employed, etc when contemplating credit transfer possibilities.

These and other issues when worked out in detail will lead to the formulation of a full- fledged Credit Transfer Policy document that must be evolved by any university desirous of introducing the Choice-Cased Credit System. To sum up, it may, therefore, be emphasized that merely expressing courses offered in terms of Credit Points is not adequate for implementing the Choice-Based Credit System. Rather, a comprehensive exercise taking into account all the major implications of the system from the point of view of the learner must remain at the core of all activities in this regard.

2.5 Maharashtra Credit Transfer and Accumulation System (MCTAS)

The Maharashtra Credit Transfer and Accumulation System (MCTAS) will be a tool of the Higher Education within the state for making studies and courses more transparent. It helps students to move between higher educational institutes and universities to have their academic qualifications, which enhances the flexibility of study programmes for students.

2.5.1 Credits

Credits express the volume of learning based on the defined learning outcomes and their associated workload. Normally 1 credit is equivalent of 30 hours of learner's load. As per UGC guidelines 90 working days are mandatory in a semester of any program, which translates to normal working hours of students in a semester as 900 hours (90x (contact hours +self-study hours)). Total credits of a semester will be 30 (900/30). Hence, 60 credits can be allocated to the learning outcomes and associated workload of a full-time academic year or its equivalent, which normally comprises a number of educational components to which credits are allocated. These educational components may include theory course, laboratory course, seminar, project,

internship, any activity which enhances learning outcomes of learners. Credits are generally expressed in whole numbers.

2.5.2 Allocation of Credits

Credits will be allocated to entire qualifications or programmes according to state/national policy frameworks. They are allocated to educational components, such as theory course, laboratory course, projects/dissertations, work-based learning and internships, taking as a basis the allocation of 60 credits per full-time academic year, according to the estimated workload required to achieve the defined learning outcomes for each component.

2.5.3 Assessment methods

The various assessment tools to be used such as written examination, oral and practical examinations, projects, performances, presentations and portfolios that are used to evaluate the learner's progress and ascertain the achievement of the learning outcomes of an educational component. The assessment methods and criteria for an educational component have to be appropriate and consistent with the learning outcomes that have been defined for it and with the learning activities that have taken place.

2.5.4 Award of credits

Credits are awarded to individual students after they have completed the required learning activities and achieved the defined learning outcomes, as evidenced by appropriate assessment. If students and other learners have achieved learning outcomes in other formal, non-formal, or informal learning contexts or timeframes, credits may be awarded through assessment and recognition of these learning outcomes.

2.5.5 Accumulation of credits

The process of collecting credits awarded for achieving the learning outcomes of educational components in formal contexts and for other learning activities carried out in informal and non-formal contexts. A student can accumulate credits in order to obtain qualifications, as required by the degree-awarding institution.

2.5.6 Credit Transfer

It is a process that allows credit awarded by one higher educational institute to be recognised by another higher educational institute to count towards the requirements of a same programme or that allows credit gained during studies of a particular programme to contribute towards the requirements of a different programme at same or another higher educational institute.

3 Teaching-Learning Process

The existing format of teaching learning requires radical changes. First and foremost, universities/colleges must focus on the student engagement as a hallmark so that more personalised learning occur in the universities and colleges. Personalisation does not mean replacing teachers with technology and individualised study. The new university/college landscape must be a socially inspiring and safe environment where all students can learn the social skills that they will need in their lives. Personalised learning and social education lead to more specialisation but build on the stronger common ground of knowledge and skills.

In this new vision for universities and colleges the following themes of change would emerge.

i. Less Classroom Based Teaching:

Developing customised and activity based learning eventually leads to a situation where people can learn most of what is now taught in college level through digital devices, anytime and anywhere. Shared knowledge and competencies that are becoming the part of modern learning and expertise and professional work will also become part of universities/colleges and traditional classrooms. Less teaching can actually lead to more student learning if the circumstances are right and the solutions are smart.

ii. More Personalised Learning:

It is important for each young person to require certain basic knowledge in the discipline in which he or she is learning. Today the students have alternative ways to learn these basic things. Today's students are learning in the universities/colleges through media, internet and different social network to which they belong. As a result, they are finding teaching in universities and colleges irrelevant because they have already learned what is meaningful for them elsewhere. And therefore we need to rethink universities/colleges so that learning relies more on customised individual learning plans and less on teaching from a standardised curriculum.

Setting a clear but flexible framework for university/college based curriculum planning using individualised learning plans who have special educational needs.

iii. **Focus on Holistic Development:**

Teaching and learning should focus on deep, broad learning, giving equal value to all aspects of a group or individuals personality, moral character, creativity, knowledge, ethics, social skills, empathy and leadership. The aim of the universities/colleges should be to find each students talent.

iv. **Collaboration Among University/Colleges:**

The basic assumption is that educating people is a collaborative process and that cooperation, networking and sharing ideas among universities/colleges will eventually raise the quality of education. When universities/colleges collaborate, they help one another and help teachers create a culture of cooperation in their classrooms.

v. **Pedagogy for teaching learning processes can be drawn from 1-4.**

vi. **The emerging disruptive technologies and tools will be extensively used by teachers in teaching learning process.**

4 Assessment and Evaluation:

Assessment is an integral part of learning/guiding the process and stimulating further learning.

4.1 Approaches to Assessment:

4.1.1. Assessment of Learning :

Its purpose is summative, intended to certify learning and report to students, other educators, parents and sometimes to outside agencies such as government, employers or other educational institutions about students' progress by placing students' relative position compared to other students. Assessment of Learning in classrooms is typically done at the end of something (eg, a unit, course, a grade, a Key Stage, a programme) and takes the form of tests or exams that include questions drawn from the material studied during that time. In Assessment of Learning, the results are expressed symbolically, generally as marks across several content areas to report to students and parents. This is the kind of assessment that still dominates most classroom assessment activities with teachers firmly in charge of both creating and marking the test. Teachers use the tests to assess the quantity and accuracy of student work, and the bulk of teacher effort in assessment is taken up in marking and grading. A strong emphasis is placed on comparing students, and feedback to students comes in the form of marks or grades with little direction or advice for improvement. These kinds of testing events indicate which students are doing well and which ones are doing poorly. Typically, they do not give much indication of mastery of particular ideas or concepts because the test content is generally too limited and the scoring is too simplistic to represent the broad range of skills and knowledge that has been covered. Assessment of Learning is the assessment that becomes public and results in statements or symbols about how well students are learning.

4.1.2 Assessment for Learning:

Assessment for Learning offers an alternative perspective to traditional assessment in schools. Simply put, Assessment for Learning shifts the emphasis from summative to formative assessment, from making judgments to creating descriptions that can be used in the service of the next stage of learning. Assessment for Learning happens during the learning, often more than once, rather than at the end. Students

understand exactly what they are to learn, what is expected of them and are given feedback and advice on how to improve their work. When they are doing Assessment for Learning, teachers collect a wide range of data so that they can modify the learning work for their students. They craft assessment tasks that open a window on what students know and can do already and use the insights that come from the process to design the next steps in observation, worksheets, questioning in class, student-teacher conferences or whatever mechanism is likely to give them information that will be useful for their planning and teaching. Marking is not designed to make comparative judgments among the students but to highlight each students' strengths and weaknesses and provide them with feedback that will further their learning.

4.1.3 Assessment as Learning:

Through this process students are able to learn about themselves as learners and become aware of how they learn – become meta-cognitive (knowledge of one's own thought processes). Students reflect on their work on a regular basis, usually through self and peer assessment and decide (often with the help of the teacher, particularly in the early stages) what their next learning will be. Assessment as learning helps students to take more responsibility for their own learning and monitoring future directions. It assesses each student's thinking about his/her own learning, what strategies he/she uses to support or challenge that learning, and the mechanism used by him/her to adjust and advance his/her learning.

Currently, almost all classroom assessment in a traditional environment is summative

- **Assessment of Learning**, focused on measuring learning after the fact and used for categorizing students and reporting these judgements to others. A few teachers use
- **Assessment for Learning** by building in diagnostic processors – formative assessment and feedback at stages in the programme – and giving students second chances to improve their marks. Systematic **Assessment as Learning** is almost non-existent.

Approach	Purpose	Reference Point	Assessor
Assessment of Learning	Judgments about placement, promotion and credentials	Other students	Teacher
Assessment for Learning	Information for teachers' Instructional decisions	External standards or expectations	Teacher
Assessment as Learning	Self-monitoring, self-regulation of learning and self-correction or adjustment	Personal goals and external standards	Student

4.1.4 Formative Assessment :

These are classroom assessment techniques (CAT) and may have the following effects :

- i. Helps develop self-assessment and learning management skills in students
- ii. Reduces feelings of isolation amongst students, especially in large classes
- iii. Increases understanding and ability to think critically amongst students about the course content
- iv. Fosters an attitude in students that values understanding and long-term retention
- v. Shows students' interest and support of their success in your classroom.
- vi. Provide day-to-day feedback that can be applied immediately for improvement in teaching
- vii. Provide useful information about what students have learned without the amount of time required for preparing tests, reading papers, etc.
- viii. Allows the teacher to address student misconceptions or lack of understanding without wasting time
- ix. Helps teachers to foster good working relationships with students and encourage them to understand that teaching and learning are on-going processes that require full participation.

4.2 Types of Classroom Assessment Techniques

(Angelo, T.A. and Cross, K.P. (1993). Classroom Assessment Techniques: A Handbook for College Teachers, Second Edition, San Francisco: Jossey-Bass Publishers. This resource is adapted from

original content by Lee Haugen, Center for Excellence in Learning and Teaching, Iowa State University).

- (A) Course-related knowledge and skills
- (B) student attitudes, values, and self-awareness
- (C) Reactions to instruction methods

(A) Course-related Knowledge and Skills

Technique	Procedure	Strategy	Time Required
One Minute Report	During last few minutes of a class period, ask students to use a half a page to write “Most important thing I learned today and what I understood least.”	Review before next class and use to clarify, correct or elaborate.	Little
Weakest Point	Similar to One-Minute Report. However, ask students to describe what they did not understand and what they think how the understanding can be improved.	Same as One-Minute report. If many students are found to have a problem with understanding the concept, the teacher need to try another approach to teaching.	Little
Chain Notes*	Pass around a large envelope with a question about the class content. Each student writes a short answer, puts it in the envelope, and passes it on.	Sort answers by type of answer. At the next class meeting, use to discuss ways of understanding.	Little
Application Article	During last 15 minutes of class, ask students to write a short news article about how a major point applies to	Sort articles and pick several to read at next class, illustrating a range of applications, depth of	Moderate

	a real-world situation. An alternative is to have students write a short article about how the point applies to their major.	understanding, and creativity.	
Student-generated test questions	Divide the class into groups and assign each group a topic on which they are each to write a question and answer for the next test. Each student should be assured of getting at least one question right on the test.	Use as many of the questions as possible, combining those that are ^{SEP} similar.	Moderate

(B) Student Attitudes, Values and Self-Awareness

Technique	Procedure	Strategy	Time Required
Journals	Ask students to keep journals that detail their thoughts about the class. May ask them to be specific, recording only attitudes, values, or self-awareness.	Have students turn in the journals several times during the semester so you can chart changes and development.	Moderate

(C) Reactions to instruction methods

Technique	Procedure	Strategy	Time Required
Suggestion Box	Put a box near the classroom door and ask students to leave notes about any class issue.	Review and respond during the next class session.	Low
Exam Evaluations	Select a test that you use regularly and add	Make changes to the test that are	Moderate

	a few questions at the end which ask students to evaluate how well the test measures their knowledge or skills.	reasonable. Track student responses over time.	
Student Rep Group	Ask students to volunteer to meet as a small group with you on a regular basis to discuss how the course is progressing, what they are learning, and suggestions for improving the course.	Some issues will be for your information, some to be addressed in class.	High
Peer Review	Work with a willing colleague, pick a representative class session to be observed and ask the colleague to take notes about his/her impression of the class, your interactions with students, and your teaching methods.	Decide method with the colleague. A discussion is best, but a written report may be more useful in the long term.	

Besides, the following techniques can also be used for “Assessment as Learning” :

- i. Portfolios of students’ work
- ii. Embedded assessment
- iii. Capstone courses can be designed to require students to demonstrate their accumulated knowledge, skills, and/or values through major creative or research projects, as well as written and oral presentations.
- iv. Standardised Tests
- v. Internship and other field experiences
- vi. Surveys conducted by students

- vii. Wiggins identified authentic assessment with the performance of exemplary tasks that replicate the standards and challenges of adult life. For example, students might address the college management with regard to the student dress code, or the city council with regard to the safety of the institution or the street crossings. Authentic assessment would involve examining the quality of their arguments and the supporting evidence for any change they propose. On the other hand, a paper describing how a group of concerned citizens might go about trying to change a city regulation would be viewed as non-authentic—a hypothetical exercise with no actual “reality tests” or consequences.

To empower students, to know their learning, the universities and colleges must focus more on assessment as learning based on reflection. The universities and colleges may create rubrics for assessment of students for all the courses.

4.3 Use of ICT in Assessment and Evaluation:

Globalisation of the world economy and higher education are driving profound changes in engineering education system. Worldwide adaptation of Outcome-Based Education (OBE) framework and enhanced focus on higher-order learning and professional skills necessitates paradigm shift in traditional practices of curriculum design, education delivery and assessment.

Assessment and Evaluation/student assessments play a very important role in deciding the quality of education. It is widely acknowledged that “assessment drives learning”, what and how students learn depends to a major extent on how they think they will be assessed.

The technological revolution, the electric media is replaced by the digital media or ICT and virtually every aspect of human behavior or activity is in some way or another dependent on the new computer technologies. ICT is having lot of possibilities in improving the whole examination system.

It is recommended that universities and colleges shall use ICT in examination and Assessment and Evaluation.

In particular, the following policy options should be considered:

4.3.1 Encourage the development of ICT environments and tools that holistically support curricula.

While there are a vast number and variety of ICT tools that support learning and assessment, most of them are limited in scope and do not necessarily support the

learning progression foreseen in curricula. Policy action is needed to support ICT environments and tools that take into account curricular needs and are better targeted at deployment by teachers.

4.3.2. Encourage the development of ICT environments and tools that allow teachers to quickly, easily and flexibly create customized electronic learning and assessment environments.

Open source tools that can be adapted by teachers to fit their teaching style and their learners' needs should be better promoted. Teachers should be involved in the development of these tools and encouraged to further develop, expand, modify and amend these themselves.

4.3.3 Encourage teachers to network and exchange good practice.

Many of the ICT-enhanced assessment practices within Colleges are promoted by a small number of teachers who enthusiastically and critically engage with ICT for assessment. To upscale and mainstream and also to establish good practice, it is necessary to better support these teachers, encourage them to exchange their experiences and establish good practice.

4.3.4 Set incentives for research and development of promising technologies for the assessment of Key Competences, in particular as regards: the use of authentic tasks; the development and dissemination of educational multiplayer games; the development of automatic assessment and correction tools for written text; and the use of learning analytics to enable assessment to be embedded in virtual learning environments and games.

4.3.4 Encourage discussion and offer guidance on viable ICT-enhanced assessment strategies.

While deployment of ICT in Colleges is lagging behind, given the vast range and variety of ICT strategies supporting assessment, a critical discourse on the advantages and drawbacks of ICT should be started among educators and policy makers. This could lead to the development of recommendations for the take-up of ICT in the comprehensive assessment of Key Competences.

4.4 Benefits of ICT Based Examination:

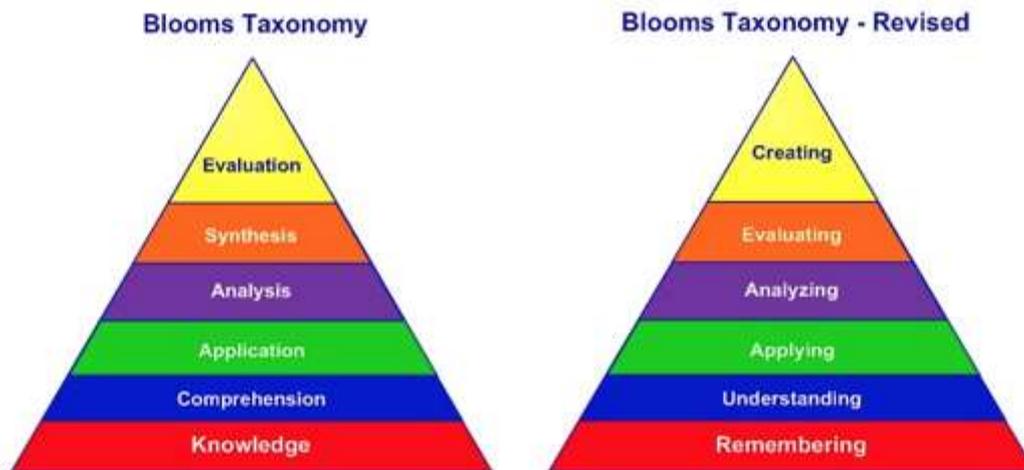
- i. Improving the coordination between different branches concerned with the conduct of Examinations.
- ii. Improving the quality of services provided to the students by the examination branches of the universities.
- iii. Helpful in bringing transparent examination system which can be assessed by the students, parents and appointing agencies easily.
- iv. Introducing E-exams by adopting the technology to simplify the examination process by computer aided control.
- v. Less dependence on the manpower and help in reducing the burden of the examination branch.
- vi. Cost effective in long run for the universities and education boards integrating ICT in the examination system.
- vii. Helpful in communicating with the students, teachers, paper setters, evaluators and parents.
- viii. Easy to monitor the whole examination process by the concerned authorities while sitting in their offices.
- ix. Less chances of examination malpractices and making the whole system very fair.
- x. Environmental friendly examination system by reducing the consumption of paper.
- xi. The committee recommends Bloom's Taxonomy Hierarchy be used for assessment and evaluation.

4.5 Bloom's Taxonomy:

Bloom's taxonomy is a classification system used to define and distinguish different levels of human cognition such as thinking or understanding. Educators have typically used Bloom's taxonomy to inform or guide the development of assessments (tests and other evaluations of student learning), curriculum (units, lessons, projects and other learning activities), and instructional methods such as questioning strategies.

The original taxonomy was organized into three domains: Cognitive, Affective and Psychomotor. Educators have primarily focused on the Cognitive model, which includes six different classification levels: **Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation**. The group sought to design a logical framework for teaching and learning goals that would help researchers and educators understand the fundamental ways in which people acquire and develop new knowledge, skills, and understandings.

Revised Bloom's Taxonomy (2001) : A revised version of Bloom's Taxonomy was released by a group of cognitive psychologists, curriculum theorists and instructional researchers in 2001 with the title A Taxonomy for Teaching, Learning, and Assessment. The revised taxonomy includes six different classification levels: Remembering, Understanding, Applying, Analysing, Evaluating and Creating. These are shown diagrammatically as follows :



Uses of Bloom's Taxonomy

- i. Formulate assessments
- ii. Design lessons, creating blogs, creating programmes or Apps, inventing etc.
- iii. Evaluate the complexity of tasks
- iv. Draft curriculum outlines
- v. Develop online courses
- vi. Plan project-based learning
- vii. Self-assessment

The revised taxonomy is also useful for digital learning

Scoring and Grading :

Currently, absolute grading system is used.

Relative Grading : Relative grading is an assessment system wherein teachers determine students' grades by comparing them against the grades of their peers. As opposed to the system of absolute grading, where a student's score on a given test or assignment is directly converted into a letter grade (for example, 10/10 is A+; 9/10 is A, etc.), relative grading means students' marks fluctuate depending on how they compare with others in class. It is also known as norm-

referenced testing. Relative grading is similar to bell curving or grading on a curve, and considers the highest score as the baseline (A+), relatively adjusting all others compared to that score.

One example of this is grading “on the curve.” In this approach, the grades of an assessment are forced to fit a “bell curve” (normal distribution). A hard grade to the curve would look as follows :

O	=	Top 1.07% of students
A+	=	Next 3.76% of students
A	=	Next 11.28% of students
B+	=	Next 21.34% of students
B	=	Middle 25.10% of students
C+	=	Next 21.34% of students
C	=	Next 11.28% of students
D	=	Next 3.76% of students
F	=	Bottom 1.07% of students

As such, if the entire class had a score on an exam between 90-100% using relative grading would still create a distribution that is balanced.

Steps to be Followed :

Using group comparisons for grading is appropriate then the class size is sufficiently large (perhaps 35 students or more) to provide a reference group representative of students typically enrolled in the course. (The following steps describe a widely-used and generally sound procedure:

- i. Convert raw scores on each exam to a standard score \bar{x} or (z or T by using the mean and standard deviations from each respective test, set of papers, or presentations.

- ii. Standard scores are recommended because they allow us to measure performance on each grading component with an identical or standard yardstick. When relative comparisons are to be made, it is not advisable to convert raw scores to grades and average the separate grades. (This is because the distinction between achievement levels will be lost)
- iii. Differences will melt together as students are forced into a few broad categories.
- iv. One such method of relative grading is the standard score as follows:

$$\text{Standard Scores (Z)} = \frac{X - \text{Mean}}{SD}$$

- v. T-scores form a scale with a mean of 50 and standard deviation of 10. Its advantage is that all scores from different tests can become comparable. This ensures that the test scores do not change with the test used to measure. Thus, the quality of the test score improves. This score enables the institution to declare how well an individual performs in comparison with others in the group.

T-Scores are computed as follows $\frac{T-50}{10} = \frac{X-\mu}{\sigma}$

Thus, $T = 50 + \left(\frac{X-\mu}{\sigma}\right) \times 10$

- vi. $T(i) = \text{Grading on the Highest Score} = \frac{\text{Score}}{\text{Highest Score}} \times 100$

Here,

If $T(i) \geq 90$	O
If $T(i) \geq 80$	A+
If $T(i) \geq 70$	A
If $T(i) \geq 60$	B+
If $T(i) \geq 55$	B
If $T(i) \geq 40$	C+
If $T(i) \geq 30$	C
If $T(i) \geq 20$	C-

If $T(i) \geq 10$	D
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Percentiles/Percentile Ranks can also be used.

- vii. Grading on the Curve (Normal Distribution).

Note: *Z-Scores may take negative values and have decimals and so are inconvenient for recording purposes. The T-Score form a scale with a mean of 50 and SD of 10. This is a scale universally agreed upon and used by measurement experts and so all tests can then have their original scores converted to it. And therefore, the committee suggest to convert raw scores into T-Scores and then grade students accordingly.*

5 Research and Innovation

NEP Perspective:

There are a number of impediments to conducting research in India at the current time. As a consequence, many talented Indians wishing to innovate, often, leave the country, or otherwise, turn to other jobs that do not optimise their talents. Reducing these impediments to research and innovation will be key to increasing home-grown research, retaining talent in the country, and again attaining a vibrant research ecosystem by which India can solve some of its most pressing problems and grow its economy, and intellectual and material prosperity.

Some of the primary obstacles includes :

- i. Lack of funding for research
- ii. Lack of a research culture and mindset and
- iii. Lack of research capabilities in most of the universities

5.1 Maharashtra State Responsible Research and Innovation Council (MSRRIC)

The committee is of the view that the State government shall establish the Maharashtra State Responsible Research and Innovation Council. This council shall be the apex body to oversee, guide, mentor, fund, incentivize, build capacity for quality research across all disciplines and direct the research activities in the State universities by framing a broad policy. This council shall be established through an Act by the State government as an autonomous body of the State of Maharashtra.

5.2 Objectives of the MSRRIC

- i. Enabling dialogue about research priorities by facilitating an open and collective approach to investing in multidisciplinary research and training. The State departments of Maharashtra should define their priorities and encourage research for their own departments by giving at least 5 Crores per department for disbursement to the **Maharashtra State Responsible Research and Innovation Council (MSRRIC)**.
- ii. Fund competitive, peer-reviewed grant proposals of all types and across all disciplines.
- iii. Seed, grow and facilitate research at academic institutions, particularly at universities and colleges where research is currently in a nascent stage, through mentoring of such

institutions by eminent research scholars, hiring excellent, young research students and faculty, and strengthening and recognising existing high quality programmes at such institutions.

- iv. Act as a liaison between researchers and relevant branches of government as well as industry, so that research scholars are constantly made aware of the most urgent research issues of the day so that policy makers are constantly made aware of the latest research breakthroughs so as to make appropriate policies for the State.
- v. Recognise outstanding researchers in the State.
- vi. Facilitating cooperation between the research councils and external stakeholders by promoting dialogue, collaboration, and partnership.
- vii. Communicating the activities and views of the research councils to increase policy influence and collective visibility.
- viii. Collaborating with industries and other funding agencies to reduce bureaucratic red-tapism for researchers and university administrators.
- ix. Incubating industry research projects in the universities.
- x. Live projects like the Poverty Action Lab to deal with problems of development to be set up.
- xi. Improving operational performance by capacity building and sharing best practices.

5.3 Composition of the Council

MSRRIC shall be composed of eminent scholars and researchers.

- i. One Padmavibhushan/Padmabhushan/Padmashree/Eminent, globally known scientist - Chairperson
- ii. The Chief Secretary of the State - Member
- iii. Two eminent researchers of international repute from the faculty of science and technology - Member
- iv. Two eminent researchers of international repute from the faculty of social sciences and humanities - Member
- v. One eminent researcher from Research and Development (Industry) - Member
- vi. One eminent globally known innovator - Member
- vii. The secretary Higher and Technical Education, Government of Maharashtra as the Member Secretary

5.3.1 Other than the ex-officio members, all other chairperson/members shall be nominated by the chief minister on the recommendation of the Higher & Technical Education Department of Government of Maharashtra.

5.3.2 Tenure of the Council : The tenure of the Council shall be five years.

The Council may appoint divisional standing committees for effective implantation of the Responsible Research and Innovation Policy.

5.4 Post-Doctoral Programmes

Not many universities in Maharashtra have postdoctoral programmes. All the State universities must encourage researchers to undertake research in postdoctoral programmes. The government and the universities should roll out scholarships and fellowships for such studies.

5.5 Miscellaneous:

- **e-Board of Studies Forum (e-BoSF):**

An e-Board of Studies forum be created where all the chairpersons/chairman from concerned subject shall be the member. The objective of creation of such a forum is that there should be some connectivity between and among the boards which shall facilitate the Maharashtra Credit Transfer System discussed in the assessment and evaluation part of the draft. The said forum may be used to identify criticality of the choices offered in the course and facilitate flexibility in accumulation of credits. Apart from looking into near standardization of the subject, the E-BoS may also identify the local/regional aspects of the subject matter to be included in the respective universities. Sharing resources/ best practices and the like. Help in creating an exhaustive question bank, content creation. Improving subject delivery.

- **Employability:**

Though the emphasis of the curriculum is on the competency, employability is one of the core areas one has to address. As recommended above due to the continuous assessment of students and a built-in internship programme gives opportunities for the institution to introduce the students to the industry, it is pertinent to lay emphasis on building competencies among the students.

All the universities and the Colleges in the state of Maharashtra shall have a its own Placement and Cell which should facilitate, internships, on the job training if the subject demands, and later attempt to convert the internships into employment or facilitate the needs of employment of the students.

- **Endnotes on Recommendations:**

The committee comprising of experts in various fields have synergised their expertise to develop the above curriculum framework in the light of the New Education Policy of India. The report submitted to the government is prescriptive and entails a detailed implementation plan.

The notes which are a part of the report gives clarity to the various aspects of curriculum development in terms of both, philosophy and praxis of higher education. It also attempts to forecast the capabilities and competency the learner would be able to achieve while he is undergoing his higher education.

The approach is an interventionist where the committee recommends new institutions like Maharashtra State Responsible Research Innovation Council, The Maharashtra Dean's Consultative Committee (MDCC), Centre for Excellence in Teaching and Learning and E-Board of Studies Forum at the state level. The committee lays emphasis on the use of ICT and futuristic technologies and disruptive technologies like artificial intelligence in all spheres of higher education.

Education should become more inclusive and dynamic to give enough space of free learning to the learner. The governance structure of the universities must me become flexible and open to accept changes for the fulfilment of all the stakeholders.

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3. Teachers Training

Report of Sub Group of Task Force on - 'Teachers Training' [SGoTT]

Date & Time: - 16/12/2020; 4.00PM - 5.30PM

Venue: - Online Google Meet (meet.google.com/hyi-wfkc-zvg)

Summary:

Dr Shashikala Wanjari described the importance of Teachers' Training in the perspective of Education in general and NEP2020 particular. The assigned activities of the SGoTT are:

1. Role of the existing HRDCs in the context of NEP
2. Faculty improvement and their career development, faculty strength and research.
3. Credit-based courses in teaching/education/pedagogy/writing for PhD students
4. Creating large pool of outstanding senior/retired faculty.
5. The 4-year integrated B.Ed.

1. Role Of The Existing HRDCs In The Context Of NEP

- Dr. Wanjari emphasized on the need for not only strengthening the existing HRDCs but also re-aligning them in the context of NEP. She briefly described the background behind the concept of HRDC and its vision. She suggested that scope and dimensions of HRDC should be determined. The following should be covered in the framework of HRDC:
 - Multi-disciplinary approach of NEP should also be reciprocated in Teachers' training
 - Pedagogy aspect
 - Online Training of teachers
 - Understanding of Indian culture should be included
- Dr. Welukar suggested the HRDC number, training programs; impact analysis would be helpful to create a document to suggest quality of enhancement of trainings at HRDC. The following points were mentioned:
 - There is need for defining the structure and framework of HRDC.
 - Barring few exceptions, the quality of trainers and dis-continuity of training programs offered by HRDC is not well aligned with vision of HRDC.
 - Making distinction between the outcome and output of HRDCs, he suggested the need for change of mindset.
 - He pointed out the sociological, anthropological perspective and Futuristic, historical perspective of Education are missing.
 - He emphasized the need for continuous training of entire staff right from Vice Chancellors to the entire chain of elements in the education system like Counselor, Registrar, and Support Staff.
 - Considering that Students and Parents are customer, the re-orientation of the idea of 'Training' is must.

- He suggested that a novel model of HRDC like Centre of Excellence for Teaching & Learning like Harvard / Stanford etc may be devised. It should be blended method (online and physical) and concept of corporatization of Teaching, Learning & Services and carry out continuous research based on professional fee.
 - He suggested new Framework be created emulating the Corporate model of HR development. State Universities should create a new model of HRDC which will co-exist with or aligned with Central Govt HRDCs.
- Ms. Suchitra Surve cited the example of Singapore System of Teachers training wherein the teachers are assigned Tracks like leadership track, Teaching Tracks, Specialty Track and career progression is ensured along these special traits in a professional way.
 - She also referred to the contemporary best international practices like cross mentoring by senior teachers, lead teachers, Handholding of teachers, mentoring of teachers developing of Academic Leadership.
 - Regular teacher training interventions can be included with the help of external agencies.
 - Teacher's profession not only restricted to Teaching also includes understanding of students and understanding of teaching methodologies and these aspects must be stressed upon.
 - Referring to the recommendation of 'blended' model of Training of Teachers, she underlined the need for going 'phygital' i.e. physical plus digital in future.
 - She pointed out to the gap between Requirement of corporate and Teachers knowledgebase
- Shri. Vijay Kadam emphasized the need for transformation considering that the analysis of current scenario presented by the earlier speakers.
 - He cited the lack of qualified teachers for coaching of UPSC as well as disconnect of teachers with latest things / updates. Suggested creation of pool of trained Teachers through Teachers Training Academies or else orienting teachers accordingly.
 - Referring to B.Ed degree of 4 year duration, he cited the possible lack of employment of trained teachers after completing B.Ed and suggested options like clubbing with another degree like Commerce so as to make employable.

2. Faculty Improvement and Their Career Development, Faculty Strength and Research.

- Dr. Wanjari suggested that research aspect be added to working of HRDC.
- Members suggested that many foreign Universities are doing training, incentivizing, performance appraisal for enhancing the research.
- Dr. Welukar suggested that some good policy ideas from Responsible Research & Innovation in Great Britain can be explored; the idea of KRA will also encourage research. KRAs will make research mandatory and lead to improvement of performance.
- Ms. Suchitra Surve summed up it as corporatization of services and also making it professional. Further developmental interventions such as:
 - Additional subject training.
 - Learning and teaching of the different subjects for multi-disciplinary approach
 - Teaching innovation and introducing educational research.
 - Alternating training in schools/colleges and career progressive integration

- Required to develop certain attitudes like adaptability, teamwork, pursuit of improvement and innovation through systematic data collection and assessment.

3. Credit-Based Courses In Teaching / Education / Pedagogy / Writing For PhD Students

- Members suggested that Choice based credit Course is more related to the domain of Curriculum.

4. Creating Large Pool Of Outstanding Senior / Retired Faculty

- Dr Wanjari emphasized on the need for creating State wide, domain based pool of eminent scholars, educationist having respective domain knowledge.
- Dr Welukar cautioned against re-employment under the disguise of empanelment.
 - He cautioned against potential pitfalls and suggested a transparent, norm based, democratic system and well defined process for enrolment. This enrolment should not be permanent and mechanism for checking performance of enrolled experts after regular interval should be created.
- Shri Kadam cited the example of retired senior bureaucrats being re-employed by Government agencies to benefit from the experience they have acquired.
 - He suggested that many senior academicians, educationists have acquired a huge knowledgebase and experience with them and the same must be utilized for the sake of society by creating such resource pool.

5. The 4-year Integrated B.Ed.

- Noting the dis-functioning of B.Ed Colleges (nearly 18K in the country), Dr Wanjari suggested that employment opportunities for a candidate completing 4 year B.Ed after HSC must exist.
- Career planning, alternate career options etc should be considered.
- It was suggested that career pathway in the form of additional degree should be created.
- Dr Welukar noted that there is no option spelled out to 4 year B.Ed programme; the present 2 year B.Ed has not been satisfactory; so 4 year duration is preferred in order to get quality teachers; all the graduates of 4 year B.Ed may not be absorbed in employment avenues; so an exit option after completing 2 years of 4 year B.Ed should be thought of.
- Aptitude test may be made compulsory for B.Ed.
- Shri Kadam pointed out to the issue of drop-outs of students aged 10-15 years especially in the rural area and suggested that sensitization of teachers on this issue should be a part of Teachers training so that drop-outs can be reduced
- All members agreed on
 - Early recognition of passionate candidates may help in creating Quality trained teachers.
 - Psychometric tests, preferably from some credible agency outside the Govt. framework may be conducted.
 - The Psychometric Tests can be combined with Personal Interview to assess the communication skills, language proficiency and other personality traits required to become a Teacher.

3.1 Teachers Education

3.1 Recommendations of Dr Mashelkar Committee for Teacher Education

The National Education Policy 2020 in its Part II on Higher Education has devoted the Chapter 15 on Teacher Education. This chapter has 11 sections. The comments and recommendations for state level implementation of these sections are given below.

The comments and recommendations are divided in 3 parts, first for Teacher Education Institutions (TEIs) offering B.Ed. program for pre-service candidates to join teaching career in schools, second for Ph.D. entrants who may potentially join teaching careers in Higher Education Institutions (HEIs) and third for the in-service teachers in colleges and universities (HEIs).

A. Section 15.1 of NEP has stated the significance, imperatives, goals and approach of teacher education in Indian context which may be broadly agreeable for the state level implementation.

Recommendation: In order to implement these goals at state level, the goals that are stated in abstract form in NEP will have to be translated into rather concrete or SMART goals i.e. Specific (suggesting specific actions), Measurable, Achievable, Relevant and Time Targeted. They will have to expressed in the form of corresponding learning outcomes and learning objectives.

It is, therefore, recommended that a committee, with a term not exceeding 3 months, and consisting of one teacher education expert representing each of the public and private universities in the state may be expressly constituted for this purpose. This committee may be preferably chaired by Director, School of (Teacher) Education, Yashwantrao Chavan Maharashtra Open University (YCMOU). A duly empowered officer of the Directorate of Higher Education may function as the secretary of the committee.

The mandate of the committee may be:

1. To set SMART goals, learning outcomes and learning objectives based on the Section 15.1 of NEP 2020 along with clear statement of verifiable evidences to be produced by the student (pre-service potential teacher) for satisfactory attainment of these goals, outcomes and objectives;
These goals, outcomes and objectives should be stated in two groups:
2. To stipulate the new curriculum, academic environment and process in spirit of NEP but for the 2-year (please see para E below for justification of 2-year pattern) post-graduate Regular as well as ODL B.Ed. programs to be launched on a statewide scale wef. academic year 2022-23 for achieving these goals, outcomes and objectives satisfactorily;
3. To consider the model curriculum recommended by NCTE and to adhere strictly to the National Curriculum Framework 2005 while formulating the above mentioned curriculum;
4. To formulate strict, if not canonical, guidelines for infrastructure, faculty qualifications, faculty selection, probation, continuous upgradation, promotion/continuation/discontinuation, student selection test, student and teacher attendance recording and verification, teaching, learning, professional practice in the schools in the neighborhood, action research, formative and summative assessment and student support so as to ensure effective unfoldment of this 2-year B.Ed. curriculum and verifiable attainment of its outcomes and objectives.

5. To stipulate in detail, four model life-cycles viz. B.Ed. Program Life-cycle, Institute Life-cycle, Teacher Life-cycle and Student Life-cycle (consistent with items 1 to 4 above) to be followed in day-to-day functioning of TEIs.

It is further recommended that this common curriculum and guidelines designed with the representative participation of all universities in the state may be adopted on a statewide scale by all the universities. This is essential because the B.Ed. graduates have to serve in the schools in the state which normally follow identical education framework and curriculum pattern and textbooks, etc. across the state. These are prescribed by Bal Bharati, SCERT and SSCE and HSCE Boards. (Of course, a few schools do follow CBSE and such other patterns.) Common system across the state is, therefore, proposed to ensure from recruitment perspective, the state-wide uniform availability of potential teachers trained for identical goals, outcomes and objectives.

- B. Section 15.2 of NEP** has expressed grave concern over wide-spread malpractices in B.Ed. colleges or TEIs across India and underlines need for express and radical action for revitalization of the TEI sector and its regulatory system. It may be prudent for the state to agree with this in view of Justice J. S. Verma Commission (2012) Report.

This section of NEP offers full justification for the rigorous recommendation made by this committee in para A above which are drafted in response to Section 15.1 of NEP. The recommendations in para A above address to overcome the observations recorded in Section 15.2 of NEP viz. wide-spread lack of seriousness in teacher education sector, sale of B.Ed. degrees for a price, no check on malpractices in the system, lack of enforcement of basic quality, integrity, credibility and efficacy, etc. Some the steps taken in the past in terms of improving the regulatory system of TEIs are mentioned below in the form of context for justifying our recommendations in para C below.

Context: The National Council for Teacher Education (NCTE) is mandated with the planned and co-ordinated development of both pre-service and in-service teachers throughout the country. NCTE had designated NAAC for accreditation of TEIs. Between 2002 and 2017 NAAC could accredit only 1522 TEIs in the country. Given an estimated total of about 18000 TEIs that needed to be accredited, NCTE took a decision to discontinue the mandate given to NAAC and started work with the Quality Council of India (QCI). NCTE had been working with QCI to design and operationalise a new accreditation and ranking system.

Faced with a crisis of quality in the pre-service training of teachers, NCTE vide notification dated 28th April 2017, in the exercise of its powers under sub-section 2 of section 32 of the NCTE Act, 1993, introduced an amendment to Regulation 8(3). According to this amendment, an institution recognized by NCTE was required to obtain accreditation from an agency identified by it once every 5 years. Additionally, it was decided, for the first time, to rank the top 100 Teacher Education Institutes (TEI) in the country once every 2 years.

NCTE initiated these steps with a view to help prospective student-teachers make informed choices about the Teacher Education Institute (TEI) they should select to improve their chances of acquiring the Attitude, Skill and Knowledge required to become a good teacher and passing the Teacher Eligibility Test (TET), a mandatory requirement to become a teacher in both government and private schools in India.

However, it is understood that for a variety of reasons, NCTE had to discontinue the arrangements with QCI and the associated private agency and return to NAAC for accreditation. As a result, the problem of an effective regulatory system for all TEIs continues to persist.

- C. **Section 15.3 of NEP** has given a corrective action by way of empowerment of regulatory system in view of observations in 15.2.

Recommendation: It is, therefore, recommended that a sub-committee of the committee proposed in para A above, may be expressly constituted for the purpose proposing a Smart Internal Quality Assessment and Assurance Framework for all TEIs in the state. A senior teacher educator who may be Ex Member or Ex Chairman of NCTE, a Quality Assessment Expert, an IT Expert and an AI Expert may be appointed as the members of this sub-committee. While making its recommendations, the sub-committee will ensure consistency with the recommendations of the main committee.

In view of the context given above, as NAAC has been reinstated as for accreditation of TEIs and if NAAC is going to continue with its episodic and once in five-year approach, the concerns regarding quality of TEIs as expressed in Section 15.2 of NEP will continue to remain unaddressed. The sub-committee proposed above may, therefore, focus on continuous and comprehensive Smart Internal Quality Assessment and Assurance Framework rather than episodic accreditation.

In order to operationalize the recommendations of this sub-committee, Directorate of Higher Education may consider getting a central portal developed for hosting an evidence-based Smart Internal Quality Assessment and Assurance System (SIQAAS) for all TEIs in the state. Such a portal and associated software framework be put in place by April 2022 by designing and operationalizing a new quality assessment and assurance system for all TEIs in the state.

Every TEI will have to constitute an Internal Quality Assurance Cell (IQAC), which will use SIQAAS and remains responsible for ensuring continual improvement of quality as per various norms for faculty, administration, teaching-learning-assessment, etc. to be prescribed as per para A4 above and as indicated on Gap-Analyser Dashboards of SIQAAS.

SIQAAS will enable IQACs of all TEIs for a holistic excellence through continuous monitoring and gap analysis of key performance indicators, complying with norms and standards for continual improvement while presenting openly verifiable evidences for the same. Beyond the physical and academic assets, TEIs shall be expected to give maximum attention to quality of teaching-learning-professional practice-assessment-student support, etc.

This framework should offer tracking of compliance to Norms and Standards, attainment of Key Performance Indicators, ensuring Build-up Approach rather than overnight Make-up Approach to readiness for accreditation, etc. through automated 'Life Cycle Management Framework' on the central portal. This will track in an online mode the performance throughout the 2-year life-cycle (of each batch of the B.Ed. program) of not only TEI but also that of its Teachers and Students (Prospective Teachers).

SIQAS shall help automate continuous data-logging of these 3 life-cycles for quality assessment and monitoring functions in an affordable, expeditious, accurate and effective manner and allow all concerned to take immediate corrective actions and give quality time for promotion of academic excellence in TEI.

The external stakeholders such as GoM, Universities, SCERT, NCTE, NAAC, etc. will have access through their secured logins on the portal for sharing data and information, mutual interactions, business transactions, overall coordination and decision support without repetitively asking for routine information from TEI.

The SIQAAS will not capture any subjectively perceived information expressed in the descriptive documents written in an ad-hoc manner. It will only capture factual data at the source rather than at any intermediate point and that too on a regular basis and in an online mode. The data will have to be strictly backed-up by actual evidences to be uploaded in the form of digital artefacts (e.g. entity data, photos, audio/video clips, process-folios, GPS data, with time-stamps, etc.). These evidences will be accepted only through authorized and authenticated logins in a secured mode and at stipulated time.

The complete and automated life cycle management approach will give TEIs a system which will manage their routine operations with AI-based proctoring, wherever possible, and generate various reports required by stakeholders. The data required for quality assessment system will be derived from routine operations of TEIs automatically. TEIs will not be required to perform any separate data entry or extraction for quality assessment system. The required data will be a spin-off of their routine operations. The data will be captured with sharp sense of purpose to track the attainment of SMART Goals, Learning Outcomes and Learning Objectives and propose instant corrective actions and track their timely compliance and issue objection-notifications for non-compliance.

Such a framework shall enable GoM to have a comprehensive, verifiable and falsifiable online picture of continuous quality improvement and innovations at TEIs. GoM may take a decision to continue or close down the TEIs based on annual objective assessment through SIQAAS dashboards.

It is recommended that for offering overall leadership to TEIs, GoM may consider constituting Maharashtra State Council for Teacher Education (MS-CTE) so that all the responsibilities of GoM related to Teacher Education sector and TEIs (right from curriculum formulation and its periodic revision, continuous quality assessment to approval or continuation or discontinuation of TEIs, etc.) may be outsourced to this council. The sub-committees proposed at the beginning of para C as well as the main committee proposed in para A may be also requested to offer their recommendations about MS-CTE's role and responsibilities and structure suitable to its functions by critically studying the model of NCTE.

- D. Sections 15.4** has spelt out the structural aspects of B.Ed. program and how to accommodate, integrate and offer it within the 'composite multidisciplinary HEI pattern' propounded in Section 10 of NEP. The recommendations of this committee regarding implementation of 'composite multidisciplinary HEI pattern' for all HEIs in the state in general may be made applicable to TEIs as well.
- E. Sections 15.5 of NEP** has recommended a 4-year integrated B.Ed. program as well as 2-year and 1-year B.Ed. programs for different incoming categories. This would lead to 3 B.Ed. programs being run by the TEIs simultaneously. It may be quite unwieldy for implementation for TEIs and confusing for recruiters.

Recommendation: It is, therefore, recommended that the present system of 2-year B.Ed. program may be continued after incorporating radical improvements proposed as per para A and C above in the true spirit of NEP.

This is being proposed in the interest of the students as after completing 4-year B.Ed. they may neither get teacher's job due to probable non-availability of adequate positions nor would they be eligible for other career options due to narrow specialization. Such a probability and uncertainty may also deter good students from enrolling and may cause aggravation in shortage of good quality school teachers.

F. Section 15.6 of NEP has envisioned availability of expert faculty due to stand-alone TEIs merging into 'composite multidisciplinary HEI pattern'. This section has also suggested availability of practicing places for B.Ed. students in schools in the neighbourhood. Both the aspects may be agreeable for state level implementation, subject to provision in para D above.

G. Section 15.7 of NEP has recommended admission to teacher education programs through selection test conducted by National Testing Agency (NTA).

Recommendation: GoM may, however, decide to admit students through state-level test instead of unduly centralized test by NTA which may be devoid of local context, language, criteria, etc. Such a test may be conducted as per recommendations of the committee as per para A.4 above.

H. Section 15.8 of NEP has explained the ways of strengthening faculty profile in Department of Education under new 'composite multidisciplinary HEI pattern'. This may be generally agreeable at the state-level implementation, subject to provisions in para D and F above.

I. Section 15.9 of NEP has recommended fresh Ph.D. entrants to take credit-based courses in teaching /education /pedagogy /... as well as take actual teaching experience through teaching assistantships and other means. This may be generally acceptable for the state-level implementation.

Recommendation: It is recommended that the Ph.D. programs in the state may be re-oriented for this purpose by all the universities in the state wef. academic year 2022-23. The Ph.D. students may be oriented through appropriate credit courses preferably in online or blended mode to a variety of theoretical and applied topics in teacher education. An illustrative set of credits is given below:

How do the emerging adults learn?, Educational psychology of emerging adults, Theory of multiple intelligences, Neuro-psychology for effective higher education, Great Educationists of 20th Century, Changing learner profiles, changing learner aspirations, Changing learning environments and changing expectations of the world of work and how do we respond, Instructivist vs. constructivist pedagogy, 'Teaching is not lecturing anymore!', Flipped classroom, 'You are teaching, but are they learning?', 'How to educate with high-tech and human-touch?', Course Design, Philosophical, psychological, sociological, historical, and technological foundations of higher education, Bloom's Taxonomy, Evaluation vs. Assessment, How to design developmentally appropriate assessments?, 'Can we end high-stake final exams?', 'Why do we take higher

education?' 'What is so higher in higher education?', 'Why multi-disciplinarity is so critical in higher education?', Internationalization of higher education, Indian culture and higher education, Indian constitution and higher education, Role of higher education in sustainable development, Gender bias in higher education, 21st century competencies and character qualities for college students and teachers, 21st century study skills, Higher education for emerging knowledge society, AI – challenges and opportunities for higher education, ..., etc.

Many applied topics in the form of Role-Based Credits (RBCs) related to various roles of educators may also be offered to Ph.D. entrants as proposed in para J below.

- J. Section 15.10 of NEP** has recommended continuous professional development of in-service college and university teachers through existing institutional arrangements. (Chapter 13 of NEP desired that the HEI faculty should be Motivated, Energized and Capable.) This may be acceptable for state level implementation through Human Resources Development Centers (HRDCs) in universities or Maharashtra State Faculty Development Academy (MSFDA) and online platforms.

For more than 150 years, university and college teachers are being appointed in India normally only on the basis of their qualification in their respective subject domains. Any formal exposure and expertise in pedagogy was never a prerequisite. Pedagogy, education, administration, management, etc., however, are very well-developed, fast-evolving, theoretical and applied scientific disciplines. Teaching and institutional management are, therefore, more science than an art. It is a primitive and highly error-prone practice to teach without formally learning and applying pedagogy and run institutions without applying emerging body of formal knowledge in management. It is like driving in dark without headlights. It has obvious and serious negative impact on learner motivation, engagement and achievements as well as quality of HEI as a whole.

The college and university teachers must, therefore, get formally trained in new pedagogy and andragogy including allied domains and disciplines of management, etc. in an in-service mode, if not in pre-service one. Universities are expected to be a grand confluence of Scholars, Subjects, Students and Society with a fully connected topology. At present the scholars are 'teachers of subjects', but are neither formally developed as 'teachers of students' and nor as 'servants of society'.

If teacher education is seriously implemented with this focus on developing 'subject-scholars' into 'educators of students and society', it will result in quantum improvement of quality of higher education in the state. As the academic environment will be revitalized by application of formal knowledge of education and pedagogy in addition to that of the subjects, the teachers will develop love and passion for student and societal development as they will get desirable results predictably. Scholars will discover an educator within them.

This will make their professional practice knowledge-driven and free of trials and errors. With the rich repertoire of formal body of knowledge at their command, they will succeed as educators, administrators, managers and leaders in the same way as the well-trained surgeons succeed with guaranty even in complex surgeries.

This professional success will make their and their students' lives joyful. With the back-up of strong scientific expertise, they will take pride in the profession. As the pride-deficit withers away,

talented and innovative youngsters may seek to become teachers by choice and society may repose its faith in teachers and respect for them as it will get high quality education for its wards and value-for-money for its spend on higher education.

Recommendations: It is recommended that with the due concurrence of the GoM, MSFDA may be entrusted with the role of nodal agency with adequate financial support to design, develop and launch the online or blended credit courses for teachers of HEIs to be well-versed with teaching-learning-assessment-student support, etc. and become well-trained educators. MSFDA may forge strong collaborative partnership with HRDCs for this purpose.

Novel academic, financing and business models may be evolved to revitalize HRDCs as Centers of Excellence for Teacher Education in emerging knowledge society.

MSFDA may seek a partnership with School of (Teacher) Education of YCMOU who have the domain knowledge in the discipline of Teacher Education and the expertise in ODL course material development and course delivery on massive scale. MSFDA and YCMOU may seek support of HRDCs and experienced and reputed private and social sector organizations for expeditious development of preferably online or blended course modules.

If implemented by MSFDA in a mission mode, 100 modules could be developed in academic year 2022-23 by MSFDA investing about Rs. 5 Crore. A fee of Rs. 500/- or so may be charged to the teachers and Ph.D. entrants to learn each online module of about 2 to 3 hours so as to make the continuous module development effort of MSFDA financially sustainable in less than 5 years.

The completion of certain number of “Theory Credits (TCs)” (as illustrated in para I above for Ph.D. entrants) and “RBCs for Educators” (as given below) may be made mandatory in each academic year wef. academic year 2022-23 to all HEI teachers (permanent and temporary or regular and contractual) and a due weightage to these credits may be suitably incorporated in the performance appraisal system of teachers by the respective colleges and universities. Based on the actual work experience and competencies built out of learning through these credits, teachers may be encouraged to choose career progression tracks such as Teaching Track, Leadership Track, Research Track, Specialty Track, etc.

In addition to TCs and RBCs for Educators, the teachers may continue to take credits in their respective subject domains and allied multiple disciplines for regular advancement of their knowledge and skills through existing sources. All teacher should also be rigorously educated on NEP 2020 Part I to IV so as to seek their wholehearted participation in implementing the transformative agenda of NEP.

An illustrative List of RBCs for Educators is given below. Each of the TCs and RBCs could be a 2 to 3-hour online module to be followed by practice assignments and assessments:

1. Roles of Educators: Learner

1. Life Long Learner
2. Smart User of state-of-the-art IT Tools for Learners and Educators
3. Scholar
4. Deep Curator of Domain Knowledge

5. Knowledge Archiver
6. Researcher, Research Methodologist
7. Domain Expert
8. Subject Matter Expert
9. Sceptic or Challenger and Contributor to the Body of Knowledge

2. Roles of Educators: Designer and Developer

10. Design Thinking Expert
11. Curriculum Designer
12. Instructional Designer
13. Immersive Learning Experience Visualizer and Designer
for Classroom and Lab in Physical or Virtual or Augmented Reality
14. Game-Based Learning Designer, Serious Gaming Expert
15. Credible Evaluation and Assessment System Designer
16. Learning Environment /Ecosystem Designer
17. Campus Experience Designer
18. Courseware Author, Story-Board / Script Writer
19. eBook Writer
20. Creative Black-Board / Smart Board Writer
21. Traditional and New Media Content Developer
22. Educational Aids Designer and Developer
23. Student Projects Designer
24. Research / Project Proposal Developer

3. Roles of Educators: Teacher

25. Subject Lover, Popularizer, Motivator, Inspirer
26. Personalized Student Support, Care and Relationship Expert
27. Emerging Adults' Psychologist
28. Changing Learner Profile and Changing Learning Needs Analyzer
29. Learning Experience Facilitator, Scaffolder
30. Learning Path Advisor
31. Co-Explorer, Path Finder, Collaborator
32. Group or Collaborative Learning Specialist
33. Reflective Practice Specialist
34. Blogger, Vlogger, Debater
35. Dialoguer, Communicator, Presenter, Lecturer, Story Teller
36. Online Course Delivery Expert, MOOCs Instructor, TED Speaker
37. Industry Consultant
38. Teaching Methodology Specialist
39. Demonstrator, Trainer, Tutor, Instructor, Coach, Remedial Coach
40. Skill Builder, Skill Gap Analyzer
41. Artificial Intelligence Partnership Trainer
42. Talent Nurturer for Gifted Students
43. Special Educator for Physically Challenged Students

4. Roles of Educators: Interaction Manager

44. Physical or Virtual Classroom Interaction Manager
45. Discussion Forum Manager
46. Student Blog Manager
47. Social Media / Micro-blogging Platform Group Admin
48. Online Survey Conductor
49. Academic and Social-Cultural Event Manager
50. Extra-Curricular / Sports / ... Activity Organizer
51. Hostel Rector, In-Charge - Student Welfare

5. Roles of Educators: Interface Manager

52. Grant-in-Aid Bodies Interface Manager
53. University / UGC / AICTE / ... Interface Manager
54. Government Interface Manager, Statutory Compliance Manager
55. Industry-Institute Linkage Manager, Placement Coordinator
56. Civil Society-Institute Interaction Facilitator
57. Community Outreach Manager
58. International Students' Affairs Manager
59. Vendor Interface Manager
60. Educational Aids and Allied Procurement Expert

6. Roles of Educators: Mentor

61. Constructivist and Cognitivist Pedagogue / Andragogue
62. Techno-pedagogue
63. Teacher Educator
64. Empathizer of Students and Junior Teachers
65. Admirer, Constructive Critique
66. Co-thinker, Sounding Board
67. Conscience Keeper
68. Innovation Catalyzer
69. Counselor, Guide, Mentor

7. Roles of Educators: Evaluator and Assessor

70. Evaluation Experience Designer
71. Evaluation Material Developer, Evaluator
72. Evaluation Event Coordinator
73. Formative and Summative Assessment Designer, Assessor
74. Deep Learning Assessor
75. Creative Transcript / Recommendation Writer
(for students applying for advanced studies or jobs)
76. Evaluation and Assessment Data Analyst and Remedial Action Specialist
77. Item-Response Analyst
78. Educational Content, Environment and Process Quality Assessor

- 79. Student Feedback Assessor
- 80. Institutional Quality Assessor
- 81. Accreditation Coordinator
- 82. Reviewer, Peer Reviewer
- 83. Recruiter of Junior Teachers
- 84. Performance Appraiser of Junior Teachers

8. Senior / Apex Roles of Educators

- 85. Academic Administrator, Manager, Coordinator, Organizer
- 86. Institution / Department / Program Head or Second-in-Command
- 87. Policy Making, Management and other Committee Member or Chairman
- 88. Planner, Risk Assessor and Risk Mitigation Planner
- 89. Resource Mobilizer and Resource Optimizer
- 90. Guardian of Institutional Sustainability
- 91. Institution Builder
- 92. Brand Builder, Brand Protector, Brand Enhancer
- 93. Business Promoter, Fund Raiser
- 94. Social Media Marketing Expert, Marketing and Relationships Manager
- 95. Quality Evangelist
- 96. Human Resource Developer, Leadership Developer
- 97. Change Maker, Innovation Catalyzer
- 98. Educational Researcher, Research Guide / Ph.D. Guide, Conference Panelist / Chair
- 99. Lead Teacher, Academic Leader, Apex Thinker, Thought Leader, Policy Maker / Advisor
- 100. Custodian of Institutional Vision, Mission, Culture, Generational Memories of Domain Knowledge and Best Practices in the institution, Learning Traditions, Discipline, Ethics, Values and Social Accountability.

K. Section 15.11 of NEP recommends establishment of National Mission on Mentoring with large pool of outstanding senior / retired faculty to mentor and support university and college teachers. This recommendation may be accepted by the state and the services from the national pool may be availed by universities and colleges. No separate pool at the state level may be created. Mentors empaneled in the national pool may further develop their mentorship skills by accessing the role-based credits enlisted in para J6 above. The terms and conditions of availing of services of members of the mentor pool by a college or a university may be decided by the mentor and the institution mutually.

4. Governance

Report of the Sub-Group 4: GOVERNANCE

GOVERNANCE OF THE HEIs IN THE STATE OF MAHARASHTRA

Members _

- 1) **Prof Suhas Pednekar (Chairman)**
- 2) **Dr Dhanraj Mane**
- 3) **Prof Vilas Sapkal**
- 4) **Prof Abhay Pethe**
- 5) **Dr Ajit Joshi**

To provide insights into the Governance Aspect of the Higher Education in the state of Maharashtra, the entire document is categorized into-

- A. Current Status of the HEIs in the State
- B. Relevant Provisions in National Education Policy 2020
- C. New Proposed Provisions

By way of preamble, we may mention that Governance is usefully seen to comprise of four buckets. One, Policies that are informed by basic principles; two, processes and protocols which have to be simplified (single window) in order to reduce transactions costs; three and most importantly, extant capacity and its building (where data and implementation are most important); four, Independent Evaluation Office (IEO) for monitoring and evaluation so that one can tweak and course correct. Our approach and recommendations would be guided by the following overarching principles: (i) Clarity of purpose and vision; (ii) Clarity in roles and responsibilities of Executive Bodies; (iii) Continuity in realization of governance across regimes; (iv) Transparency in actions, aided by technological advancements; (v) Accountability (vi) Engagement.

At the heart of the transformation conceived by NEP is autonomy which has to be truly understood and implemented in spirit and letter by all the stakeholders. The true meaning of arm's length has to be drilled into the psyche of all concerned and the current practice of interference even in day to day matters should be strictly avoided.

[A] Current Status – The existing types of HEIs in the State of Maharashtra and their hierarchical governing system is outlined below.

TYPES OF HEIs -

- i. Large public Universities
- ii. Deemed to be Universities
- iii. Affiliated Colleges
- iv. Autonomous colleges
- v. Private Universities
- vi. Cluster Universities – Government and Grant-in-Aid Private.

For each type of institute is governed by a different set of rules and regulations. Even each cluster university is governed by a separate set of rules. Thus, there are multiple sets of Rules and Regulations that are in force, and that leads to complexities and delayed progression. There is no umbrella act governing the entire HEI's ecosystem in the state. If the provisions of the National Education Policy are to be gradually implemented the current Rules and Regulations have to be modified/abandoned.

Further, each Public University caters to a large number of affiliated colleges. For example, University of Mumbai, Savitribai Phule Pune University and Rashtrasant Tukadoji Maharaj Nagpur University have more than 600 diverse affiliated colleges each. These colleges range from single faculty low enrolment colleges to large multi-faculty autonomous colleges. Due to this multi-layered diverse system, the Universities are unable to fulfil their specific objectives, particularly the creation and valorisation of knowledge.

With NEP-2020 striving towards autonomy, the current gap is high. There are about 36 autonomous degree colleges in the state currently and this number is expected to go up in near future. Transparent governing structure with more clarity is required to govern all autonomous colleges in future.

GOVERNING SYSTEM:

In the state, there exists Maharashtra State Commission on Higher Education and Development (MAHED) to develop higher education policies for the state as well as oversee and facilitate HE on sustained basis. However, it needs to be more functional. There is a joint Board of VCs, however, it is not mandated for any role. At the University level Senate, or its equivalent body is the highest Governing body for an HEI. The Management Council, or its equivalent, has the dual role of Governance as well as Management. One of the lacunae in the system is that these bodies have

fixed tenure. The VCs and PVCs are also tenured positions which result in no concrete transformation of the system. Because of this situation, no governing or managerial body at the University is perpetual; while the University is in perpetual existence. Further, in the Public Universities Act, these officers have to shoulder the responsibilities of governing, managing, and administrating its affiliating units which further imposes limitations towards actual roles of Universities.

To summarize, dissolution of these bodies after fixed tenure, not reconstituting them in time, ever-changing membership, etc., has led to narrow focussed and short-term vision and planning of the Authorities and Officers.

It is, therefore, suggested that *there should be clarity of purpose and vision laid down by the top leadership; roles and responsibilities of the top governing/managerial bodies be clearly delineated and that they should be*

“perpetual”. The element of “being perpetual” would be incorporated in the spirit of bringing in an element of continuity, possible by following the principle adopted by the Rajya Sabha (say), where to the extent possible, one- third of the members retire periodically. This would ensure smoothness in transition and continuity in governance, while furthering the vision.

[B] Relevant Provisions in the NEP

The NEP’s vision includes the following three key changes with respect to HE (9.3)

1. Moving towards a higher educational system consisting of large multi- disciplinary universities and colleges
2. Moving towards faculty and institutional autonomy.
3. Governance of HEIs by highly qualified Independent Boards having academic and administrative autonomy

Under institutional restructuring and consolidation of HEIs the policy proposes the following categories of HEIs (pt. 10)

1. Research Intensive Universities
2. Teaching Intensive Universities
3. Autonomous Degree-granting Colleges

It is proposed that over a period every college would develop into either an autonomous degree-granting college or a constituent college (pt. 10.4). As per NEP-2020, through a suitable system of

graded accreditation and graded autonomy, and in a phased manner over a period of 15 years all HEIs will aim to become independent self-governing institutions pursuing innovation and excellence. On this background, we need to address the challenges of small size colleges and also those placed at remote places which may not be able to fulfil the criterion of NEP.

Departments and Colleges – as many as possible - should be granted autonomy in the true sense and the University can only exercise a meaningful oversight from a distance and with clear guidelines. This will allow the excellent ones to usher in interdisciplinary studies and introduce meritocracy and needs-blind approach, where shortage of funds would not pose a stumbling block.

We would strongly recommend that there be extensive use of technology in regulation. This will enable all HEIs to adopt online self-disclosure based transparent system of governance. A prototype of such a digital model could be created by the subgroup looking at digitalization or indeed by and external agency. Multiple mechanisms with checks and balances will combat and stop the blatant commercialization of higher education.

[C] New Provisions Proposed

I) Governing Structure at the State Level 1.1

Chancellor

The Governor of the State shall be the Chancellor of all State-owned and Grant- in-Aid Universities.

The Chancellor of a Private University or College which is unaided shall be appointed by the management of the HEI as per norms.

1.2 Maharashtra State Council for Development of Higher Education (MSCDHE):

The Council shall have perpetual existence, following the Rajya Sabha principle, specified previously.

1.2.1 Constitution:

- a. The Council will be headed by a highly reputed academician or scientist from Maharashtra, nominated by the Chancellor/ Govt. or through formation of Search Committee.
- b. The members include – one-fourth of the members of the Board of VCs (not more than 5); by rotation, nominated by the Chancellor
- c. One expert member from each of the following areas – Science, Technology, Law, Finance, Medicine, Agriculture, Humanities, Business/Industry, Education Management, Engineering, Skilling Expert; with prescribed qualifications, nominated by the Government

- d. The Principal Secretary, Higher and Technical Education, GoM would be a member of the Council.
- e. A CEO should be appointed by the Government with prescribed qualifications and CEO will be the Member Secretary.

1.2.2 Function:

- a. Overall Governance of the higher education in the State
- b. Advise the Government about all aspects of HE. This includes matters related to funding and in particular formulating formulaic devolution of grants from the centre to the HEIs and act as a conduit for such fund flows.
- c. To develop policies for different kinds of HEIs in the state
- d. Adopt the decisions, policies, guidelines, norms set by the national authorities
- e. Take appropriate decisions about any anomalies observed in the Rules and Regulations governing the HEIs
- f. Take decisions on the matters forwarded by the Board of VCs
- g. To prepare/ compile a development plan for HE in the state and also prepare a template for HEIs to prepare such a plan for individual HEIs.
- h. Create suitable sub-structures comprising of members from in and outside of MSCDHE dealing with accreditation, finance/funding regulation etc. These substructures will „talk‘ to Central institutions created under the umbrella of RAHE for similar purposes
- i. Section 77 of the ACT be used with suitable inclusion of accreditation, Regulation, Funding, Standard setting etc.

1.2.3 Meetings

The Council should meet at least twice a year, the place could be rotated within different regions of the State.

The Minutes of the meeting with resolutions passed should be sent to an appropriate authority (to be finalised later) for proper implementation.

1.3 Board of Vice-Chancellors (BVC) Raison

d’etre

State Universities face a lot of issues and challenges, many of which are common. In this context

BVC would serve two purposes: firstly, to provide a platform for discussion and consensual resolution of issues as also sharing best practices and secondly, to collectively represent to other authorities such as State Government, UGC etc. thereby avoiding duplication and infusing efficiency. Further, the BVC, comprising of experienced Vice Chancellors, would be able to bring to the table their hands-on experience at handling diverse kinds of HEIs.

1.3.1 Constitution:

- a. The Chairperson shall be one of the Senior VCs with at least 30 years of teaching experience, nominated by the Chancellor, with tenure of two years, by rotation
- b. The Board shall have all the Vice-Chancellors of Universities, Cluster Universities, Degree-granting Colleges, Private Universities.
- c. Director of Higher Education/Technical Education shall be the Member Secretary.

1.3.2 Function

- a. To discuss various issues related to different kinds of HEIs
- b. Give recommendations to the Council about the issues referred to it.
- c. To discuss the guidelines/norms from the national authorities, facilitate their implementation and also make recommendations to Council about any specific issue pertaining to them.
- d. Monitor the implementation of Government Acts, Notifications, Norms, Directives.
- e. Make plans for effecting collaborations among the HEIs.
- f. Make plans for inter-HEI events

II) Governing Structure at the HEI

2.1 Society Partnership Council (SOUL): (The current name, SENATE can be done away with)

Every University, Autonomous College, and Affiliate University should have a SOUL, replacing the current Senate, to look after the Governance of the Institution.

The Council for a Unitary Research University or a Unitary teaching-intensive university should have not more than 40 members while for other types of HEI, not more than 20 members.

SOUL should be a perpetual body, once again following the Rajya Sabha principle that was referred to earlier.

2.1.1 Constitution:

- a. The Chairman of the SOUL shall be an eminent scholar appointed by the Chancellor

/Government/Management.

- b. The Vice-Chancellor shall be the Co-Chairman of the SOUL.
- c. Experts, about 6-7, from different fields, particularly from management, law, finance, and also related to the main activities of the HEI, to be nominated by the Chancellor/Government or through search committee or Empanelment with prescribed qualifications.
- d. Pro Vice-Chancellor/Dean shall be the Member Secretary
- e. Representatives of teachers and students would be nominated and as per prescribed qualifications.

Notes

- I. For different categories of HEIs, the constitution of the SOUL to be prescribed separately with more details.
- II. For a cluster University 1-2 Principals of the constituent colleges should be the members
- III. For an autonomous college, some HoDs and some teachers should be the members
- IV. For a private college/university appropriate number of nominees from the Management.
- V. Till the restructuring of all HEIs in the state is complete, the following arrangement may be made-

The Senate in the case of affiliating Universities may be replaced by the SOUL with about 40 members. The members may be including Principals of the affiliated colleges, including those of the autonomous colleges under the jurisdiction of the University, as per the provisions of the statutes, Heads of University Department, Financial and Management experts, Nominees of VC, Chancellor, DTE, DHE (with prescribed qualifications).

2.1.2 Function

- a. It would be the Principal Financial Authority of the HEI
- b. SOUL will decide the policies of the HEI
- c. SOUL will give strategic directions
- d. SOUL is responsible for the management of the funds of the HEI
- e. SOUL will approve the Budget and Financial statements of the HEI
- f. SOUL will approve, repeal, and amend the Statutes and Ordinances of the HEI

2.2 Management Council:

Management council should be a perpetual body also following the principle of Rajya Sabha. This will imply that except for prescribed ex-officio members, the other types of members should retire at regular intervals in lots as per their tenures which will lend continuity to the body and help maintain institutional memory.

2.2.1 Constitution

- a. The MC will be headed by the VC in the case of a University and Principal in the case of a college
- b. Heads, or their nominees, of Institution of National Importance in the city/area
- c. Experts from areas related to the activities of the HEI to be nominated by the Chancellor (2 nominees) and VC (2 nominees) with prescribed qualifications.
- d. Heads of the constituent HEIs/Department/Schools (Fixed number)
- e. Nominated representatives from among Teachers and Students
- f. Deans
- g. Directors of the Campus
- h. Directors of sub-campuses
- i. FAO
- j. Government Nominee
- k. University Engineer
- l. Registrar – Member Secretary

2.2.2. Function

As prescribed by the statutes.

2.3 Board of Deans:

Board of Deans should be given the responsibility of affiliation and de- affiliation/ grant of autonomy/ MoUs.

2.4. Academic Council (AC):

Academic Council should be a perpetual body, once again following the Rajya Sabha principle of 1/3

2.4.1 Constitution

- a. The AC should be headed by – (i) the PVC in the case of an affiliating University/teaching-

intensive University; (ii) Principal/Dean Academics in the case of a college; (iii) Dean, Research, in the case of a Research University (iv) VC or Senior Dean in the case of a Cluster University

- b. Heads of constituent Units
- c. Professor, Associate Professors, Assistant Professors, as per Statutes
- d. External experts
- e. Deans
- f. Directors of sub-campus or their nominees
- g. Registrar
- h. Member Secretary: (i) A Dean with tenure of 2 years in the case of a University or cluster university (ii) Vice-Principal/Dean (Academics)/IQAC Coordinator in the case of an autonomous college

2.4.2. Powers

As per the statutes

2.5 Schools: The concept of School instead of Faculties should be introduced and the traditional 4 broad faculties can be reframed into its specialization for better administration namely:

- (a) School of Life Sciences
- (b) School of Physical Sciences
- (c) School of Mathematical Sciences
- (d) School of Social Sciences & Law
- (e) School of Humanities
- (f) School of Commerce and Management
- (g) School of Technology

The School structure would avoid the narrowly conceived Department structure and instead bring together allied disciplines within a few broad and inclusive entities, called Schools, under whose interactive ambit would be the more specialized units, called Centres. There could also be Special Centres that are outside even the broad structures of School. Then there could be Research Clusters that cut across Schools and Centres as well as some programmes, which are placed within specific Schools but are built on the interests of faculty across the university. Research scholars would be encouraged to cross the invisible walls around disciplines.

Given the significance of International affiliations, there should be a separate and permanent body for International affiliations, inbound as well as outbound

The School structure would require a threshold size and decision making powers to be vested in the Dean of the School for all routine matters – financial and academic.

Such a decentralisation of decision making powers would serve a dual purpose (a) it would allow fixing of responsibility which would ensure greater accountability. (b) It would bring in an element of greater engagement of administration with faculty and students.

III) Other Recommendations

- (1) While restructuring the current HEIs as per the vision of the NEP, we will have to
 - a. Make viable clusters of the existing small single faculty colleges and make them multi-faculty cluster universities; the colleges becoming the constituent colleges.
 - b. Convert the existing traditional university campuses into either research- intensive universities or teaching-intensive universities.
 - c. Convert the deemed to be universities into either research-intensive universities or teaching-intensive universities.
 - d. All nominations should be by merit and via Search Committees or Empanelment.

Thus, the following categories of HEIs will be formed in the state in a stepwise manner

	Type	Funding mode
1	Research-Intensive Unitary University	Grant-in-aid
2	Research-Intensive Unitary University	Private
3	Teaching intensive Unitary University	Grant-in-aid
4	Teaching intensive Unitary University	Private
5	Degree Granting Autonomous College	Grant-in-aid
6	Degree Granting Autonomous College	Private
7	Degree Granting Autonomous College	Government
8	Collegiate University (Cluster University)	Grant-in-aid
9	Collegiate University (Cluster University)	Private
10	Collegiate University (Cluster University)	Government

(2) Based on the type of the HEIs, the Governance models should be decided; and for each category, Umbrella Acts should be framed by the Government.

(3) The HEIs have public responsibility which should be monitored by the Government. While deciding about the Governance there should be a balance between assurance of independence of the HEIs on one hand and ensuring and promoting economic and social objectives of the state.

(4) As far as possible the funds should be given in a lump-sum manner. The generation of resources from business, beneficiaries, philanthropists, through specific fund-raising activities and through PPP model should be encouraged. One of the ways is to grant proportionate funds (matching grants).

(5) Research University should have a Research Management System, Research committees, Research Officers, Rules and policy of research, Rules and procedures for managing the life-cycles of research projects, System to evaluate the quality of research output.

(6) Each College, School, Department within a University should have a Dean or Chairperson, or Dept. Head who will supervise the respective unit.

(7) The appointments of Vice-Chancellors – as far as possible – should not be made by inviting applications but by nomination and through the Search Committee. The Vice-Chancellor shall nominate Pro Vice-Chancellor. There can be more PVCs depending upon the size of the University.

(8) Control of Government

Control of the State Government on different types of HEIs should be clearly specified. Some of the specific issues are - Utilization of Government funds, appointments on Government approved posts, Creation of newly approved positions, Custody/Selling/ Mortgaging of movable and immovable property, Implementation of Government norms with respect to the reservation, fee structure, etc.

(9) Finance

(a) The University should be free to utilize the funds generated on its own as per the norms and internal approvals

(b) The University should approve its budget in the month of February every year.

(10) VC post is a tenure post and hence the person has a stake in the University affairs for a short period. On the other hand, the University's planning and execution of major projects are long-term. The University's top Authorities should be perpetual to safeguard the long term and time-independent interests of the University.

(11) There should be a standing committee to look after major projects and future/long term planning of the University. The members should be experts in Engineering, Finance, Management,

and few senior professors with not less than 20 years of experience and with at least 10 years of service remaining. The Engineering and Accounts Departments should be answerable to this committee.

(12) Currently, many positions on the authorities are filled by elections. For true participatory governance and management, all stakeholders should get an opportunity to participate. Hence the members belonging to each category of members on the authorities should be nominated by (i) rotation (ii) tenure (iii) seniority (iv) prescribed eligibility.

(13) An external team / cell/ agency (or more than one such) should be constituted to assist the HEIs in smooth transformation to NEP-based education. This would also include creating prototype manuals for processes and protocols inside each type of HEI. Logically, then four verticals will have to be dealt with viz. Academic Development, Evaluation Practices, Financial Code and processes and Administrative system. Not only will such a team(s) suggest efficient reengineering and create recommendatory manuals but also suggest and create training modules and agencies to implement and handhold the HEI during the process of transition.

(14) Finally, and most importantly, many of the recommendations will by definition derive from the ACT. Given that there is an extant committee looking at reformulation/ amendment of the ACT, it is important that their recommendations are in sync with those proffered here. It may be essential to share these as we go along (even before we finalize the complete report).

(15) Finally, we recommend that almost all the recommendations made here require additional agents and agencies (Deans, PVCs, Directors to name a few instances). These have financial implications which we recommend that the government undertakes to bear without any reservation. Perhaps financial estimation of such recommendations may be separately worked out by the committee.

Members



- 1) Prof Suhas Pednekar (Chairman) _____
- 2) Dr Dhanraj Mane _____
- 3) Prof Vilas Sapkal _____
- 4) Prof Abhay Pethe _____
- 5) Dr Ajit Joshi _____

(All members of this sub-group have given their consent to submit this report)

5. Digital Education

Recommendations of the Digital Education Sub-Group

Introduction

In order to make effective use of Digital Education, we propose that each student of Higher Education should be given some Digital Rights. The following paras give details about such desirable Digital Rights which may help bridge the Digital Divide and Digital Deprivation of millions of Higher education students on one hand and open new developmental opportunities to them on the other.

India in general and Maharashtra in particular is beset with six challenges in our Higher Education viz. *Bigger, Better, Cheaper, Faster, Wider and Deeper!*

1. **Bigger:** We have very big numbers entering HEIs and with GER to be raised from 26.3% to 50% by 2035, this number will be even bigger.
2. **Better:** This large number wants world-class quality of higher education to ensure upward mobility, dignity and employability.
3. **Cheaper:** With limited purchasing power, the masses demand world-class quality at affordable cost.
4. **Faster:** They are in a hurry to get best quality education to get a job faster.
5. **Wider:** Most of them cannot migrate to big cities. They want higher education with wider geographical accessibility.
6. **Deeper:** They desire mass-personalization, education with a deeper personal touch.

There exist two solvers to be used simultaneously to solve these six simultaneous challenges:

1. **Be Smarter:** Make pervasive use of appropriate Information Technology and smart digital tools
2. **Be Wiser:** Avoid duplication. Forge partnerships to network resources – infrastructural, financial, technological, human, developmental, intellectual, cultural, etc.

The recommendation and implementation strategies given below address these challenges and apply these two solvers.

The recommendations also attempt to address the challenges and opportunities before Higher Education System in the form of several chronic as well as emerging circumstantial compulsions, certain imperatives and many desirables.

It is necessary for us to offer most relevant higher education to our youth to ensure their

1. Readiness for Pandemics, Globalization-Slowbalization-De-globalization, Climate Change
2. Readiness for large-scale restoration and regeneration of natural resources and ecosystems
Previous generations have damaged the planet. New generations have to repair it through very creative, imaginative “Green Collar Jobs” – which may be Google of this decade – connecting all living beings on the planet not just websites.
3. Readiness for aspirational and yet sustainable lifestyle
4. Readiness for creation of a knowledge society free of poverty, inequality and intolerance
Readiness for productizing knowledge and knowledgizing products and distributing wealth equitably
5. Readiness to harness the emerging exponential technologies opening up the opportunities of IR 4 and 5 and unleashing millions of “New Collar Jobs”.

In short we need higher education to bring about student-development centric, social development centric and environmental development centric transformation.

Digital Education needs to supplement and compliment traditional education in this context.

We, therefore, propose a “Digital Rights Manifesto of Students”. Our recommendations are predominantly “Student Development Centric”. It is like save the tiger mission. If you save tiger – the highest predator - the entire food pyramid is saved!

Section 1: Digital Rights of Students of Higher Education Institutions

1. Free Laptop + Internet to Every Student

A Quad-core, 4GB RAM Laptop with 14 inch screen, a good battery backup of around 10,000 mAh and other normal operating system, basic application software, antivirus, basic accessories such as power

adapter and power cord, bag, etc. with a 4 year carry-in warranty and remote support for hardware maintenance and remote support for software issues should be given free of any cost to each and every student of Higher Education Institute (HEI) including students of open universities and distance learning programs. The laptop should preferably have a built-in SIM or eSIM. The detailed configuration of the laptop may vary from time to time.

If built-in SIM/eSIM is not available in laptop, a personal Internet dongle/connection should be provided to each and every student free of any cost for her/his use anywhere anytime for a period of his graduation for 3-4 years or post-graduation for 1-3 years as the case may be.

Initially, a minimum of 1Mbps speed should be available to the student. It would be an enabler for the student to access all other digital rights mentioned below. The Internet connection provided will block access to certain websites which are not allowed by the government.

The colleges will have to provide a 24x7 reliable 4G/5G internet facility on the campus.

A requisite number of such laptops should be centrally procured by an appropriate authority for ensuring, uniformity, equality, quality, warranty, maintainability and economy of scale. Temporary and permanent teachers may also be given such a laptop at cost.

This path-breaking recommendation is being made to qualitatively transform the entire higher education landscape and ecosystem in Maharashtra at an affordable cost and in a shortest possible time with a view to make it internationally competitive.

While there may be many initiatives for improving information and communication technology infrastructure at the campuses of HEIs, this recommendation focuses on direct digital empowerment of individual students in response to the recent traditional educational deprivation and digital deprivation simultaneously witnessed by few hundred thousand HEI students in the state during recent lockdowns due to Corona pandemic. There exist possibilities of similar kinds of unforeseen global and local disruptions in education not only due to pandemics but also due to increasing frequency, spread and severity of natural disasters due to climate change.

The teachers, students, administrators and managers of HEIs shall base all their future educational and other activities and interactivities and pedagogy or andragogy right from recording attendance to teaching, educating, mentoring, guiding, facilitating, learning, studying, searching, researching, curating, exploring, experimenting, experiencing, recording, uploading/downloading, sharing, communicating, presenting, discussing, debating, blogging, collaborating, executing projects/ assignments, assessments, evaluations, examinations, student support on the assumption that every

player/stakeholder in the academic ecosystem possesses ubiquitous access to a recommended configuration of laptop and internet, etc.

All of these stakeholders shall share a common platform (details given below) without any disparity and deprivation irrespective of socio-economic, geographical and such other differences. The configuration shall be suitably altered for physically challenged students.

Please see Annexure – A: Steps to Ensure Appropriate and Regular Use of Laptop by the Authorized Student.

2. Free Access to Study Skills Content on the Laptop

Each laptop being distributed to the students will have preloaded eContent for how to use the laptop, how to keep it and data in it safe and secure, how to protect it from virus attacks, how to keep all the files and folders and digital objects well organized, how to maintain it so as to get optimal performance.

In addition, the eContent will also cover eLearning material in English, Marathi and Hindi on 21st Century Study Skills, Ergonomic Skills, Netiquettes (Netizenship Skills), Cyber Security Skills, Work/Learn From Home Skills and Go Green Skills. A detailed list of such skills is proposed in Annexure – B.

3. Access to Digital Wearable Devices and Wellness Portals

A digital wearable device may be a low cost mass-procured smartwatch or an AR gear. Using these devices, students will be able to measure vital health parameters and monitor their wellness regularly and seek data-based corrective advice regarding diet, hygiene, preventive and precautionary steps, exercises/yoga, lifestyle, etc. with an access to authentic and AI enabled wellness portals. This may also help them avert potential health risks. Free access to such devices and advisory portals may be considered as Digital Right of HEI students. This may also result in considerable reduction in state expenditure on health in long term.

4. Single sign-on to all college, university, and government portals

For their personal laptop and all the portals hosted for students' use by college, university and government, the students have to repeatedly fill in basic personal data and create different login credentials. This makes it very unwieldy for a student to remember, manage and maintain. Single A Sign-On facility (preferably OTP enabled) should be provided to students for all such portals so that it would help them concentrate on studies than remembering usernames and passwords and using 'forgot password' utilities!

5. Free Cloud Space for Storage

We all have access to cloud storage and most of us save our data on the cloud in one way or another. The cloud storage ensures that we have the data available with us always. The capacity of free cloud storage is limited. The students should get free cloud storage of about 15 GB for saving their files, educational content etc., in case the free facility by providers such as Google is discontinued in future.

6. Free Access to Software Licenses

There are various kinds of software tools required for various educational disciplines. Many softwares are available with free and open access. Many of them may be freely downloadable and even freely distributable. However, some important softwares are not freely available even for university students.

Access to educationally significant but not freely available software licenses should be given free to respective students. For example, software tools for modeling and simulation which makes learning experiential not only for science and engineering but also for management, social sciences and mental and moral studies and disciplines, etc., or software tools for software development, AI-enabled language learning tools, financial accounting and ERP tools, BFSI tools, numerical and statistical analysis tools, mapping tools, GIS tools, drafting tools, CAD, VLSI design tools, visualization tools, AR/VR tools, etc.

It will ensure that the students get rigorous hands-on experience on these tools and their assignments and assessments can be made more trendy by meaningful use of these tools instead of making them write traditional descriptive answers. This can take their education from inform type to perform type and from perform to transform. Such hands-on experience will make learning deeper and more engaging and enjoyable.

As the students will sit in the class with their laptops, even classroom learning experience can become very lively by using these softwares. The classroom education can be easily transformed from 'taught education' to 'learnt education'.

7. Free Licenses of Digital Classroom Platforms

Digital classrooms are virtual classrooms in which students can join remotely. During pandemic they offered reasonable continuity of teaching-learning to students and teachers having devices, connectivity, internet bandwidth. However, licensing issues dominated the scenario. Many teachers and students took recourse to virtual meeting platforms instead of virtual classroom platforms. Many teachers and students suffered from inordinate delays in procurement of licenses, etc. During post-pandemic period, perhaps only certain percentage of students can physically attend college on rotation basis for maintaining safe distancing. This may necessitate a reliable digital classroom facility for all students. The digital classroom license shall remove geographical barriers experienced by

remote students in cluster of colleges or open and distance learning (ODL) students located far away from their respective study centers.

Such a state-of-the-art platform should be developed in-house by taking into account Indian conditions of paucity of bandwidths and overcoming them with adaptive bit rates for streaming the classroom content. Giving teachers and students free access to such world-class platform will not only make them technologically advanced but also make their so called degraded learning experience in case of pandemics or other disastrous disruptions in education more tolerable and graceful, if not completely at par with regular classroom experience.

These platforms will help students access remote teachers of other colleges offering credits which are not offered in the colleges in which student has sought admission. Multi-disciplinary educational experience can thus be ensured at affordable cost.

8. Free Access to Online Services for Students' Academic Life-cycle Management

The students and teachers should be given free access to state-of-the-art

1. Learning Content Management System (LCMS)
2. Learning Management System (LMS)
3. Work-Based Learning Management System (WBL MS) for internships and apprenticeships and Vocational Education Courses / Credits
4. Collaboration Management System (CoMS)
5. Assignment Management System (AMS)
6. Continuous Comprehensive Assessment Management System (CCAMS) and
7. AI-Proctored, Evidence-Based, Secure, On-Demand and Home-Based Online Examination Management System with instant evaluation and item analytics as well as student performance analytics (OEMS)
8. Online Freelancing Support System.

All these systems should be designed and developed in-house within an year and should be regularly customized, supported, maintained and enhanced in-house and should be made available in an integrated manner on a single common platform to all students, teachers and administrators.

9. Free Access to Online Services for Students' Administrative Life-cycle Management

In addition to the academic life-cycle management services mentioned above, all the students should get following types of online services developed in-house and hosted on the common portal for her/his hassle-free administrative life-cycle management for the entire duration of her/his period of graduation/post-graduation. The details of these services are given in Annexure-C

1. Pre-admission Functionalities
2. Post-admission Functionalities

3. Online Examination and Common Entrance Test Management Functionalities
4. Offline Examination Management Functionalities
5. College Affiliation and Institute Recognition Management Functionality
6. Academic Audit Functionalities

10. Free Access to Servers on Cloud through Common Portal

All the software applications mentioned above will be hosted on servers in the cloud. In addition to servers for hosting the softwares, streaming servers are required for streaming video on demand (VOD) content of classroom and for reference viewing so that students do not have to waste space on their laptops for storing downloads of these videos or waste time and costly bandwidths for downloads. A free access to the server infrastructure on the cloud should, thus, be given for following purposes:

- Single Sign On Platform and Common Portal for Students and Vendors
- Online Learning with video streaming
- Learning and Content Management System
- Learning Management System
- Work-Based Learning Management System
- Collaboration Management System
- Assignment Management System
- Continuous Comprehensive Assessment Management System
- Online Examination Management System
- Online Services for Students' Administrative Life-cycle Management
- Online Freelancing Support System
- Hosting Faculty-specific Software Applications and Miscellaneous Services
- Storing master data and transaction data for all of the above

An estimated Rs. 2/- per student per day may be the hosting and streaming server charges hired on the cloud, if we serve an estimated 1 million students.

In order to access above mentioned services a common portal as mentioned above should be developed and made available to students which will help them use single- sign-on service for seamlessly accessing the various applications mentioned above. This portal can capture various touchpoint-data for discovery of students to themselves with the help of AI.

This common portal can also help vendors integrate their services easily with well-defined APIs. Students can find various services under well-defined categories on this portal. Students can filter good services based on the comments and ratings given by other students.

11. Access to Remote Mentors

A mentor may share information about her/his own career path with the students. They may provide guidance, motivation, emotional support, and role modelling. A mentor may help the student with exploring careers, setting goals, developing contacts, and identifying resources. Mentors of the same

native language may be approached/assigned. After the advent of abundance of free and open eLearning resources, the need for free access to mentors has grown dramatically. It should be treated as a right of the students of HEI to consult mentors on personal, professional and social aspects of life, study and work.

Classically as Charles W. Eliot, former President of Harvard University (1869-1909) had put it succinctly, a University stands for “Discovery, Memory and Mentoring” and it connects “Students, Scholarship and Subjects”. In addition to discovery of knowledge (and perhaps discovery of self) and finding optimal paths to learn any subject by using the generational memories of scholarships systematically preserved by the Universities, access to good mentoring has been a biggest differentiator of good Universities. We have to catch-up on this front. Digital access may help bridge the severe gap in mentoring.

12. Free Access to Virtual Assistants / Chatbots

Chatbots are artificial intelligence (AI) applications that simulate human conversation. Chatbots are programmed to respond to textual, visual or voice inputs from users and use mediums such as SMS, web chat window, WhatsApp messaging and other messaging services to receive and reply to messages. Chatbots can be deployed for Desktop, Smartphone, and Tablet.

Common Chatbots services are:

1. 24/7 Support for customers
2. Answering an unlimited number of customers at a particular point in time
3. Instant answer to commonly asked questions
4. Reducing extra workforce for support activities
5. Notification in real-time
6. Enhancing customer experience through more human-like responses

Popular Chatbots Services are:

1. <https://www.chatbot.com/>
2. <https://mobilemonkey.com/>
3. <https://quriobot.com/>
4. <https://www.freshworks.com/>
5. <https://www.tidio.com/>

Students should be given free access to some of the Chatbots Services to help in their studies.

13. Free Access to Online Course Platforms

There are many online educational platforms (MOOCs) or online learning marketplaces such as Coursera, Edx, Udemy, NPTEL, Swayam, etc. which provide thousands of free and paid courses. Bulk licenses for paid courses on these platforms may be procured by appropriate agency at very cheap

cost by exploiting economy of scale and each and every student should be enrolled on such platforms against these bulk licenses for entire duration of her/his graduation.

This will help the students to take several choice-based credits towards partial fulfillment of their degree program. It will add multidisciplinary credits to their portfolio especially if they are enrolled in remote colleges not having faculty members offering such diversity of courses.

Students can also enhance their language skills, communication skills, hard and soft skills by using variety of offerings on these platforms. Moreover, they can pursue hobby-related courses and make their leisure more enriching.

One of the most important spin-offs of this facility is that the students will imbibe life-long learning skills and self-learning, self-paced learning, self-path learning and collaborative learning and participate in borderless or world-wide learning communities at very affordable costs to the Government.

14. Free Educational Services Complimentary to MOOCs Offerings

It has been observed that since 2012, MOOCs course completion rates are falling. Retention rates are falling. There is sharp decline in enrollment. There has been consistently low enrollment from developing world.

While taking the benefit of available services of MOOCs platforms, our students should, therefore, be provided with certain complimentary services which MOOCs platforms do not offer by college professors. Few of the desirable services are enlisted below:

- High-Tech with Human Touch

- Learner Profiling
- Diagnostic Testing
- Counselling
- Career Planning
- Guidance for Program Selection
- Guidance in Optimal Sequencing of Courses in Program
- Guidance in Multi-Disciplinary and Inter-Disciplinary Credit Selection and Sequencing

- Credit Banking and Credit Transfer Facility
- International Certification Linkages, Credit Portability with World-class Universities

- Not just 'Inform Content' but 'Perform Content'
- Student Development Strategy – Inform-to-Perform and Perform-to-Transform

- Intensive Tutoring
- Localization – Learning Content in Marathi Medium, Local Accent of English Content, Cultural Contextualization, Courses with local relevance for local jobs, livelihoods, local economy, businesses, industries, enterprises, traditional knowledge systems, etc.
- Personalization in Learning and Assessments by using Artificial Intelligence Tools
- Gamified Learning
- Multi-player Gaming and Learning
- Virtual Reality or Augmented Reality Labs
- Collaborative / Group Learning
- Remedial Coaching
- Special Nurturance of Gifted / Talented Students
- Regular Inputs: Soft Skills, Communication Skills, Positive Belief, Grit, Secular-Spirituality, Morality and Ethics Labs, Eco-sensitivity or Go Green, Social Sensitivity, Ergonomics, Proactive Healthcare, etc.
- Video (and other) Evidence-Based Assessments
- Assessment of Subject Mastery not based on mere Outputs (Knowledge, Comprehension, Application, Analysis, Synthesis, and Judgement) but also based on Desired Learning Outcomes
- Developmentally Appropriate Assessments
- Assessment of Thinking (Convergent, Divergent, Critical, Creative, etc.)
- Assessment Score to be accompanied by Recommended Activities
- Meta-Cognitive Inputs based on analysis of learning and assessments
- Detailed Transcripts
- High Quality and Passionate Mentoring
- Meet-the-Expert – Virtual Meeting Opportunities
- Real World Experiences
- Internship Opportunities in Industry with stipend, work-credits for in-service students
- Under-Grad Research Opportunities

15. Free Access to eBooks

Physical libraries are becoming costly propositions. Students should be given free access to thousands of eBooks to not only enhance their knowledge but also cultivate their faculty of freedom of choice from multiplicity of exercisable options. This freedom is very limited in case of students in colleges having either limited collection of books or poor distribution and circulation facility or both.

eBooks can be accessed anytime anywhere and also possess ease of viewing online or offline and with zooming in or out which makes it convenient for students. Moreover, there is no virtual limit on how many eBooks a student can carry as they use storage space optimally under the ePub format. Searching the required content and navigation through it is also easy in the eBooks. Adding highlights and notes, accessing videos, interactive media, etc. are added advantages. The current generation of teen-agers are screen-agers and enjoys the convenience of information on the go.

16. Free Access to Databases and Repositories

There are various databases of images, presenter media, animations, videos, games, spreadsheets, codes, patents, designs, etc. which are very helpful for students to learn, modify, create, integrate, develop and share.

Moreover, there are repositories of learning objects, assessment objects, digital artefacts, software codes, data-sets, genome sequences, research outputs, etc. which would give exposure to the students to be ready for the fast-changing world. Many of these databases may have free and open access. Some of them have a paid access. In such cases they may be made freely available to concerned students on demand.

17. Free Access to Virtual Reality Labs and Gamified Learning

Virtual reality (VR) and Gamified Learning (GL) tools and labs can be used in education to enhance student learning and engagement. VR + GL contents allow students not only to see things and phenomena in virtual space but also interact with them. Using these tools students have an opportunity to learn through experience, while in traditional environment they have to mainly rely on books and lectures through which they can perhaps study but can never learn! VR also brings possibility for enabling remote students to perform simulated experiments.

A study “Improving biotech education through gamified laboratory simulations” published by Mads T Bonde, Guido Makransky, Jakob Wandall, Mette V Larsen, Mikkel Morsing, Hanne Jarmer and Morten O A Sommer states that they found 76 % increase in learning outcomes by using a gamified laboratory simulation compared to traditional teaching.

In the event of recurrence of pandemic-like situation wherein students are unable to access their institute’s laboratories and thus missing on their practical hands-on as well as learning by doing, virtual simulated lab can be a reasonable graceful substitute to physical labs.

In immediate future, it appears rather unaffordable to provide real VR experiences to students on a mass scale as the hardware like VR gears (HTC Vive, Oculus Go, etc.), high end computing platforms and specialized software requirements are still very expensive. However, with the advancement of technologies like WebVR, WebGL, html5, etc. have brought the VR experience to the modern web browsers which can be given to students of HEI on free of cost basis.

In case VR glasses are not available, the VR Content can be repurposed for gamified learning on web browsers, laptops and mobile phones and can be experienced without any VR glass offering perfect suitability for mass adoption. So the students with laptop can now experience 3d interactive content through a web browser. This brings a new world of opportunities for educators to improve the student's learning experience.

Using VR content creation tools like Unity, Unreal Engine, etc. interactive educational contents can be created, and also virtual lab experience can also be developed which can be experienced through Web Browser. These contents can also be created as smart phone apps.

There are online platforms like Amazon Sumerian - a VR engine from AWS - that enables content creators without 3D graphics or VR programming skills to create VR content. Contents created with AWS Sumerian works with all major VR platforms, laptops, mobile devices, and web browsers.

A good example of online virtual lab is by Danish company Labster (<https://www.labster.com/>) . Labster provides online interactive lab simulations which are used by world's leading institutions like California State University, Harvard, MIT, Stanford, Trinity College, University of Hong Kong, etc. There exist few companies in Maharashtra also who have created good quality VR content for schools and Engineering Colleges.

Reference:https://www.researchgate.net/publication/263739381_Improving_biotech_education_through_gamified_laboratory_simulations

18. Free Access to AI and ML Platforms

Many students learn pretty fast and need an apt environment to flex the skills they have learned. We need to provide them better labs for deeper understating of concepts. We need to provide greater degrees of freedom to these students in exploration and experimentation in higher studies.

GPU Computational power and the simulation capability for various explorations are now available without investing in capital costs as they are offered as 'infrastructure-as-a-service' in a few clicks on 'pay per use' basis.

Students struggle a lot to get these services because of lack of money or awareness. Students need following things to work in Artificial Intelligence and Machine Learning (AI & ML) area:

1. Availability of Hardware
2. Availability of Connectivity
3. Availability of AI, ML Software
4. And Solving the puzzle of version compatibility for Hardware Vs Software

5. Availability of enormous databases for ML training
6. Highly intensive data processing
7. Help in data structuring
8. Upskilling with new trends (New ways of solving problems)

Non-availability of these critical resources creates not only digital divide but AI-ML divide among our students and their counterparts in developed world. In order to bridge this divide, students should be provided with free access to certain AI-ML platforms for educational purposes. There are many such platforms available right now to which free access can be easily granted. Some of them are:

1. Google Colab: (<https://colab.research.google.com/>) Python development knowledge is required to enjoy access to this platform.

Following are the benefits of Google Colab:

- Read to use Python Notebooks with availability of libraries for Machine Learning (ML) and Artificial Intelligence (AI)
- Availability of Faster GPU's
- Longer Runtime for the notebooks
- More Memory Availability (Use as per the requirement)

2. IBM Watson: (<https://www.ibm.com/in-en/cloud/ai>) Once students take training of this tool even a Law Student can undertake ML processing on this platform. S/he does not need the knowledge of software development.

Following are the benefits of IBM Watson:

- Build and Train AI Models
- Read to use Unstructured Data Processing
- Social Media Integration for Latest Trends Analysis
- Build Cognitive Applications
- Build Chatbots and Virtual Assistants
- Availability of Text to Speech, Language Translations, Language Classifiers
- Natural Language Understanding, Tone Analyzer, Visual Recognition
- Design and Deploy Deep Learning Models

3. Amazon WebServices –AWS: (<https://aws.amazon.com/machine-learning/ai-services/>) Once student takes training, as mentioned earlier, even a Law Student can undertake ML processing on this platform. S/he does not need the knowledge of software development.

Following are the AI Services and benefits of AWS:

- Advanced text analysis
- Automated code review
- Chatbots
- Demand forecasting
- Document analysis
- Fraud prevention
- Image and video analysis
- Real time Translation
- Personalize recommendation
- Text to speech and transcription
- Integrated Development Environment for ML

(Prepare, Build, Train and Tune, Deploy and Manage)

- All this using Visual User Interface

Benefits of providing these platforms to student for educational purposes:

- Students will be able to focus on core studies or research areas
- Access to this platform will help them avoid duplication of efforts in terms of hardware-software environmental infrastructure setup
- The availability of latest knowledge will help students to gain 21st century industry ready skills

19. Free Access to Research Journals

Research journals are academic and technical literature aimed for a specific audience. A student in a specific field will need such kind of information for developing her/his research and getting a deeper knowledge and insight into the subject. A free access to useful journals, if not provided so far, should be given preferably to the post-graduate students.

The publication charges for publishing research and review articles in open access journals should also be reimbursed to the students so as to make free access to publishing in addition to free access to reading publications.

20. Free Access to Digital Learning Resources in Marathi

Most of the digital resources for higher education are in English language. There are many students who are talented but are not very well versed in English. Such students may face difficulties in their learning due to language barrier. Also, for the majority of students, complete comprehension is also a concern. Digital resources in Marathi and other regional languages will build a strong foundation. Students undertaking their university education in Marathi or other non-English medium should also be given support of rich eLearning content in Marathi and other languages.

In fact, we should recognize digital learning resources in Marathi as a Digital Right of the HEI students and make systematic long term investments for this mission like those made by South Korea, Japan, Russia, Turkey, etc. This, however, needs powerful and consistent expression of self-esteem backed by strong political will and funding and of course deep concern for millions of students belonging to lower socio-economic strata who could not get good English education at school. This also requires strong political and cultural will of the Marathi elite to ensure that Marathi becomes a 'Dnyan-Bhasha' i.e. a language capable of generating, expressing, managing, distributing and applying new actionable knowledge in a time-bound manner.

During the period from 2021 to 2035, Maharashtra as a linguistic state shall make a transition from its 61st anniversary to 75th anniversary. Can we make a firm resolve, once and for all, to finish this historic and long-pending tasks on following three fronts?:

1. Development and popularization of Marathi as a simple-to-use 'Praman Bhasha'
2. Development and popularization of Marathi as a simple-to-use 'Dnyan-Bhasha'

3. Development of state-of-the-art digital and AI-enabled tools for Marathi Language and Devanagari Script as are and will be available to English, starting from reliable spell checker, and OCR for hand-written Marathi text.

21. Free and Open Access to Accreditation Data of Colleges

There are multiple systems of college accreditation. Each one has multiple criteria and indicators and sub-indicators. Such criteria and the scores of the colleges against all of these criteria should be made available to all the students on a common portal in a transparently, openly and easily accessible and understandable format. This will give them details about the colleges and help them choose the right college for seeking admission.

22. High Weightage to Continuous Comprehensive Assessment and End of High Stake Final Exams

The episodic term-end/final examinations are an unfortunate and educationally ill-founded but strongly continuing legacy of the past centuries wherein students and teachers did not possess technological tools for continuous comprehensive assessments, instant evaluation and run-time remedial teaching based on evaluation output.

With every student having a laptop and internet and software tools for innovative and creative ways of run-time / 'while teaching' assessment, we should do away with those episodic final examinations at the earliest as they are having no educational and developmental utility at all.

They not only cause anxiety and stress but also induce tendency of postponement of study, last-day preparations and pursuit of last-hour or last-minute mal-practices and unfair means. Apart from major waste of teaching-learning days of a term, they also cause shear waste of financial resources and impose heavy burden of most unproductive work on students, teachers and administrators.

The Universities have lost their dignity and pride as academic and research institutions and have been miserably reduced to Examining Bodies. There are severe problems in even performing that role effectively. NEP 2020, therefore, recommended de-affiliation of colleges and converting them into degree awarding autonomous colleges. Such colleges should be able to undertake meaningful continuous and comprehensive assessment instead of archaic final examinations.

A pertinent question – “what is so higher about higher education?” may be aptly answered by practicing continuous comprehensive assessments involving “higher” levels of educational objectives in Bloom’s hierarchy of educational objectives such as ‘analysis’, ‘synthesis / creativity’ an ‘evaluation / Judgement’ while also giving due attention to lower levels of educational objectives such as ‘knowledge’, ‘comprehension’ and ‘application of knowledge’. However, we shall have to consciously

do away with testing of 'memorized information'. That is not an educational objective even for elementary education!

Open-ended questions, independent thinking, independent expression, spirit of enquiry, critical and creative thinking, ability to ask non-obvious questions, ability to challenge existing body of knowledge, ability to push its boundaries, etc. should gain greater scope in teaching, learning, project work, internships and assessments in higher education.

With a laptop, internet and tools like LMS at hand, "Flipped-Classroom" paradigm should become mainstream in all colleges immediately so that "Teaching shall no longer remain Lecturing anymore!" Teachers shall therefore get enough time to be communicating as "Guide-by-the-Side" rather than giving one-sided discourses like "Sage-on-the-Stage". They should now give greater attention to assessments and mentoring and encourage students to view lectures at home/hostel on their laptops.

Final examinations, if retained at all, should not be given more than 20% weightage so that they will cease to be "High Stake" and NEP 2020 recommendation in this regard shall get satisfactorily implemented.

23. Secured Online Exams at Home

With the personal laptop and internet availability to all students and online secured examination management system on common portal at the disposal of HEIs, mock events of "secured online exams at home" should always be periodically carried out so that the entire Higher Education System shall remain always in readiness to face any eventuality like lockdown.

Certain HEIs may also institutionalize On-Demand Secured Online Exams at Home.

24. Access to Assessment Data

Huge data generated and stored as an output of Online Continuous Comprehensive Assessments will tell students how they are performing and where they need to improve. Such assessments data should be made available to the respective student so that s/he can know about her/his actual performance and progress. Such assessments data, if analyzed well with the help of sophisticated tools, can help student for self-discovery of his own strengths and areas of improvement. This data shall be secured and shall have access to only authorized users.

25. Free Access to Statistical Trends of Peer Performance

This will help students to understand how they are performing in a particular subject as compared to overall pattern of peer performance. This will further motivate them to perform better.

26. Personalized Data Analytics Support

Personalized recommendations and analytical insights based on huge data about her/his academic performance, project opportunities, internship and placement opportunities, opportunities for higher studies and compatible career options will be very helpful to every student. S/he can make well-informed and rational decisions about future based on facts rather than opinions of others or mere intuition or gut-feel or blind followership.

27. Entrepreneurial Support

Students having entrepreneurial inclinations may approach a panel of industry experts registered on common portal and showcase their projects (ideas and prototypes). The industry experts may bid on such projects and invest in them. This would help in generating intellectual property and provide a motivation for students to think openly and innovatively.

28. Free Anonymous Access to Student Data for Student Start-ups

In case students (providers) start their own entrepreneurial initiatives they may be able to freely advertise their product / service to millions of students (receivers) on common portal and get a ready-made customer base. If any student (receiver) is interested in taking the advertised product / service their data may be shared with the provider upon the receiver's consent.

This will help student start-up to achieve better success ratio as the main hurdle is the free / cheaper access to large base of relevant potential customers/users. Tools may be given to curate the data so that a student entrepreneur may send his advertisement to specific targeted segment of students, say MBA students in Nasik city, etc.

29. Access to Earn while Learn through Online Freelancing

As they possess a dedicated laptop and internet, students even in rural areas should be able to take up online freelancing opportunities on domestic and international freelancing portals to earn while they learn. Normally tens of thousands of new gigs or small projects are daily published by customers on these portals. A list of about 131 such online freelancing roles which may cater to millions of small projects on these portals is given in Annexure – D. Students will be able to earn decently, say about Rs. 3000/- per month by taking only a few hours of online trainings for the roles of their choice and working on these projects daily for an hour or on Sundays. Most of these roles require free and open source software tools. A software framework for facilitating students for optimizing their earning, time spent and efforts invested should be developed in-house and made available to the students.

30. Access to Internship / Apprenticeship Opportunities

A proper coordination should be established between the state and central government so that the student data on common portal may be used for registration of students on the various apprenticeship schemes such as National Apprenticeship Promotion Scheme, etc. of Government of India. The access to these schemes has been quite streamlined from the year 2019 and Degree Apprenticeship Scheme

has been added not only for manufacturing but also for services sector. This initiative will also improve the employability and placement opportunities of the students.

Ministry of Skill Development and Entrepreneurship (MSDE) is administering a national portal namely "apprenticeshipindia.org.in" for management of apprenticeship training. Portal allows seamless interaction between various stakeholders to ease the implementation of Apprenticeship Training as well as implementation of National Apprenticeship Promotion Scheme (NAPS). The portal has been developed to manage all the processes of the apprenticeship lifecycle covering registration of establishment and candidate, selection of establishment by apprentices and vice versa, all approval process and online reimbursement of fund under NAPS to establishment.

In July 2020 UGC has released guidelines for Higher Education Institutions (HEIs) to offer Apprenticeship/ Internship embedded Degree Programmes, wherein any recognized UG programme can embed at least one semester of apprenticeship/internship as part of the degree programme without altering the total duration of the programme. These programmes shall be treated at par with the UG programmes specified by UGC, and graduates from these degree programmes shall be eligible to take admission in relevant Master's programme.

The Work-Based Learning Management System mentioned above should facilitate students, industry and MSDE to maximize the apprenticeship opportunities to the students.

31. KYC or Student's Personal Data Entry Only Once

If a student enters her/his data once, then s/he should not be asked to enter it again for any other reason by college, university or government. After a one time careful KYC, the data should be made available on the common portal to be referred by multiple applications.

Making the students enter the same data multiple times and for multiple purposes projects a primitive image of higher education sector especially in the third decade of 21st century. Moreover, the same data is occupying enormous space in multiple data centers because of multiple entries on multiple portals.

32. Free Digital Signature

Digital Signature guarantees that the contents of a document are not altered during the exchange. Once signed by a digital signature, a document can't be changed thus it maintains the integrity of the document. Digital signature freely made available to the students will ensure that the students can submit their important documents to ensure data integrity and non-repudiation (sender of a message cannot later deny having sent the message).

33. Mandatory Use of Digi-Locker

Use of Digi-Locker by colleges, universities and government will help paperless exchange and verification of documents required for administrative facilitation to students. College/University should create a Digi-Locker for every student at the time of admission, if it does not exist already.

This will empower students on one hand to store their important documents right from Birth Certificate online and in a secured way and on the other access them anywhere anytime and grant instant and easy access to any document requested by any college/university/government/bank, etc. authority.

The colleges, universities and governments shall always deposit their certificates or documents being issued by them to the students in Aadhaar-linked format in student's Digi-Locker only. They will also access these documents as and when required from Digi-Locker instead of making students repeatedly submit the hard copies or share scanned images. A proper orientation of college/university/government administrative staff is necessary for this simple digital reform. This will save tremendous amount of time, money, energy, errors, delays, anxiety, etc. in exchange of same set of documents repeatedly.

At a later date we have to move away from documents (certificates) to securely stored and easily accessible authentic data in the document which is of material essence for administrative action than the document itself. Like many scientific research areas are moving from 'Equations to Data' the administration should move from 'Documents to Data'!

34. All Certificates Online and On-Demand

Before normal delivery on Digi-Locker, keeping in view that all relevant data of the student is available on the portal, various certificates to be issued by college, university or government should always be ready to be accessed on demand. No separate application may be required.

35. Voters' ID card, PAN, etc. without application

Every student of higher education has already submitted to college or university all the details, documents, and proofs while taking their admission and completing KYC on common portal. We should automatically provide this data to respective government departments based on consent from the student so that documents such as Voter ID card, PAN Card, etc. are made available to them without any application.

36. Eligibility Alerts for Welfare Schemes of Government

There are many welfare schemes of government for students based on their socio-economic profile. Many students don't even know about the schemes which are available to them. Sending them alerts

upon attaining eligibility based on their dynamically changing data on common portal will empower them. It will also help them to get benefits which may reflect positively on their studies.

37. Hassle-free Netbanking Account

Netbanking access enables everyone to make transactions faster and more conveniently. A netbanking enabled bank account will help students to manage their personal finances. The banks may be advised to respect the digital identity authenticated by the college after s/he has done the rigorous KYC while entering the college and on that basis open a zero-balance netbanking account of the student in a hassle-free manner. The student may receive scholarship for Department of Social Welfare or benefits of many welfare schemes of the Government, etc. directly in this account through Direct Benefits Transfer (DBT) facility. The netbanking account is a must to register on online freelancing portals mentioned above.

38. Privacy and Security of Student Data

Everyone appreciates privacy. The privacy of one's data should be one's right. The data shall be accessible only to the authorized users and has to be fully secured.

39. Lifelong Learning Opportunities

After completing the UG / PG course, the student should get opportunities and support to learn at least for 3 years after the student earns the degree. This would help the students to remain update at workplace and also imbibe in him most important 21st century survival skill of life-long learning..

40. Recommendation Engine that is not influential

Students need unbiased and rational recommendations for their learning path career. Giving them such a recommendation engine will further empower them to excel in their academic, professional as well as personal and social life.

Section 2: Tentative Cost Estimates

Sr. No.	Item	Approx. Cost (in Rs.) / Item / Annum	Approx. Total Cost (in Rs) / Annum
1.	Laptop (Quad Core Processor, 4GB RAM, 14 inch Screen, 10,000mAH Battery, 4 Year Carry-in Warranty with Remote Support for Software issues)	2,500 to be paid for 3 years	250,00,00,000
2.	Internet (4G SIMM with Dongle) or Built in SIM /eSIM in Laptop	1,200	120,00,00,000
3.	Licenses to Online Course Platforms	700	70,00,00,000
4.	Licenses for eBooks (various publishers)	100	10,00,00,000
5.	Access to Research Journals	100	10,00,00,000
6.	Cloud Space for Storage (Free)	0	
7.	Software licenses (Softwares are normally available free for college / university students)	0	
8.	Digital Signature	100	10,00,00,000
9.	Access to Databases and Repositories	100	10,00,00,000
10.	a. Images / Videos	500	50,00,00,000
11.	b. Access to Simulations and Modeling/ Gamified Learning / Virtual Reality Labs / AI Platforms / Big Data Platforms	500	50,00,00,000
12.	Life-long Learning Opportunities after UG / PG	1,000	100,00,00,000
13.	Digital Wearable Device for Health Monitoring	1,000	100,00,00,000
14.	Software Platform and Server Infrastructure: Various software platform services like Learning Management System, Streaming Service, Online Examination Software, etc. along with Server Infrastructure to handle the load	450	45,00,00,000
15.	Approx. Cost (in Rs) / Annum		825,00,00,000
16.	Implementation and Maintenance + In-house Software Development, Customization, Support, Enhancement for various administrative, academic and entrepreneurial services shown in Section 1 + Teachers' Training, etc. (20% of overall costs)		165,00,00,000
17.	Total Cost (in Rs) / Annum for 1 Million Students		990,00,00,000
18.	Total Cost (in Rs) / Annum / Student		9900/-

19.	Total Cost (in Rs) / Student for 3 Years	29700/-
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Justification:

1. Currently per student annual cost in non-professional colleges is about Rs. 55,000 and for professional colleges like engineering it is about Rs. 80,000+.
2. At 12-18% cost, apart from several the benefits to students and qualitative transformation of Higher Education in the entire state, there will be considerable saving on the institutional front in terms of infrastructure, overheads, library, etc.
3. If the GER of HEIs in Maharashtra has to be increased from 30% to 50%, open and distance learning students' enrollment will have to be increased. This can be achieved at the rate of Rs. 10,000 per student per annum i.e. most economically by offering above mentioned Digital Rights to those students.

Section 3: Implementation Strategy

1. Pre-implementation phase of 1 year of this program may start on April 1, 2021.
2. Public announcement of the program may be made on May 01, 2021 i.e. on Maharashtra Day.
3. After making all the preparations and ground work, this ambitious program may be formally launched on August 15, 2022 i.e. 75th Independence Day of India.
4. This implies that first batch of this program will be admitted in Academic Year 2022-23.
5. We may begin with about 1 million students to be admitted to the first year.
6. Every year the size of the program may be doubled with natural progression of the first batch.
7. As a result, the complete coverage of 3-year graduation program shall be achieved in the academic years 2022-23, 2023-24 and 2024-25 and that of 4-year graduation shall be accomplished in the academic year 2025-26.
8. The responsibility, accountability and authority for implementation of this program may be given to an autonomous body which may be suitably named as "MEAT i.e. Maharashtra Educational Alliance for Technology" modelled on the pattern of NEAT as proposed in NEP 2019 under Section 23.3.
9. MEAT may be chaired by eminent personality like Dr. Raghunath Mashelkar who may also chair an apex body viz. Maharashtra Rajya Shiksha Aayog.
10. Under the visionary leadership and insightful guidance of Dr. Mashelkar, the program implementation may be done in a mission mode with a dedicated team.
11. Government of Maharashtra apart from timely disbursement of funds and quarterly progress review, may play a catalytic role of proactive facilitator.

Section 4: Annexures

Annexure – A: Steps to Ensure Appropriate and Regular Use of Laptop by the Authorized Student

The misuse of the laptop can be prevented by enforcing following steps:

1. A signature of a laptop to be assigned / allotted to a student shall consist of many fixed parameters of hardware components of the laptop.
2. This signature of each laptop shall be captured and stored securely on the common portal on the central server.
3. The Digital Identity of the student in the form of biometric data, facial data, etc. shall be captured and stored securely on the same common portal and shall be used to issue Single Sign-On credentials to the student.
4. A laptop will be allotted to a particular student by connecting it to the duly authenticated Digital Identity of a student. Thus a 'laptop-student pair' is registered on the common portal.
5. Access to laptop shall be granted every time only after the signature of allotted laptop and digital identity of the student authorized to use that laptop match.
6. This matching shall be done through face detection followed by face recognition of the expected student on that laptop and such other security measures will be repeated intermittently and randomly for verification for continuing the grant of access or otherwise.
7. Student's classroom and lab attendance may be coupled with allotted laptop by a simple process.
8. Arranging daily continuous comprehensive online assessments and such other tasks at regular intervals which send the signature of the laptop along with the student's identity to the common portal will ensure appropriate, authorized and regular use of the laptop.
9. During the assessment, the verification of the student and respective laptop is done on the common portal. If not matched or student cannot appear for online assessment, the student's enrolment may get discontinued for impersonation after a few alerts and warnings.
10. A student may insure her/his laptop at one's own cost.
11. In case a student misplaces the laptop, s/he will have to arrange a new laptop at own cost in two weeks and get it re-registered on the central server.
12. A detailed process would be chalked out for this purpose.

Annexure – B: List of Digital Skills for Study on Laptop / Smart Phone

21st Century Study Skills:

Category	Skills
Recording attendance	Attendance Register App, Attendance Take App
Teaching	Google Classroom, Facebook Live, Zoom, Microsoft Teams
Educating	Google Jamboard, Edmodo, OpenLMS, Moodle, Eliademy, Schoology
Mentoring	Assignment Management Systems (AMS), LearniCo, Google Meet, Ask an Expert App
Guiding	iStudiez, Quizlet, Podcast
Facilitating	Google Keep, Evernote, Learning Assistant
Learning	SWAYAM, DIKSHA, Swayam Prabha, Coursera.org, LiveDemy, Udemy App, Unacademy, Upgrad, edx, NPTEL, Khan Academy, YouTube, TED Talks, Massive Open Online Courses (MOOCs), Codecademy, Blockly, Grasshopper
Studying	e-PG Pathshala , Duolingo, Photomath, Algebrator, PlantSnap, GeoZebra, StayFocusd app, Dictionary.com, VoLT
Searching	Using Google to search more information about study topics, Doing clustered search, Using Wikipedia to search the information, Searching and downloading eBooks (NCERT)
Researching	Research Papers (Google Scholar), Research Gate, National Digital Library of India (NDLI), E-ShodhSindhu
Curating	Plagiarism checker, MyCurator Content Curation, Frame.io
Exploring	Finding information about The World via https://knoema.com/atlas , Exploring http://planner5d.com/ for interior plans, Using Discovery Science for studying in a better way, India History App, stars.chromeexperiments.com , Intelligence Quotient (IQ), Emotional Quotient (EQ), Knowing Personality type - https://www.16personalities.com/ , learninglan.si.edu
Experimenting	Science experiments online - Physics, Chemistry, Maths, Virtual Labs

Experiencing	Google Arts and Culture app, 3Dmekanlar, Elevate, Neuronation, isslivenow.com
Recording	Rapid Content Development through MS PowerPoint, eLecta, Windows 10's built-in Game bar, Articulate, Loom, Veed.io, Audacity
Uploading/downloading	WeTransfer, SendIt, https://www.transfernow.net/
Sharing	Google Drive, Dropbox, Using Google Docs to share notes
Communicating	WhatsApp, Telegram, http://www.readwritethink.org/
Presenting	Microsoft Teams, Google Meet, Zoom, Google Jamboard, Google Slides, Prezi, Mindmap tools - Coggle, Mindmup, Freemind, Draw.io
Discussing	Discussions in forums (quora.com), nowcomment.com, Discuss, Clip (Discovery Education's https://spiral.ac/)
Debating	Artikulate.in, debatehub.net, https://www.kialo.com/
Blogging	WordPress, https://edublogs.org/ , Pinterest, Versolearning
Collaborating	ClassDojo, VoiceThread app, https://app.participate.com/ , Conduct a poll/survey/research using Google Forms, Keeping track of my important events/classes all in one place (Google Calendar), Canva, Piktochart, Team Up (Discovery Education's https://spiral.ac/)
Executing projects/ Assignments	Assignment Management System (AMS), Canvas
Assessments	Socrative app, Quizlet, Discovery Education's Puzzlemaker, Quickfire (Discovery Education's https://spiral.ac/)
Evaluations	https://goformative.com , Google Form
Examinations	https://www.gnowledge.com/ , TCEExam, Online Evaluation System
Student Support	iStudiez, Quizlet, Assignment Management Systems (AMS), LearnCo, Google Meet, Ask an Expert App

Ergonomic Skills:

Category	Skills
	Importance of ideal posture while using computer
	Some neck exercises for stress relief

Correct Sitting Postures while using computer	Ideal neck Posture
	Shoulder exercises for computer users
	Leg exercises
	Stretch your legs
	Why use an ergonomic chair?
	Use ergonomic table
	Ergonomic keyboard drawer
	Avoid the Lower Back Pain
	Prevent musculoskeletal disorders
	Exercises for your back
	Prevent ergonomic injuries in children
Using Mouse and Keyboard Correctly	Correct use of keyboard and posture
	Ergonomic keyboards
	Tips to use the keyboard
	Use Mouse Ergonomically
	What is an ergonomic mouse?
Taking Care of Eyes	Eyes vis-a-vis your computer screen
	Adjust the display's brightness
	Check and optimize the display settings
	Rule of 20-20-20"
	Prevent computer vision syndrome
	Blink your eyes
	Soothe your eyes
	Proper lighting around computer workstation
Taking Care of Ears	Avoiding high audio volume
	Helpful tips: Reading from your computer screen
	Using ergonomic headphones

Taking Care of Hands and Fingers	Exercises your hands and fingers
	Ouch! That wrist hurts!
	Flex those fingers
Forming good Habits	Break the harmful habits
	Adjust your workstation for comfort
	Check the position of your monitor
	Don't keep those legs dangling
	Correct laptop posture
	Exercises at your desk
	Avoid eating at your desk
	Breathing exercises
	Keep away from the noise
	Taking care while working at AC workplaces

Go Green Skills:

Category	Skills
Saving Energy	Importance of shutting down and logging off a computer
	Turn off your monitor
	Did you correctly shutdown your computer?
	Hibernate, lock or shut down?
	Screensavers are not energy savers, shun them
	Use apps to save time and fuel
	Use Google Maps to save fuel and time
	Save fuel, go green
	Tips on green computing
	Use shared drive storages instead of email attachments
	Analyze your computer's energy usage

	Use effective power management
	When multitasking, close the unused apps
	Organize files and folders: Saves energy
	Use energy saving technology
	Buy computers that come with a Star rating
	Buy only energy efficient products
	Upgrade to a flat panel LCD monitor
	Adjust the brightness on your monitor
	Remember to turn-off the Bluetooth and Wi-Fi
	Turn off the peripherals
	Verify if your computer's power supply is 80 plus Certified
	Extend the life of your computer
Paperless Working	Save paper, use the Notepad app
	Send e-invites and save paper
	Reduce your carbon footprints
	Share online and reduce paper waste
	Save paper, use both sides of paper
	Use paperless communication
	Use online services wherever possible
	Think before you take a printout
	Reduce paper margins to decrease paper consumption
	Use soft copies of textbooks whenever possible
	Use digital copies over hard copies
	Opt for e-bills and e-bank statements to save environment
	Use printer rationally, opt for eFax
	Replace colored prints with black and white
	Use Google Calendar to work effectively

Saving Resources	Create shortcuts, not copies
	Avoid unnecessary digital storage and email attachments
	Delete unused files from the hard drive
	Archive large email folders
	Avoid non-productive message and mail forwards
	Use zip files and PDFs
	Video conference to save time and resources
	Download only the apps and programs you need
Recycling	Recycle your old computer
	Separate your e-waste and techno trash
	Reuse ink cartridges

Netiquettes (Netizenship Skills):

Category	Skills
Netiquettes	Netiquettes
	Email etiquettes
	Online forms and their risks
	Be vigilant while using online classifieds
	Rules of Net-etiquettes
	Sharing is caring, but not on Internet
	Deactivate unused accounts
	Safe online recharge
	Risks in Online registration
	Validate before sharing online
	If you copy-paste, first know about copyrights
	Importance of strong password
	Sharing photos online
Safe Downloading	

	Stay safe on social networking sites
	Surf smarter
	Digital signatures
	Be safe while posting your resume online
	Trusted websites
	Cyber Hacking
	Cyber Mischief
	Cyber Stalking
	Cheating by personation
	Cyber Identity Fraud
	Some safe e-commerce tips
	Keep your software/apps updated
	Be vigilant while using online classifieds
	Just because it's free, it doesn't mean it's safe
Smart Habits	Encrypt files to protect data
	Online gaming is not always fun!
	Keep your account information for yourself
	Use antivirus protection before you go online
	Protect yourself from cyber bullying
	Stay safe while booking tickets online
	Create back-up copies for your important stuff
	Sharing is caring, but not on the Internet
	Unsecure wireless connections
	Peer to peer sharing
	Keep your data private online
	Surf smarter
	Don't leave copies of your printed pages in a common printer
	Use emoticons in your post

	Don't Type in ALL CAPS
	Read the email before you send
	Risks associated with social bookmarking
	Unsecured wireless connections
	Do not attach unnecessary files
	Don't reply a private message on "reply all"

Cyber Security Skills:

Category	Skills
Cyber Security Skills	Managing and maintaining strong passwords
	Securing online banking transactions and taking care of information safety
	Setting Emergency Text on ANDROID phone
	Tracking the data (internet) usage on Android PHONE
	Using good antivirus software for my Laptop and PC
	Securing Profile and other pictures shared on Facebook
	Using App Locker tools for important Mobile Apps
	Restricting Administrator account access on Personal Laptops
	"Safely remove hardware option" for plug and play devices
	Legal aspects of fake Profiles on Social Media Sites
	Securing WhatsApp DP
	Awareness about Legal aspects of publishing/transmitting material containing sexually explicit conducts
	Awareness about defamation through social media and it's legal implications
	Awareness about frauds and cheating through matrimonial sites
	Using Login IDs and passwords on public computers using safety tips
	Be careful while Sharing and Forwarding on social media
Prevent/Block the appearance of unwanted Ads and Pop-ups	
Importance of using a physical lock for laptop	
Checking the warranty of a product or gadget	

	Importance of noting down the IMEI Code
	Avoid malware while downloading Android apps
	Blocking of my SIM card when handset is lost
	Awareness about the legal consequences of using cracked or pirated software
	Protecting yourself from fake emails which pretend to be genuine
	Secure net banking and online transactions on public computers
	Awareness about data theft and IT Act 2000
	Awareness about Online Sexual harassments and it's Legal implications
	Protecting yourself from online lottery cheating and fake messages
Smart Habits	Protection from 'Work from Home' scams
	Protection from social media blackmailing
	Awareness of consequences of downloading unknown Email attachments and safety tips
	Securing Debit/Credit card physically
	Awareness about the legal consequences of displaying and distributing pirated music/videos
	Protecting data in case of loss or theft of computer/laptop
	Steps to follow whenever Mobile is stolen/lost
	Using safety tips for using public Wi- Fi networks
	Securing Aadhaar card data
	Awareness about the hazards of playing online mobile games
	Avoid peeping while using passwords and PINs
	Using the safety tips while taking selfies
	Awareness about legal consequences about data tampering
	Awareness about the hazards of using mobile while walking or driving a vehicle on road
	Awareness about the legal aspects of offence like internet and drug trafficking
	Protect yourself while travelling by a hired car

	Identifying and protecting from fraud calls regarding online lucky draw
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Work / Learn From Home Skills:

Category	Skills
Internet and Connectivity	Buying good internet plans for mobile
	Configure and activate internet connection for mobile
	Wi-Fi
	Tethering, Hotspot
Productivity	Google Tasks
	Google Calendar
	To-Do, reminders, Alarms, Clock
	Gmail
	Voice Typing
	Smart Voice Assistant: Google Assistant, Siri
	Mobile Scanners (Adobe Scanner, Google Lens)
	Evernote
	Google Docs, Google Slides, Google Sheets, Google Drive
	Voice Recorder
	Mirroring Apps
	Minutes of meetings: Otter
	Google Keep
	Android File Explorer
Connecting with Peers/Team	Google Meet, Microsoft Teams, Zoom
	WhatsApp
	Skype, Cisco Webex
	Google Duo
	Trello
	Kanban Table

Project Management Tools	Zoho Projects
File Sharing	Transfer using Bluetooth, ShareIt, WeTransfer, Dropbox
Best Practices in Remote Working	Create a workplace that works for you
	Take care of your physical health
	Take care of your mental health
	Time management
	Meeting Etiquette
	Messaging Etiquette
Cashless Transactions	BHIM App
	Paytm
	Google Pay, PhonePe

Annexures – C: Online Services for Student’s Administrative Life-cycle Management

A. Pre-admission Functionalities

1. Online Application Functionalities for Admission
 - a. Information about Courses and Colleges
 - b. Information about Admission Procedure, Eligibility Criteria, etc.
 - c. Single Online Application for Admission to all Courses and for all Colleges
 - d. Uploading Required Documents
 - e. Verification of Required Documents
 - f. Selection List and Waiting List

2. Online College Fee Collection for Admission
 - a. Information about Fees of Courses and Colleges
 - b. Information about Fees Payment Modes and Procedure
 - c. Online Payment Gateway Integration
 - d. Program-wise Student Category-wise Fee Configuration
 - e. Fee Installment Configuration
 - f. Fee Receipt Generation

B. Post-admission Functionalities

1. Informative Functionalities for Students about University and College (General and Personalized)
 - a. About University
 - b. About University Management and Administration
 - c. About Faculties and Programs
 - d. About Courses and Syllabi
 - e. About College or Department
 - f. About Application and Admission
 - g. About Eligibility and Enrollment
 - h. About Fees and Scholarships Various Alerts in Student Login
 - i. About Examination and Certification
 - j. About Convocation and Migration
 - k. About Awards and Prizes
 - l. About Placements and Alumni
 - m. About Student Support and Student Facilitation
 - n. News, Calendar and Events

2. Interactive Functionalities for Students (Personalized)

- a. Student Login
- b. Student Mobile App
- c. Online Application from Mobile App
- d. Online Exam Form submission and payment by the student
- e. Various Notifications in Student Mobile App
- f. Various Alerts in Student Login about Fees and Scholarships
- g. Student Profile in Login and App
- h. Complaints and Suggestions
- i. Grievances and Redressal

3. Administrative and Facilitation Functionalities for Students (Personalized)

- a. Unique Permanent Registration Number (PRN)
- b. Various SMS / Email Alerts to Students throughout the academic year
- c. Various Alerts to Students in their login throughout the academic year
- d. Various Notifications to Students in their Mobile App throughout the academic year
- e. ID card
- f. Bona-fide Certificate
- g. No Objection Certificate
- h. Character Certificate
- i. Transfer Certificate
- j. Online Pre-Filled Eligibility Forms
- k. Student Profile Correction Request
- l. Student Profile Update Request
- m. Personalized Time Table download
- n. Personalized Hall Ticket download
- o. Personalized Pre-Filled Exam Form download
- p. Online Application for Photocopy of Answer-Books
- q. Online Application for Re-evaluation
- r. Online application for Re-verification
- s. Online Application for Migration
- t. Online Application for Transcript

4. Payment Utilities for College and University Administration

- a. eWallet for College for Pre-Paid Transactions with University
- b. eWallet for University for Pre-Paid Transactions
 - a. Payment Gateway Integration
 - b. Utility for Deposition of Advance in eWallet by the College and University
 - c. Confirmation of Advance Deposition
 - d. Revenue reconciliation
 - e. eWallet Management based on deposits and consumptions
 - f. Refund of balance amount

- g. Credit note generation upon the financial year ending, if required
- 5. Other Utilities for College and University Administration
 - a. [No objection Certificate](#) Generation
 - b. [Character Certificate](#) Generation
 - c. [Bona-fide Certificate](#) Generation
 - d. ID card Generation
 - e. Transfer Certificate Generation
- 6. Employee and Institute Profile Management Functionality for College and University Administration
 - a. Provision to capture details about staff and institute to generate various reports required by NAAC, NIRF, UGC
 - b. Employee login to maintain profile
 - c. College/Department login for tracking, data compilation and monitoring of staff profile and institute profile
 - d. Subject/Paper-wise teacher list
- 7. Web Portal Management Functionalities for University Management
 - a. Dynamic Menu and Multilingual Content Management
 - b. Organization Structure Management
 - c. Calendar Management
 - d. Publishing RTI Compliance
 - e. Suggestions Management
 - f. Feedback and Complaints Management
 - g. University Photo Gallery Management
- 8. Academic Management Functionalities for University Management
 - a. Course Structure Definition
 - b. Evaluation and Assessment Structure Definition
- 9. Eligibility and Registration Management Functionalities for University Management
 - a. 16-digit unique Student PRN Generation and Management
 - b. SMS / Email / Login / Notification Communications Management
 - c. Student Profile Management
- 10. Examination Management Functionalities for University Management
 - a. Examination Scheduling and Time-Table Management
 - b. Exam Forms and their Inward
 - c. Exam Fee, Center / Venue Management
 - d. Hall Ticket and Seat Number Management
 - e. Management information System for providing various reports to support conduction of Examinations
 - f. Question Paper Packer Reports

- g. Block-wise Junior Supervisor and Attendance Sheet
- h. Bar Code Functionality with system generated barcodes

11. Revenue Reconciliation Functionalities for University Management

12. Online Assessment Data Entry Functionalities for University Management

- a. Facilitating online centralized / distributed data entry of assessment data
- b. Coding / decoding of answer books
- c. Blank Mark-lists
- d. Marks modification report
- e. Statistical monitoring report
- f. Moderation List
- g. Absent Student Report
- h. Pending Code Entry Report
- i. Unfair Means Report
- j. Course Wise Data-Entry Statistics
- k. Correction List
- l. Performance Ledger
- m. User Data Entry Statistic report

13. Result Processing and Certification Functionalities for University Management

- a. Data verification and validation
- b. Result processing and ordinance application
- c. Generation of statement of marks/Grade
- d. Result register / ledger
- e. Passing Certificates / Provisional Certificates
- f. Result statistics and press reports

14. Bug Tracking System Functionalities for University Management

- a. System for logging the bug or error in portal
- b. Tracking the status of the same.

15. New Requirement Tracking System Functionalities for University Management

- a. System for logging the new requirement in portal (within the scope of eSuidha)
- b. Tracking the status of the same.

16. Admission Related Reports for College and University Administration

- a. Registered Students' List
- b. Photo and Signature List
- c. Birth Date and Age Report
- d. Native Place List
- e. Guardian's Occupation List
- f. Mailing Labels
- g. Students' PRN List
- h. Student Wise Papers List
- i. Roll-No Wise Students' List

- j. General Register
- k. Transferred Students' List
- l. [Eligibility Status Report](#)
- m. [Program Part – Term-wise Discrepancy Report](#)
- n. Dynamic Report generation tool for colleges to generate customized report.
- o. Critical Decision Making Dashboard for University and Colleges
- p. Critical Exam monitoring dashboard due SRD for University

17. Admission Related Other Reports for College and University Administration

- a. Faculty-wise, Category-wise Admissions
- b. Course Part-wise, Category-wise Admissions
- c. Gender-wise Blood Group
- d. Course Part-wise Student Strength
- e. PRN Generated Status
- f. Gender-wise Cast-wise List
- g. Course Part-wise Email List
- h. Birth Month-wise Student List
- i. Term-wise Admission Fee Collection Report
- j. Course Part-wise Not-inward List
- k. Student-wise Document List
- l. Faculty-wise Admission Fee Collection Report
- m. Course Part-wise Physical Disability List
- n. Religion-wise Cast Statistics
- o. State-wise Student List
- p. Course Part-wise Marital Status List
- q. Guardian Occupation Summary
- r. Gender-wise Social Reservation List
- s. Qualification Summary
- t. Division-wise Student Strength
- u. Paper-wise Student Strength
- v. Paper-wise Division-wise Student Strength

18. Eligibility and Enrollment Related Reports for College and University Administration

- a. Eligible Candidate List
- b. Provisional Eligible Candidate List
- c. Not Eligible Candidate List
- d. District-wise statistics
- e. College course statistics

19. Fee Collection Related Reports for College and University Administration

- a. Course-wise Total Fee Reports
- b. Collected Fee Register Reports
- c. Course-wise Receipts Reports
- d. Course-wise Student Fee
- e. Canceled Receipts Reports
- f. Student Receipt Reports

20. Examination Related Reports for College and University Administration

- b. [Inward Examination Form Statistics](#)
- c. [Student Summary List](#)
- d. [Exam Form Statistics](#)
- e. [Examination Form Submission List](#)
- f. [Blank Mark List](#)
- g. [Paper-wise Name List](#)
- h. [Physically Challenged Student List](#)
- i. [Student List By Venue](#)
- j. [Reports for Venue](#)
- k. [Hall Ticket Download List](#)
- l. [Daily Paper Report](#)
- m. [Paper-wise Student Name List](#)
- n. [Physically Challenged Student List](#)
- o. [Paper-wise Attendance Sheet and Junior Supervisor Report](#)
- p. [Venue wise paper download report in SRPD](#)

21. Dashboards and Infographics for Colleges and University Administration

- a. Admission Statistics
- b. Eligibility Statistics
- c. Transfer Statistics
- d. Fee Collection Statistics
- e. Status of eWallet of College and University
- f. Examination Statistics
- g. Results Statistics
- h. Course Statistic

C. Online Examination and Common Entrance Test Management Functionalities

1. Initialization

- a. Requirements Elicitation
- b. Role/User-wise feature mapping
- c. Issuing login credentials with appropriate rights to Authorized Officers accessing the test servers

2. Question Bank Management

- a. Selection from a wide variety of question types
- b. Question bank (item bank) configuration
- c. Entry of item bank name, item bank description and item bank code for creation of an Item Bank hierarchy

- d. Creation of test paper wise item bank either by importing from Excel/Word template or by fresh entry into system
- e. Excel and Word Macros for ease of error-free and validated bulk import of questions
- f. Create/Read/Update/Delete (CRUD) operations of question bank
- g. Question bank import/export
- h. Question repository upgradation
- i. Question bank item quality assurance
- j. Statistical analysis of candidate responses to each question appearing in question papers based on Item Response Theory (IRT)
- k. Advice based on the IRT for remedial actions in question bank for future use
- l. Unicode Support
- m. QTI Standards Compliance
- n. Mapping with Syllabus
- o. Association with Bloom's Taxonomy
- p. Question ranking and feedback evaluation

3. Question Paper Management

- a. Question paper blueprint / template creation
- b. Question paper(s) generation as per paper pattern, weightages to difficulty levels, etc.
- c. Question paper version control for future use

4. Test Venue Management

- a. Test Venue - Data Creation
- b. Test Venue - Candidate Allocation
- c. Test Venue - Capacity Management
- d. Test Venue - Supervisor Allocation
- e. Remote installation of software framework at Test Centers or homes of candidates
- f. Call center facilitation to Test Venue / Center Coordinators appointed by the University

5. Candidate Management

- a. Importing candidate data such as name of candidate, seat number, details of his/her test paper/s, date and time of each test paper from University's legacy system into third party system
- b. Mock testing facilitation to the candidates prior to real test for familiarization with the online testing process, evidence capture process and user interface, etc.
- c. Candidate authentication and authorization
- d. Candidate's face detection and face recognition
- e. Candidate attendance

6. Online Test Administration and Test Event Management

- a. Downloading and installation of Secured Browser ensuring restricted navigation
- b. Test configuration as per University's requirements
- c. Test scheduling as per University's time-table
- d. Candidate Attendance
- e. Display of test guidelines to the candidates
- f. Secured and evidence-based online testing

- g. Candidates' audio, visual and onscreen evidence capturing
- h. Artificial Intelligence (AI) enabled, real-time, continuous and comprehensive auto-proctoring of every candidate taking test on laptop (but not on pad, tablet or smartphone) and remedial actions as per University's policies based on the real-time analysis of evidence data captured
- i. Exception handling as per University's policies
- j. Candidates' item/question-wise response data, result data and proctoring evidence data uploading on the central portal
- k. Data Encryption
- l. Display of result to the candidate
- m. Generation of candidates' downloadable provisional eMarksheet / eCertificate

7. Reports

- a. Publishing various standard reports
- b. Continuously updating University Dashboard for monitoring test event

8. Payment

- a. Deposition of Advance in eWallet by the University
- b. Confirmation of Advance Deposition
- c. Revenue reconciliation
- d. eWallet Management based on deposits and consumptions
- e. Refund of balance amount
- f. Credit note generation upon the financial year ending

9. Project Closure

- a. Backup, Archival, etc.
- b. Handing over the University's data such as candidates' test wise result data and compressed collages of candidates' images captured during test as evidence data in password protected excel format
- c. Jointly signing the closure report by third party and the University

D. Offline Examination Management Functionalities

22. Subjective Question Paper Generation System

Question Bank Management

- a. Question bank (item bank) configuration
- b. Entry of item bank name, item bank description and item bank code for creation of an Item Bank hierarchy
- c. Creation of paper wise item bank either by importing from Excel/Word template or by fresh entry into system
- d. Create/Read/Update/Delete (CRUD) operations of question bank
- e. Question repository upgradation
- f. Unicode Support
- g. QTI Standards Compliance
- h. Mapping with Syllabus
- i. Association with Bloom's Taxonomy
- j. Question ranking and feedback evaluation

Question Paper Management

- a. Question paper blueprint / template creation
- b. Question paper(s) generation as per paper pattern, weightages to difficulty levels, etc.
- c. Question paper version control for future use

23. Secured Remote Question Paper Delivery System

- a. Uploading of question papers in PDF from the individual login of three different question paper setters in case the question bank is not available in question paper generation system
- b. Storing the PDF of question paper in binary form after encryption with a salt key for security
- c. Examination venue supervisors' registration and approval by examination section
- d. System generated runtime separate passwords for downloading the file and opening the file to the supervisor by SMS / Email
- e. Random selection of one of the three question papers uploaded for distribution with no manual intervention
- f. Disallowing supervisors to download the question paper where the paper is not scheduled
- g. Disallowing downloading of question papers before or after the time window as defined by examination section based on the server time and as per the time table defined in the pre-examination system
- h. Watermark of the examination venue on downloaded paper to capture evidence of where it was downloaded
- i. Uploading of question paper discrepancies reported by student/examination venues

E. College Affiliation and Institute Recognition Management Functionality

Online Registration and Application Functionalities for College Administration

- a. Applicant organization Registration and Application request for
 - i. Opening New Colleges
 - ii. Extension of Existing Affiliation
 - iii. Permanent Affiliation
 - iv. Change / Addition of Subject, Division, Faculty, Increase of intake
 - v. Change of Name
 - vi. Closure & withdrawal of a College
- b. Provision to capturing following
 - I. Management Information
 - II. College details
 - III. Affiliating Body Registration and Information
 - IV. Courses information
 - V. Current Academic Year Admission Details
 - VI. Bank Account Details
 - VII. Reserve Fund and Audit Details

- VIII. Principal Details
 - IX. Overall Statistical Information
 - X. Staff Information
 - XI. RTI Details
 - XII. Library details with Journals, Books, Magazines, Papers, other information
 - XIII. Sports Director Details
 - XIV. NCC Unit Information
 - XV. NSS Unit Information
 - XVI. General Information
 - XVII. Laboratory Details
 - XXVIII. Information about Seminar / Conference / Symposium / Workshop Organized up to Last Year
 - XIX. Academic Research Information
 - XX. College Infrastructure Details
 - XXI. Information about Principal's Office Infrastructures
 - XXII. Information about Common Infrastructure
 - XXIII. Details about Communication Facilities
 - XXIV. Details about Drinking Water facilities
 - XXV. Details about Class Room and Garden, Sanitary Arrangement
- c. Custom Criterion Definition for Preform A, B and C with Marks system
 - d. Evidence Capturing for each of the above Information

Application Processing Functionalities for University Administration

- a. Online Scrutiny of application
- b. Discrepancies marking and communication to applicant organization about discrepancies
- c. Online resolution of discrepancies
- d. Online verification of application
- e. Expert committee visit date configuration
- f. Online evidence capturing during visit of Expert committee
- g. Expert committee report submission
- h. Online communication of final recommendation/s

Reports for College and University Administration

- a. Applications status report
- b. MIS and various statistical reports for effective decision making

F. Academic Audit

Online Academic Report Submission Functionalities for College Administration

1. Provision to capture following information or auto populate relevant information filled in institute and employee profile module
 - a. Management Information

- b. College details
- c. Affiliating Body Registration and Information
- d. Courses information
- e. Current Academic Year Admission Details
- f. Bank Account Details
- g. Reserve Fund and Audit Details
- h. Principal Details
- i. Overall Statistical Information
- j. Staff Information
- k. RTI Details
- l. Library details with Journals, Books, Magazines, Papers, other information
- m. Sports Director Details
- n. NCC Unit Information
- o. NSS Unit Information
- p. General Information
- q. Laboratory Details
- r. Information about Seminar / Conference / Symposium / Workshop Organized up to Last Year
- s. Academic Research Information
- t. College Infrastructure Details
- u. Information about Principal's Office Infrastructures
- v. Information about Common Infrastructure
- w. Details about Communication Facilities
- x. Details about Drinking Water facilities
- y. Details about Class Room and Garden, Sanitary Arrangement
- z. Students feedback on curriculum delivery, Infrastructure facilities, Library, Teacher performance

2. Online Submission of academic audit report with requisite fees

Academic Audit Functionalities for University Management

- a. Online scrutiny of application
- b. Discrepancies marking and communication to applicant organization about discrepancies
- c. Online resolution of discrepancies
- d. Constitution of committee and their roles configuration in college visit management application
- e. Online verification of application
- f. Expert committee visit date configuration
- g. Online evidence capturing during visit of Expert committee.
- h. Online report submission in prescribed format along with rating
- i. Online communication of final recommendation/s

Reports for College and University Management

- a. Applications status report
- b. Academic audit report
- c. MIS and various statistical reports for effective decision making

Annexure – D: Job Roles in Digital Freelancing

Job Roles in Physical Space

Sr. No.	Sectors/Sub-Sectors	Job Roles
1	eCommerce	eCommerce Consultant
2		Product Photographer (eCommerce)
3		eBanking Correspondent (KYC Agent - PayTm)
4	Creative Digital Arts: Graphic Design	Business Card Designer
5		Poster Designer
6		Book Cover Designer
7		Print/Advt. Designer
8		Story Book Designer
9		Flyer Designer
10		Brochure Designer
11		Magazine Cover Designer
12		Wedding Invitation Designer
13		Corporate Event Invitation Card Designer
14		Packaging Designer
15	Creative Digital Arts: Image Editing	Photo/Wedding Album Designer
16		Custom Gift Designer (Mug, Cap, Keychain etc.)
17		Photo Re-toucher
18		Photo Background Remover
19		T-Shirt Designer
20		Banner Designer
21		Flex / Standee Designer
22		Art Appreciation
23	Data Entry and Data Management	Documentation Assistant

24		Data Entry Operator- Typing/conversion of hard copies to soft copy
25		Image Assisted Data Entry Operator
26		Excel Workbook Manager
27		Chart Creator in Excel
28	Office Productivity	Form Designer
29		Resume & Cover Letter Writer
30	Financial Accounting	Billing Specialist
31		Bookkeeper
32		GST Return Filling Assistant
33		Accounting Assistant
34		IT Return Filling Specialist
35	Marketing	Market Researcher/Surveyor
36		Video Testimonials Creator
37		Brand Identity Designer/Branding Services
38	Event Management	Event Planner (Marriage, Birthday etc.)
39	Travel and Tourism	Tour/Travel Planner
40	Governmental eServices Delivery to Citizens	eCitizenship Services Provider
41	Cyber related Services	Cyber Crime Intermediaries
42	3D Printing	3D Artifacts Printer (3D Printing)
43	eEducation and Educational eContent Development	eContent Developer
44		School ICT Coordinator
45	IT Hardware and Networking	Desktop Assembling Technician
46		PC Hardware Repairing and Maintenance Engineer
47		Printer Sales and servicing Technician
48		IT Networking Technician

49		Network Design and setup Technician
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Job Roles in Cyber Space

Sr. No.	Sector/Sub-Sector	Job Roles
50	Creative Digital Arts: Graphic Design	Logo Designer
51		Icon Designer
52		Graphic Design Essentials
53		Graphic Designer
54		Infographic Designer
55		Certificate Designer
56		Web Banner Designer
57		Cartoon Artist
58		Smartphone Case Customization Artist
59		Calligraphy Artist
60		Presentation Designer
61		Creative Digital Arts: Illustrations
62	Caricature Artist	
63	Sketch Artist	
64	Creative Digital Arts: Image Editing	Photo Editor
65	Creative Digital Arts: Web Designing	Website Mockup Designer
66		Web Design Assistant
67		WordPress Expert
68		Website Builder using Wix
69	3D Digital Art and Architecture	3D Model Designer
70		3D Interior Designer
71		3D Product Designer
72		3D Character Designer

73		3D Environment Designer
74		3D Indoor Lighting Designer
75		3D Environment Lighting Designer
76		3D Map Designer
77		Jewelery Designer
78		AutoCAD Designer Assistant Part 1 (Intro to AutoCAD, Working with CAD)
79		AutoCAD Designer Assistant Part 2 (My First CAD Project (Mechanical) - MFCP 1 & 2)
80		AutoCAD Line Drawing Assistant-1 (Creating Objects)
81		AutoCAD Line Drawing Assistant-2 (My first CAD Project 1 & 2)
82	2D Animation	2D Animation Artist
83		Subtitle Editor
84		Explainer Video Animator
85	Video Editing	YouTube Video Editor
86		Stock Motion Video Editor
87		Whiteboard Animation Video Editor
88		Social Media Video Creator
89		Online Advertising Expert
90		Blog/Article Writer/Content Marketing Writer
91	Social Media Marketing	Web Content Writer
92		Social Media Editor
93		YouTube Thumbnail Artist
94		Vlogger
95		Facebook Campaign Manager

96		SEO (Search Engine Optimisation) Specialist
97		Email Outreach Manager
98	Technical Communication	Transcription Writer
99		Technical Writer
100		Email Designer
101	Data Entry and Data Management	Data Organiser in Excel
102		Basic Dashboard Creator in Excel
103		Basic Financial Analyser in Excel
104		Data Analyser in Excel using Pivot Table
105		Web Scraper
106		Excel Template Designer
107		Scenario Manager in Excel
108		Excel Form Creator
109	eContent, Translations and Voiceovers	Language Translator
110		Proofreader
111		eBook Publisher
112		Voice-Over Artist
113		Audio Editor
114		eBook Writer
115		Product Description Writer
116		Audio Translator
117	eEducation and Educational eContent Development	Intro Videos Creator
118		Concept Explainer Videos Creator
119	eTutoring	eTutor
120	Scratch Programming	Game Developer in SCRATCH
121	Programming and Software Development	Basic App Developer
122		Basic Scratch Programmer

123		Game Tester
124	Office Productivity	IT for Writers
125		Google Expert (Google Suite for Business)
126		Word Template Designer
127		PowerPoint Template Designer
128	Customer Support	Virtual Assistant
129		Live Chat Agent
130		Customer Support Representative
131		Remote Technical Assistant

6. Professional & Vocational Education & Research

Report of the Sub-group on Professional & Vocational Education & Research

Group Members

1. Professor G.D. Yadav, Chair
2. Professor Uday Salunke
3. Professor B.B. Ahuja
4. Shri Niranjan Hiranandani
5. Dr. M.S. Unnikrishnan
6. Shri Milind Satam

Preamble

As is stated in the NEP it should make a complete person who is responsible, progressive, and contributing to nation building and thus every State can take it forward to suit its own needs which will evolve over next few years if 2030 is the target for implementation of the Policy. Because of the Covid-19 pandemic, the digital divide between the affluent and underprivileged became strikingly evident. It has provided us with an opportunity to prepare for the future. Professional and Vocational education ought to gear towards less content, and more towards hands-on learning about how to think critically and solve problems, how to be creative and multidisciplinary, and how to innovate, adapt, and absorb new material in novel and changing fields using novel pedagogy. By 2040, all higher education institutions (HEIs) shall aim to become multidisciplinary institutions and shall aim to have larger student enrolments preferably in the thousands, for optimal use of infrastructure and resources, and for the creation of vibrant multidisciplinary communities. Since this process will take time, all HEIs will firstly plan to become multidisciplinary by 2030, and then gradually increase student strength to the desired levels.

As proposed in the NEP 2020, HEIs will have the flexibility to offer different designs of Master's programmes: (a) there may be a 2-year programme with the second year devoted entirely to research for those who have completed the 3-year Bachelor's programme; (b) for students completing a 4-year Bachelor's programme with Research, there could be a 1-year Master's programme; and (c) there may be an integrated 5-year Bachelor's/Master's programme. Undertaking a Ph.D. shall require either a Master's degree or a 4-year Bachelor's degree with Research.

What the State of Maharashtra can do which others be able to emulate is required. Because of several job opportunities abroad in coming decades due to paucity of technically trained personnel in the developed world, Indian graduates must be trained in the latest knowledge and practical experience which could be in the global context.

RECOMMENDATIONS

A. Definition of Term and Flexibility of Education

1. The professional and vocational education must lead to hands on experience and hence employability. Therefore, the trimester (4-months term) system should be adopted for both UG and PG courses including the integrated master's degree programmes (15-trimesters). This will also allow to make use of infrastructure properly with a lot of flexibility among classroom and work terms.

B. Doubling the Capacity through Classroom and Work Terms

2. In this way, the students admitted in the first trimester are split into two groups in the second trimester, wherein one group stays in the classroom for the next trimester whereas the second group goes for work or internship. So, depending on the type of courses, 3-year (9 trimesters, 6 trimesters in classroom), 4-year (12-trimesters, 8 trimesters in class room) or 5-year (15 trimesters, 9 trimesters in classroom) programmes can be designed. Thus, the students can get 12 months, 16 months and 24 months internship or industrial experience with different industries or organizations. Innovation can be brought into the system. For instance, depending on the type of internship, a student can extend the work term by an additional term or continue in the classroom for another term. A weak student may continue in the classroom.
3. The idea here is not to create job seekers but job creators, entrepreneurs as well as intrapreneurs.
4. The institute can double the capacity due to the trimester system because first and second trimester in a year can have a new batch.

C. Nature of Examination and Assessment Pattern

5. To follow the trimester system, continuous mode of assessment with 70% and 30% weightage for end-trimester should be given. The teacher will have a flexibility of conducting evaluation based on computer tests, multiple choices, objectives, quizzes, etc. and best 7 out of 10 such examinations can be used for 70% weightage. This will dissuade students from rote learning. There will not be any backlog as well as the students would know if they have passed the subject or not during the class assignments.
6. Because of the trimester system, the teacher can also get one term for research or industry consultation or industry placement. The teacher will teach only two trimesters in a year having ample time for research and industrial consultations or upgrading their skills in niche areas. The teacher is provided with many options.

D. Opportunity for Collaboration with Other Institutes at home or Abroad

7. Joint degree or sandwich or dual degree programmes with foreign countries will be possible if the trimester pattern of education is adopted. It can also be extended to other Indian Universities.

E. Establishment of Placement and Internship Cell

8. Each institute should have full time placement and internship office - managed by persons with industrial experience and corporate network. This will act as a liaison with industry, NGOs or social enterprises, and government labs for placement.
9. Creating an internship culture and ecosystem by government policy measures.

F. Honours Degree for Research During Classroom Term

10. It would also be possible to give honours degree if a student takes extra research credits in the same institute while being in the classroom.

G. Multi-Disciplinary or Designer's Degree

11. Since multi-disciplinary or designers' degree (where the student chooses subjects of his liking and synthesizes a degree which has a major component and more than one minor component) is being talked about, different major and minor degrees can be earned by a student depending on interest

and facilities. For instance, a Mechanical Engineering student can take courses in Chemical Engineering or Electrical Engineering or Business Administration.

12. With various greater strides in scientific and technological knowledge and tools, such as big data, machine learning, artificial intelligence, mathematics, computer science, and data science, in conjunction with multidisciplinary abilities across the sciences, social sciences, and humanities, can be offered as minor degrees.
13. Institutes should be involved in creating facilities which can be used to earn extra revenues for serving the local industries.
14. Local industry can also facilitate acquisition of instruments and equipment which can be used for training the students.
15. The CSR funding should be permitted to be used for research and innovation across all disciplines. There is a need for the Central Govt. to increase CSR funding to 3% instead of the current 2%, the extra 1% going for creating infrastructure for higher research and innovation.
16. Vibrant curriculum is possible if the students spending time in industry as interns are consulted for changing the syllabus appropriately. It would be possible to change it from batch to batch.
17. Because of 3-, 4- and 5-year programmes skill related courses can also be added to the main degrees in the lines of the Skill Development Institutes across the country.
18. To provide the structure for internships & to institutionalize apprenticeship like CA - certificate of apprenticeship.

H. Ph.D. Students as Educators

19. The Ph.D. students can also be brought into the trimester pattern by which at least 2-3 trimesters are spent in industry.
20. All research students must be treated as possible educators of tomorrow and should be involved as teaching assistants for two trimesters during their entire Ph D duration.
21. Because of the trimester pattern, teachers who have no Ph D degree can be enrolled for Ph Ds and can spend alternate term in their own institute as teachers and as students the place where s/he is enrolled for the Ph D degree. In this way, the management does not lose a teacher for a long period of time as well as there is a continuity at both places.

I. Chief Minister's Ph D Fellowship

22. There is a need to create Chief Minister's Doctoral Fellowship with support of the various ministries in the State as well as with industries where live problems are assigned to the students. Half of the fellowship will come from industry. In certain cases, the Higher Education department must create fellowships for each discipline to solve local problems.

J. Industry Sponsored Chair Professorship

23. Industry sponsored Chair Professorship for different subjects or expertise should be encouraged in order to lay a permanent base for research and academic excellence.
24. Involve industry or professionals to be part time teachers - TCS / HDFC / part time teachers to come into the system. Industry professionals: part time teachers

K. Importance of Undergraduate Research

25. Students from different institutes can be enrolled for UG research for a term depending on location as well as interest. Thus, a trimester can be used for UG research. This will expose them to good institutes having accomplished faculty and pave way for collaboration among different institutes.

L. Recruitment of Foreign Faculty

26. With the availability of the digital resources, it will be possible to recruit foreign faculty to teach courses in a trimester system wherein the physical presence may not be required. It will also help in ranking of the institutes. Due to the use of ICT, many such programmes can be undertaken to attract quality faculty.

M. Shared e-Resources for Research

27. Availability of research databases, journals, patents, etc. should be freely made by the Government to all registered students through their institutes and ORCID IDs. The concept of one nation one source will be effective.
28. All students must secure an ORCID ID which is a unique identifier like Aadhaar (<https://orcid.org/>). ORCID provides a persistent digital identifier (an ORCID ID) that the user owns and controls, and

that distinguishes one from every other researcher. The researchers can connect their ID with their professional information — affiliations, grants, publications, peer review, and more. They can use it to share their information with other systems, ensuring they get recognition for all their contributions, saving time and trouble, and reducing the risk of errors.

29. Think globally and act locally is an adage which must be at the hub of research problems having both academic punch with industrial and social relevance.
30. Cross-disciplinary research problems must be encouraged by the institutes.

N. IPR Studies and Valuation

31. All students must take a course on Intellectual Property Rights and its Valuation. The teacher must also be able to update themselves on IPR. Courses in IPR and Environmental Laws should be introduced in all professional programmes.
32. The IPR generated in academic institutes should be shared on 50:50 basis and the first right of refusal should be vested in the sponsoring industry. If the institute thereafter monetizes the IPR, the profits should be shared equally by both. The inventors from academia should be given 80% of the proceeds from the IPR and 20% to the institute. It will enable a spirit of innovation among faculty members.
33. Academicians should be allowed to undertake industrial consultations with one day a week for that purpose with 1/3 of the fees to be shared with the institute without using any material facility. If institutes facilities are used, then 50% of the fee should be shared with the institute.
34. It is necessary to create Professorship of Practice where industry practitioners can spend a sabbatical in academia.

O. Ethics, Professionalism, and Moral Education

35. All professional programmes must have courses in Ethics, Professionalism, and Moral Education in order to prepare the students for real life situation and to avoid conflict of interest in their careers.

P. Promoting Girls Education across all Disciplines

36. India can really become a great nation if girls are encouraged to go for university education and given it free, for all desirous and deserving students, up to Master's and Ph D degrees with the participation of industry using their CSR funds. None of the girls should be deprived of education if she has talent and desire. Those who can afford can pay fees or support others if financially well off. It will have great social and economic ramifications resulting into homogenization of society at large and development of an egalitarian society. If girls are provided with an opportunity to educate themselves up to Ph.D. without any restrictions, the direct and indirect benefits will be as follows:

- (i) All families having a girl child will benefit without any financial burden.
- (ii) The marriageable age will automatically go up. It will lead to population control since educated mothers will follow small family norms.
- (iii) The girls will also have a chance to choose their life partners leading to social harmony.

Q. Appointment of Research, Innovation and Translation Board

All institutes must have such a board to promote research and innovation which can be translated into a commercial activity. The suggested constitution of the Board is as follows:

Sr. No.	Name
1	Chairman, Distinguished Alumnus (preferably an entrepreneur, industrialist)
2	Principal/Director, Member Secretary
3	Member, Representative of Management
4	Senior most teacher
5	Member, Distinguished Alumnus (within India)
6	Member, Distinguished Alumnus (from abroad) (if any)
7	Member, Distinguished Alumnus (industry)
8	Member, Distinguished Alumnus (Govt./semi-govt. services)
9	Member, Distinguished alumnus from other college engaged in similar activities

- 10 Member Industries Association such as FICCI, CII, or ICC, ASSOCHAM, etc.
- 11 Member, Senior Deserving Faculty
- 12 Member, Deserving Student
- 13 Member, Relevant Industry

R. Appointment of Thesis Examiners

37. The quality of education and in particular research is enhanced if international yardsticks are applied. Each institute must prepare a database of examiners for evaluation of thesis who are real experts drawn from all over the world. No former research student or relative of the research guide can be appointed as examiners.

The referee reports must be blind, and the identity should never be revealed to the guide or the student.

S. Industry Sponsored Post-Doctoral Research Associates

38. Industry must be encouraged to sponsor post-doctoral research in a company which will result into consultation to faculty as well as development of technology. Tax incentives must be provided.

T. Enhancing the Employability

39. Implement and promote a virtual environment that acts as a HUB to connect employers, career counselors, universities, and VET staff, to better prepare students for work. Technology can work as enabler for this purpose. An online portal with some of the following facilities can be of help to develop the same:

- (a) Sector wise Knowledge bank - Regularly updated literature to update the students about various industry verticals. This reference material can be in the form of reading material, presentations as well as video lectures from Industry experts. Quizzes can be given for self-evaluation or as part of compulsory course work.
- (b) Sector-wise articles and news alerts to keep learners updated about day-today developments in the sectors of their interest.

- (c) Interview preparation videos for grooming as well as sector specific training content.
- (d) Industry Sector-wise Interviews of experts / Seniors, where they share their life journey details as well as give insights about how to succeed in a specific field.
- (e) Interactions with recruiters from various industries where they outline their expectations and traits as required.
- (f) Interviews with alumni, where they brief about their progress and give tips to succeed.
- (g) Life skill development modules from trainers for holistic development of learners.
- (h) Competency tests to help identify employability gaps and get quantitative and qualitative feedback to bridge the employability gap in a constructive manner.
- (i) Online Knowledge hub, where several tutorials / videos can be regularly uploaded about new skills, developments along with other latest developments happening in the business / Industry environment.
- (j) Increase opportunities and incentives for collaboration between industry and institutions of higher education.
- (k) Strengthen links with industry by getting industry players more involved in curriculum design, evaluation and innovation activities.
- (l) Support increased opportunities for student work experience, placements and internships.
- (m) Invite employers to engage.

U. Preparing professionals in cutting-edge areas such as Artificial Intelligence (AI), 3-D machining, big data analytics, and machine learning, genomic studies, biotechnology, and nanotechnology.

40. It is a challenge for institutions to revise the curriculum every few months, specifically in today's fast changing technology environment. Institutes should adapt the modularization approach to develop online / Hybrid modules on AI, Big data, Machine Learning etc., which can be regularly updated and provide them to students as a bouquet of modules under CBCS (Choice Based Credit System). Students can select the modules of their choice and get credits as well as additional certificates. This will encourage students to obtain professional and technical certificates based on industry demand. The platform can be also leveraged to provide industry-oriented modular courses to provide students with immediate employability.

V. Integration of vocational education programmes into mainstream education

41. Clear action plans with targets and timelines should be developed to achieve this goal.

Starting certificate courses in collaboration with industry: Once such organizations and companies are identified which specialize in the above mentioned areas, then educational institutions should collaborate with these organizations in syllabus making, conducting training courses, offering internships and creating job opportunities.

W. Vocational education specific to local demands

42. The following action plan be adopted.

- (a) Awareness programs to change the general attitude towards Vocational Education
- (b) Skill based aptitude tests (SBT) introduction to provide guidance to students for career choice
- (c) Ensuring every child learns at least one vocation and is exposed to several more.
- (d) Incorporating more academic content in vocational courses.
- (e) More Activity-Based Pedagogy - Integration is proposed to improve the teaching of all subjects by replacing didactic classroom instruction with activity-based instruction that links abstract concepts with real-life events and the solving of useful problems. Favored pedagogical techniques in vocational courses include project-oriented methods, student-initiated activities, group work, teaching of abstract or general principles in the context of specific applications, and an emphasis on tutoring or apprenticeship methods rather than lecturing.
- (f) Combining vocational and academic teachers to enhance academic competencies in vocational programs that foster the exchange of knowledge and lead to improved communications between disciplines. Coordination and collaboration between academic and vocational teachers will be provided through activities such as teaming, joint curriculum development, joint planning, and classroom observation.
- (g) Making academic courses more vocationally relevant.
- (h) Curricular "alignment": modifying both vocational and academic courses.
- (i) Occupational clusters, "career paths," and occupational majors.

X. Conversion of well performing institutes into MERU (Multidisciplinary Education & Research University)

43. The State Govt. should undertake this exercise immediately and identify institutes which are above NAAC grade of 3.25. Applications should be invited at least a year in advance asking institutes to convert them in to MERU with a proper planning of vision, mission, values, administration, academic programmes, faculty, research and innovation, incubation, finance, and industry connectivity and creation of entrepreneurs.

Y. Appointment of Consultants

44. The following points also emerged out of the discussion and could be part of other sub-groups.
- (a) Assigning task to world consultants like KPMG/Mckinsey and industry associations like Nasscom for studying and estimating the growing needs of universities and skill training enterprises.
 - (b) To take up teaching and learning in a manner it encourages students to work and study - Early morning / evening classes.
 - (c) Colleges to take up at least 20-30 percent courses on the online platforms - normal times.
 - (d) Double in-take capacity for colleges that have accreditation above 3.25.

6.1 Quality Academic Research

Recommendations of Dr Mashelkar Committee regarding Quality Academic Research

The National Education Policy in its Part II on Higher Education has dealt with Catalyzing Quality Academic Research in All Fields in its Chapter 17.

In Section 17.1, NEP highlights the critical role of knowledge creation and research, growing and sustaining large and vibrant economy, uplifting society and inspiring the nation to achieve even greater heights. NEP, therefore, underlines the need for creating a robust ecosystem of research in Higher Education Institutions (HEIs).

A few recommendations to achieve this goal in the state through HEIs responsible for high quality human resource development for the field of fundamental and applied research and for the field of teaching in colleges and universities are given below:

1. Consortium for Research Olympiad Missions (C-ROM):

- A. In Section 17.8, NEP envisions a comprehensive approach to transforming the quality and quantity of research in India and proposes definitive shifts in school education for identifying students' talents for research. It is, therefore, recommended that all universities (with active participation of their departments and schools) in Maharashtra may form a consortium to start, grow and sustain Research Olympiad Mission in cooperation with all 3+4 (i.e. standard 6 to 12) schools in Maharashtra.
- B. The main objectives of these missions are:
 - a. to identify the students having extraordinary talent and native intelligence, potential and attitude for scholarship, discovery and research and having high levels of curiosity, rational, logical or critical thinking, skepticism, creative and collaborative thinking, communication, inclination for exploration, experiencing and experimentation, humility and integrity, etc. *(Each one may not possess all of these!)*
 - b. to identify students with such potential and proclivities and try to diagnose, through systematic exposures, the match between their passions and the fields of research such as natural and social sciences, mathematics and philosophy, arts and humanities, languages and literature, heritage and culture, engineering and technology, medicine and healthcare, agriculture and veterinary, management and leadership, education and development, law and judiciary, business and commerce, etc.;

- c. to nurture them continuously throughout the years of their school education by way of organizing subject / discipline specific hierarchy of Annual Research Olympiads at school, tehsil, district, region and state levels;
- d. to organize winter and summer schools / camps and such other engaging activities in regional universities or in the state or national institutes, national and international private and public laboratories, centers of excellence, etc. based on their strengths in specific discipline / fields for regional and state level winners so as to give them exposure to research environments, light but formal training in discipline-specific research methodology, research mindset, current trends in the fields, seriously amazing hands-on problem-solving or mini research project experience with researchers, professors, etc. This would, on one hand, help them discover themselves and on the other hand, help universities to identify their future research students with high potential and give an opportunity to build relationship with them and their teachers and parents.

(Let Indian Music Industry not be the only to hunt, spot, nurture and celebrate diverse musical talents across India and right in the childhood for industry's future through the reality shows. Let it not be the only field to attract appreciable investments and involvement of parents for development of gifted.);

- e. to counsel their parents regularly to consider research and innovation as a more appropriate career option for their ward;
 - f. to encourage and regularly guide these winners to participate in national and international Olympiads, etc.;
 - g. to award certificates of appreciation and assignments to be pursued between the two camps;
 - h. to give them certain credits to be recognized in their school evaluation of at least standard 9 to 12 so as to compensate for not pursuing subjects of their low preference.
- C. It is recommended that in order to implement the ROM effectively, each of the regional universities may establish a ROM Center with dedicated team of enthusiastic scholars and managers with adequate funds from the state and / or the university. Their job is to keep building and nurturing future batches of high-potential research students of the university. The heads of the ROMs will be university's representatives in the state-level consortium. The role of consortium is to create synergy among all ROMs.

D. It is also recommended that the accreditation process of Research Intensive Universities should have, in NAAC terminology, an additional criterion with considerable weightage in overall accreditation score, its indicators and qualitative and quantitative metrics for ROM performance.

2. Three or Four Year UG Programs with Research Credits:

- A. The students nurtured under ROMs up to standard 12, may seek admission to 3 or 4-year Bachelor’s Degree Programs in colleges. Such students may be supported by ROMs for further nurturance by offering research credits in these degree programs.
- B. The ROMs of all universities in the state together and in consultation with other concerned faculties may define the Research Oriented 3 and 4-year Bachelor’s Degree Program structures in the following template and get the same approved in the concerned bodies and authorities of the universities for implementation after due preparations:

No. of Mainstream Education Credits (A)	No. of Research Component Credits (C)	** Total No. of Credits for Award (D=A+C)	Normal Duration	Exit Points / Awards
A1 – A2	C1 – C2	22 - 24	One Semester	Certificate
2A1 – 2A2	2C1 – 2C2	44 - 48	Two Semesters	Diploma
4A1 – 4A2	4C1 – 4C2	88 - 96	Four Semesters	Advanced Diploma
6A1 – 6A2	6C1 – 6C2	132 - 144	Six Semesters	BA/BSc/BCom/... Degree
00	44 - 48	176 – 192	Eight Semesters	BA (Hons.)/ BSc (Hons.) / BCom (Hons.)/ BE/ ... Degree

*** (The No. in col. C in fourth year and the Total No. in col. D above is only illustrative and may vary for universities and programs.)*

- C. These Research Credits may be completed in university departments, R&D labs, industries or on the fields of their choice under coordination of ROMs and guidance of experts.
- D. The students who have not come through the nurturance of ROM in school education but interested in taking research credits may have to go through a selection test designed and conducted by ROM.

- E. The students taking research credits may be grouped across departments into multi-disciplinary research teams and may be given multi-disciplinary research projects especially in the 4th year under the guidance of multi-disciplinary mentor teams.
- F. For this they may be given systematic exposure to the megatrends, challenges and opportunities with which the world in general and India in particular are beset such as the ones mentioned in Sections 17.2 and 17.4 and many more.

3. Five-Year Integrated Research Intensive UG-PG Programs:

- A. The universities may take a policy decision of creating 5-year Integrated Post-Graduate Degree Programs preferably in all of their departments and schools.
- B. The students nurtured under ROMs up to standard 12, may be offered admission and scholarships with higher preference to these 5-year integrated PG programs in the Research Intensive University Departments. Such students may be supported by ROMs for further nurturance by offering more research credits in these PG programs.
- C. They should be involved in the ongoing research projects of the departments or associated national R&D labs or industries, etc. and also in the multi-disciplinary research projects.
- D. Those students who have not come through the nurturance of ROM in school education but interested in taking research as a career may have to go through a selection test designed and conducted by ROM.
- E. The students of these programs may be grouped across departments into multi-disciplinary research teams and may be given multi-disciplinary research projects especially in the 4th and 5th years under the guidance of multi-disciplinary mentor teams.
- F. For this they may be given systematic exposure to the megatrends, challenges and opportunities with which the world in general and India in particular are beset such as the ones mentioned in Sections 17.2 and 17.4 and many more.

4. 1 or 2-Year Research Intensive PG Programs:

- A. As proposed in the NEP 2020, HEIs will have the flexibility to offer different designs of Master's programmes: (a) there may be a 2-year programme with the second year devoted entirely to research for those who have completed the 3-year Bachelor's programme; (b) for students completing a 4-year Bachelor's programme with Research, there could be a 1-year Master's programme;

5. Promoting Free Education to Girls up to PhD across all Disciplines:

- A. In order to reduce the gender disparity, girls may be encouraged to go for university education and given it free, for all desirous and deserving female students, up to Master's and PhD degrees. None of the girls should be deprived of education, if she has talent and desire.
- B. It will have great social and economic ramifications resulting into an egalitarian society. If girls are provided with an opportunity to educate themselves up to Ph.D. without any restrictions, there will be many direct and indirect socio-economic and cultural benefits.

6. Conversion of Well-Performing Institutes into Multidisciplinary Education & Research University (MERU)

- A. The State Govt. should undertake this exercise immediately and identify institutes which are above NAAC grade of 3.25. Applications should be invited at least a year in advance asking institutes to convert them in to MERU with a proper planning of vision, mission, values, administration, academic programmes, faculty, research and innovation, incubation, finance, and industry connectivity and creation of entrepreneurs.

7. Chief Minister's PhD Fellowship:

- A. Chief Minister's Doctoral Fellowship may be instituted with support of the various ministries in the State as well as with industries where live problems of the state are assigned to the students. Portion of the fellowship amount may come from industry. In certain cases, the Department of Higher Education and Technical Education may create fellowships to solve local problems.

8. Industry Sponsored Post-Doctoral Research Associates:

- A. Industry may be encouraged to sponsor post-doctoral research which may result into consultancy to faculty as well as development of technology. Tax incentives may be provided.

9. Industry Sponsored Chair Professorship

- A. Industry sponsored Chair Professorship for different subjects or expertise may be encouraged in order to lay a permanent base for research and academic excellence.

10. Shared e-Resources for Research

- A. Availability of research databases, journals, patents, etc. should be made free by the Government to all registered students through their institutes.
- B. All students must secure an ORCID ID which provides a persistent digital identifier that the user owns and controls, and that distinguishes one researcher from every other. The researchers can connect their ID with their professional information, affiliations, grants, publications, peer review, and more. They can use it to share their information with other systems, ensuring they get recognition for all their contributions, saving time and trouble, and reducing the risk of errors.

11. Appointment of Research, Innovation and Translation Board

- A. All institutes engaged in research may constitute such a board to promote their research and innovation and translate it into a commercial activity. The Board may consist of institute's head, representatives of management, faculty, alumni, industry, industry association, students, etc.

12. Appointment of Thesis Examiners

- A. The quality of education and in particular research is enhanced if international yardsticks are applied. Each institute must prepare a database of examiners for evaluation of thesis who are real experts drawn from all over the world.
- B. No former research student or relative of the research guide can be appointed as examiners.
- C. The referee reports must be blind, and the identity should never be revealed to the guide or the student.

13. Miscellaneous Recommendations

- A. Institutes should be involved in creating facilities which can be used to earn extra revenues for serving the local industries.
- B. The CSR funding should be permitted to be used for research and innovation across all disciplines. There is a need for the Central Govt. to increase CSR funding to 3% instead of the current 2%, the extra 1% going for creating infrastructure for higher research and innovation.
- C. Research funding under NRF to the state universities may be given most punctually, with least administrative hassles and through open, transparent, impartial and equitable process to all the disciplines.
- D. The fellowship amounts may be disbursed to Research Scholars most punctually.
- E. Adequate funds may be disbursed for publishing one's research in open access journal.

6.2 Vocational Education

Recommendations of Dr Mashelkar Committee regarding Vocational Education

A. Preamble:

National Education Policy (NEP) 2020 in its Part II on higher education has dedicated Chapter 16 on “Reimagining Vocational Education”. The rationale and objectives given in this chapter are summarized below in the context of unemployment and un-employability of graduates in India:

1. As the percentage of workforce in India in the age-group 19-24 that received formal vocational education is only 5% during the 12th Five-Year Plan, there exists urgency to increase it. (*This in USA is 52%, in Germany 75% and in South Korea 96%!*)
2. As vocational education is perceived inferior to the mainstream education and also perceived to be pursued by those unable to cope-up with mainstream education, there is an urgent need for re-imagining how vocational education should be offered so as to overcome the social status hierarchy.
3. Vocational education programs, therefore, need to be integrated into mainstream education in all Higher Education Institutions (HEI) in all the Bachelor’s Degree programs.

B. Enablers in National Skill Development Ecosystem:

Before proceeding to offer recommendations to implement the above mentioned policy objectives, it may be prudent to summarize the favourable and enabling conditions that already exist in national skill development ecosystem which will help colleges to integrate vocational education into their mainstream education with full financial support from the Government:

1. Ministry of Skill Development & Entrepreneurship, Government of India has set-up 37 Sector Skill Councils (SSCs) as shown in Table – 1 below:

Sector ID	Sector Name	Sector ID	Sector Name
1	Automotive	21	Leather
2	Apparels	22	Logistics
3	Aviation & Aerospace	23	Management
4	Beauty & Wellness	24	Media
5	BFSI	25	Mining
6	Capital Goods	26	Hydrocarbon
8*	Coating & Painting	27	Plumbing
9	Construction	29*	Life Sciences
10	Domestic Workers	30	Power
11	Electronics & Hardware	31	Rubber
12	Food Processing	32	Retail
13	Agriculture	33	Sports
14	Furniture & Fittings	34	Strategic Manufacturing
15	Gems & Jewellery	35	Healthcare

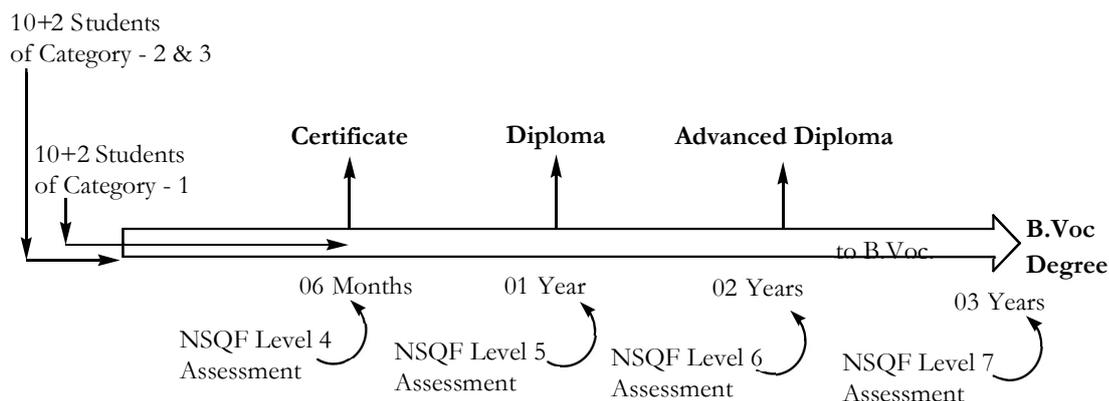
Sector ID	Sector Name	Sector ID	Sector Name
16	Green Jobs	36	Telecom
17	Handicrafts	37	Textiles & Handlooms
19*	Infrastructure Equipment	38	Tourism & Hospitality
20	Iron & Steel	39	IT-ITES
	*Sectors 7, 18 and 28 have been discontinued.	40	Person with Disability

2. All SSCs together have approved hundreds of Job Role-Based skill development courses called as Qualification Packs (QPs) which are segregated from entry level 1 to advance research level 10 as per National Skills Qualification Framework (NSQF) as per National Occupational Standards (NOS). The Level Descriptor is shown in Table - 2 below:

(Ref.: <https://www.nqr.gov.in/sites/default/files/NSQF%20Gazette%20Notification.pdf>)

NQSF Level of Course	Who can take admission
1	No formal education required
2	No formal education required
3	Class 8 th Pass
4	Class 10 th Pass
5	Class 12 th Pass
6	First Year
7	Second/ Third Year
8	Graduate
9	Post-Graduate
10	Post-Graduate

3. An academic progression for the students in vocational stream as specified by UGC is illustrated below:



4. As an illustration, awards could be given at each stage as per Table - 3 below for cumulative credits awarded to the learners in skill based vocational courses.

NSQF Level	Skill Component Credits	General Education Credits	Total Credits for Award	Normal Duration	Exit Points / Awards
7	108	72	180	Six Semesters	B.Voc. Degree
6	72	48	120	Four semesters	Advanced Diploma
5	36	24	60	Two semesters	Diploma
4	18	12	30	One semester	Certificate

(Ref.: https://www.ugc.ac.in/pdfnews/6556003_Guidelines-for-providing-Skill-Based-Education-under-NSQF.pdf and https://www.ugc.ac.in/pdfnews/6925009_skillsnqf.pdf)

5. The Table – 4 below shows the sector-wise and level-wise number of Qualification Packs (QPs) for 33 out of 37 sectors:

Sr. No.	Sector Name	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Total No. of QPs
1	Agriculture	0	3	15	44	10	3	4	0	0	0	79
2	Apparel	0	0	5	20	14	3	3	0	0	0	45
3	Automotive	0	16	17	50	38	48	17	2	0	0	188
4	Beauty & Wellness	0	0	7	10	14	12	2	0	0	0	45
5	BFSI	0	1	1	10	0	0	0	0	0	0	12
6	Capital Goods	0	16	13	21	6	0	0	0	0	0	56
7	Construction	8	17	18	24	13	13	0	0	0	0	93
8	Domestic Worker	0	0	4	0	0	0	0	0	0	0	4
9	Electronics	0	0	32	78	28	1	0	0	0	0	139
10	Food Processing	0	0	1	21	4	1	0	0	1	0	28
11	Furniture & Fittings	0	2	0	3	0	0	0	0	0	0	5
12	Gems & Jewellery	1	5	32	22	17	5	4	0	0	0	86
13	Green Jobs	0	0	1	4	0	0	0	0	0	0	5
14	Healthcare	0	0	5	20	3	0	0	0	0	0	28
15	Handicrafts	0	1	34	56	8	1	0	0	0	0	100

Sr. No.	Sector Name	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Total No. of QPs
16	Iron & Steel	1	6	25	11	6	0	0	0	0	0	49
17	IT-ITES	0	0	0	9	18	1	47	3	1	0	79
18	Infrastructure	0	0	0	14	3	0	2	0	0	0	19
19	Leather	0	8	0	36	6	0	0	0	0	0	50
20	Logistics	0	4	14	13	3	0	0	0	0	0	34
21	Life Science	0	2	5	13	32	8	1	0	0	0	61
22	Media & Entertainment	0	0	11	16	11	7	6	0	0	0	51
23	Mining	1	0	4	30	2	0	0	0	0	0	37
24	Plumbing	1	4	9	2	2	2	3	2	0	0	25
25	Power	0	2	2	5	2	0	0	0	0	0	11
26	Retail	1	1	1	3	2	2	1	0	0	0	11
27	Rubber	0	0	8	104	28	8	0	0	0	0	148
28	Sports	0	0	0	3	1	0	0	0	0	0	4
29	Security	0	0	0	3	3	4	0	0	0	0	10
30	Telecom	0	0	5	17	8	5	2	0	0	0	37
31	Textile	0	0	6	44	10	0	0	0	0	0	60
32	Tourism & Hospitality	1	3	11	22	12	9	5	0	1	0	64
33	People with Disability*	0	0	0	0	0	0	0	0	0	0	0
	Total	14	91	286	728	304	133	97	7	3	0	1663

It may be noted that at present, in 37 sectors put together, there exist more than 1269 QPs / Job Role-Based Skill Development Courses which are at NSQF Levels 4, 5, 6 and 7 i.e. matching with the first, second and third years of Bachelor's Degree Program. It means there exists many opportunities for the college students to enhance their employability.

(The details of QPs at NSQF Level 1 to Level 10 are available at <https://kaushalya.mahaswayam.gov.in/SectorSkillCouncildoc.pdf>)

6. The curriculum, equipment required at the Training Center, course category and other details of the QPs can be seen in a more systematic and structured manner at the following link:

<https://skillmissionbihar.org/domain-skilling/domain-based-fresh-skilling/courses/courses-under-domain-skilling>

7. Any individual can take admission to these courses in an approved skill development center or Training Center subject to fulfilment of the eligibility conditions specified for each QP. Government of India desires to skill 40 Crore Indians under Skill India Mission.
8. All these courses / QPs are sponsored either by central or by the state government. As a result, student admitted to any of these courses by an approved skill development center is not required to pay any fees either directly or indirectly.
9. The skill development center also referred to as Training Center (TC) gets payment for training the students from the central or the state government as per the Cost Norms published by National Skill Development Corporation (NSDC) of Ministry of Skill Development and Entrepreneurship. The Common Cost Norms applicable wef. January 1, 2021 can be seen at following link: https://nsdcindia.org/sites/default/files/files/Common_Norms.pdf

The costs payable by the Government to the TC wef. January 01, 2021 are Rs. 49.00, Rs. 42.00, and Rs. 35.10 per student per hour of training for courses / QPs listed in Category I, Category II, and Category III respectively. These rates are revised annually.

Model Payments to TCs for few QPs are shown in the Table - 5 below as illustrative examples. The last three columns indicate 1st, 2nd and 3rd stages of payment receivable. Normally,

- 1st stage payment gets due between admission and completion of training,
- 2nd stage payment gets due upon completion of assessment and passing the QP successfully and
- 3rd stage payment gets due upon job-placement of the student.

Sector	QP Code	QP Name	Category	Rate (in Rs.)	Duration (in hours)	Min Batch Size	Total Training	1st Stage Payment @20% in	2nd Stage Payment @50% in	3rd Stage Payment @20% in
IT-ITeS	SSC/Q2212	Domestic Data Entry Operator	2	42	400	20	33600	10080	168000	67200
BFSI	BSC/Q0910	Goods & Services Tax (GST) Accounts Assistant	3	35.1	100	20	70200	21060	35100	14040
Aerospace and Aviation	AAS/Q0605	Airline Cabin Crew	1	49	480	20	47040	14112	235200	94080

Sector	QP Code	QP Name	Category	Rate (in Rs)	Duration (in hours)	Min Batch Size	Total Training	1st Stage Payment @30% in	2nd Stage Payment @50% in	3rd Stage Payment @20% in
Apparel	AMH/Q1210	Assistant Fashion Designer	1	49	500	20	490000	147000	245000	98000
Beauty & Wellness	BWS/Q0102	Beauty Therapist	2	42	350	20	294000	88200	147000	58800
Electronics	ELE/Q4606	Field Technician Networking And Storage	2	42	240	20	201600	60480	100800	40320
Media & Entertainment	MES/Q0206	Advertising Operations Coordinator (Digital)	3	35.1	240	20	168480	50544	84240	33696
Life Sciences	LFS/Q0401	Medical Sales Representative	2	42	491	20	412440	123732	206220	82488
Textile	TSC/Q7306	Jacquard weaver - Handloom	1	49	300	20	294000	88200	147000	58800
Tourism and Hospitality	THC/Q0102	Front Office Associate	3	35.1	340	20	238680	71604	119340	47736
Green Jobs	SGJ/Q0107	Solar PV Business Development Executive	1	49	140	20	137200	41160	68600	27440

Sector	QP Code	QP Name	Category	Rate (in Rs)	Duration (in hours)	Min Batch Size	Total Training	1st Stage Payment @30% in	2nd Stage Payment @50% in	3rd Stage Payment @20% in
Food Processing	FIC/Q9002	Food Regulatory Affairs Manager	3	35.1	240	20	168480	50544	84240	33696
Retail	RAS/Q0108	Retail Associate cum Cashier	2	42	350	20	294000	88200	147000	58800

10. Currently there are three types of programs under which NSQF complaint QPs are offered:

- a. Central Sponsored Centrally Managed (CSCM),
- b. Central Sponsored State Managed (CSSM),
- c. State Sponsored and State Managed (SSSM).

Training Center Registration Processes for these 3 types are given on the NSDC website.

11. The facilities and resources with indicative specifications required for getting approval as Training Center are enlisted below:

- Training Centre Area: Minimum usable area from 1500 Sq. Ft to 3000 Sq. Ft. with classroom and lab of predefined size.
- Infrastructure & Equipment: Training centres must have all the required infrastructure and equipment as per job role.
- Dedicated Training Centre: The Centre must have dedicated area for training centre project which means no other course should run in that area.
- Washroom Facility: Training centre must have separate washrooms for Boys & Girls.
- Non-IT Courses: Training Centre must be equipped with at least 6 computer systems connected to Internet.
- IT Courses: Training Centre has to be equipped with minimum 15 computer systems connected to Internet.
- Training of Trainers (TOT): Each training centre should have a TOT certified trainer for each job role with student to trainer ratio 30:1
- Biometric Attendance: Biometric devices (Aadhaar enabled) for capturing students' and trainer's attendance at the training centres.
- Placement Desk & Placement Co-ordinator
- SSC Certified Training Material
- Pantry & Parking Facility
- Overhead Projector in All Classes
- CCTV Camera in Class, Lab & Reception
- Power Backup
- RO / Water Purifier

- Library Facility
 - Fire Fighting Equipment
 - First Aid Kit
 - Scheme Oriented Marketing Material
12. Any Proprietary, Partnership, Public or Private Limited, LLP, NGO, ITI, School, College, Semi Government and Government Organisations can apply for the registration of Training Center.
 13. The training and assessment of the students are carried out as per norms stipulated by respective Sector Skill Councils.
 14. Keeping in view the local demand as well as local expertise and resources at command, a college (training center) may design its own vocational course / QP under a particular sector and seek approval for it from the respective Sector Skill Council and offer it subsequently by following the norms given in the document available at:
https://www.nsdindia.org/sites/default/files/files/QP_NOS_Development_Manual.pdf

C. Recommendations:

1. In order to implement NEP objectives effectively, all the universities (and autonomous colleges) across Maharashtra may take a policy decision to integrate vocational education component as a mandatory component into their mainstream education for all students of all non-professional Bachelor Degree Programs such as BA, BSc, BCom, etc. wef. the academic year 2022-23.
2. By 2030, All universities may attempt to ‘mainstream the vocational education’ and ‘vocalionalize the mainstream education’ as envisioned in “Technology Roadmap: Education – TIFAC Report 2017” by proper integration of the two. ‘Know-What’ and ‘Do-What’ should go hand in hand with ‘Know-How and ‘Do-How’ in all Bachelor’s Degree Programs.

University’s degree education may, therefore, include knowledge, skills, competencies, character qualities, attitudes, and values critical for survival, development and empowerment of students and society in 21st century.

This integration of vocational education into mainstream education will trigger the process of “vocations” becoming “professions” and thereby giving dignity to vocations as envisioned in “Technology Roadmap: Education – TIFAC Report 2017”. The integration strategy may be able to simultaneously address the problem of unemployment and un-employability of educated youth, relevance of higher education and that of unjust social hierarchy and disparity based on vocations.

3. All the universities may also take a policy decision to align the mandatory vocational component of their mainstream non-professional Bachelor’s Degree Programs with the national skill development ecosystem developed and governed by Ministry of Skill Development and Entrepreneurship (MSDE), Government of India.
4. This decision to align with national system may lead to many benefits such as:

- a. Sponsorship of central and/or state government to colleges for conducting vocational education.
- b. Free and standardized vocational education in the form of Job Role-Based Courses to all students making them job-ready and hence enhancing their employability.
- c. Students will get many Job Role-Based Course completion certificates from Government of India. This may give added credibility to those seeking employment. This will also bring all students on an identical national level-playing field and help many of them overcome the disadvantage in job market due to their rural background.
- d. Students of all non-professional Bachelor's Degree Programs will share the same pool of vocational courses and thereby reduce compartmentalization and fragmentation of higher education.
- e. Reimbursement of training costs to colleges with annually revised rates will make vocational education sustainable.
- f. All the universities and colleges would at once inherit hundreds of ready to deliver standardized Job Role-Based Courses. They neither have to design the curricula nor carry out the assessments of the same.
- g. Easy credit-portability and student-mobility across colleges or universities.
- h. Employers will enjoy ease in recruitment due to uniform national standard of training, assessment and certification.
- i. Soon after the national system of NSQF and National Occupation Standards (NOS) aligns with the International Standard Classification of Occupations (ISCO) of International Labour Organization (ILO), the students will enjoy greater international employment opportunities and easy mobility in international labor market due to automatic recognition of their prior learning.
- j. As and when the vocational education gets integrated into school education, student already having many skills at NSQF levels 1, 2 and 3 in schools will enter colleges and thereby colleges may get better equipped students for their vocational component.

This will be very significant benefit because demographic forecasts have shown that Indians will be the largest Diaspora Community in the world by 2035 as young Indians will be the workforce of the world.

5. All the universities may constitute their own 'Vocational Education Faculty' for entire coordination of vocational education and its integration into mainstream education in an effective and time-bound manner in the respective universities.
6. The Deans of this faculty of all universities should together arrive at a uniform interpretation of UGC guidelines for academic progression as per credit accumulation and accordingly together decide a state-wide uniform standard for number of credits to be given for completion of each of the available QPs and also for new QPs being added by various Sector Skill Councils from time to time. This will ensure credit portability and student mobility across universities.
7. The Vocational Education Faculty may offer continuing guidance to colleges, training of trainers for QPs as well as maintain a single-point interface and active liaison with Sector Skill Councils, Ministry of Skill Development and Entrepreneurship, Government of India and Department of Skill Development, Government of Maharashtra as well as other government departments and with

enterprises, businesses and industries in the 37 sectors mentioned in para B1 above. This will help smooth integration of vocational education into mainstream education.

8. The Deans may also spread best practices developed by some of the colleges who may be already registered as TCs and conducting skill development courses / QPs under Skill India Mission.
9. The Deans of the Vocational Education Faculties of all universities in the state may give wider publicity in the press and electronic media, on the university website as well as in social media to the university's policy for integrating vocational education into mainstream education for improving skills as well as employability of their graduates.
10. The Vocational Education Faculties of all universities together and in consultation with other concerned faculties may define the non-professional Bachelor's Degree Program structures in the following template and get the same approved in the concerned bodies and authorities of the universities for implementation wef. academic year 2022-23:

No. of Mainstream Education Credits (A)	NSQF Level of Vocational Component Credits (B)	No. of Vocational Component Credits (C)	** Total No. of Credits for Award (D=A+C)	Normal Duration	Exit Points / Awards
A1 – A2	4	C1 – C2	22 - 24	One Semester	Certificate
2A1 – 2A2	5	2C1 – 2C2	44 - 48	Two Semesters	Diploma
4A1 – 4A2	6	4C1 – 4C2	88 - 96	Four Semesters	Advanced Diploma
6A1 – 6A2	7	6C1 – 6C2	132 - 144	Six Semesters	BA/BSc/BCom/... Degree

****** (The Total No. in col. D above is only illustrative and may vary for universities and programs)

The universities may keep at least 20% of the total number of credits of appropriate NSQF level as shown in the table above to be mandatorily the Vocational Component Credits required for award of certificate, diploma, advanced diploma or degree.

The university will define only the structure as per the template shown in the table above. The individual college will decide which QPs to offer in that structure against the Vocational Component Credits. However, the colleges shall strictly abide by the overall structure in the template.

Many QPs normally include about 40 hours of common component of entrepreneurship and soft skills. While defining the structure, university may include a few credits to entrepreneurship, soft skills and workplace readiness skills and avoid their duplication in each of the QPs. As a result, a

student may be able to get comfortably trained in about 3 to 5 QPs during 3-year Bachelor's Degree Program and enhance his/her employability.

11. All colleges may constitute a Department of Vocational Education and decide from time to time which of the nationally available QPs they would like to offer in their college under the Bachelor's Degree Programs.
12. They may also design and deliver their own QPs after getting approval of appropriate Sector Skill Council as described in para B14 above. The Dean of Vocational Education Faculty may coordinate with NSDC or Sector Skill Councils for getting approvals for the proposals of all colleges well in advance before commencement of each academic year.
13. All colleges may set-up the training facility with infrastructure and resources as per the specifications mentioned in para B11 above for the respective QPs. In view of the repurposing of its existing infrastructure and in view of the 'per student per hour' cost reimbursement norms shown in para B9 above, the set-up may not bring undue financial burden on the college.
14. All colleges may carry out the training and continuing assessments of their students for the approved QPs as per the norms specified by the respective Sector Skill Councils.
15. The colleges in the vicinity / cluster or in the same city, may offer diversity of QPs so that students in that area will have greater choice of Vocational Component Credits, if either of the neighbouring colleges allows its students to undergo the QPs offered by the others.
16. The colleges may seek a partnership with macro, micro, small or medium enterprises, businesses, industries, etc. for providing faculty as well as practicing places for actual work experience for effective vocational education of their students. The colleges in mofussil areas may also seek faculty participation through virtual classrooms.
17. Based on the assessment, the Sector Skill Councils issue the Government of India Certificates to the successful students. Universities may in consultation with these councils decide to be co-certifying authority. The universities shall, however, not participate in the assessments for QPs leading to Vocational Component Credits. The Sector Skills Councils' assessment data may be shared with universities for award of vocational component credits from time to time.
18. The Vocational Education Department of the college may undertake the student placement activity. This will allow the college to claim the 3rd and final stage of payment of 20% from the government as shown in para B9 above and also improve the brand of the college and build more loyal alumni while building strong bridges of collaboration with the world of work.
19. If as per Ministry of Skill Development and Entrepreneurship (MSDE) norms, a student has to keep a gap of few months between the completion of one QP and start of the next, Department of Higher and Technical Education, Government of Maharashtra may liaise with MSDE and obtain appropriate relaxation for higher education students in Maharashtra so that the students will be able to take vocational component in each of the six semester.

In case such a relaxation is not granted, the template shown in para C10 above may be suitably modified to ensure the stipulated gap between consecutive QPs. In that case there could be two options as shown below:

- a. The students may take longer duration QPs in alternate semesters and complete them over two semesters. University may give credits shown in the template for half the QP in one semester and for remaining half in the next semester.
- b. If the students wish to take shorter duration QPs, they should do so in alternate semesters.

The best way, however, is to seek relaxation for the gap.

7. Inclusion and Equity

Preliminary Draft

Report of the Sub Group on Equity and Inclusion in Higher Education

Sukhadeo Thorat

The New Education Policy 2020 recognised the issue of Equity and Inclusiveness in Higher Education. It inclusiveness it identified the groups such as scheduled tribes, scheduled castes, other backward castes, women ,physically handicap and designated them as “Socio-Economically Disadvantaged Groups”(SEDGs) . It emphasised that “entry into quality higher education experiences can open up a vast array of possibilities that can lift both individuals as well as communities out of cycles of disadvantage. For this reason, making high-quality higher education opportunities available to all individuals must be among the highest priorities This Policy envisions ensuring equitable access to quality education to all students, with a special emphasis on SEDGs.”It goes on to add that “exclusion of SEDGs from the education system are common across school and higher education sectors. Therefore, the approach to equity and inclusion must be common across school and higher education; furthermore, there must be continuity across the stages to ensure sustainable reform. Thus, the policy initiatives required to meet the goals of equity and inclusion in higher education must be read in conjunction with those for school education.”

However the NEW believe that there are certain facets of exclusion, both causal and in their effect that are particular to or substantially more intense in higher education. These must be addressed specifically for higher education. These include:

- > lack of knowledge of higher education opportunities,
- > economic opportunity cost of pursuing higher education,
- > financial constraints,
- > admission processes,
- > geographical barriers,
- > language barriers,
- > poor employability potential of many higher education programmes, and
- > lack of appropriate student support mechanisms.

For this purpose, the NEP proposed additional actions that are specific to higher education. It proposed the action separately to be adopted by all Governments and Higher Education Institution (HEIs) .

The actions proposed for Government are follows :

Steps to be taken by Governments include the following

- Earmark suitable **Government funds** for the education of **SEDGs**;
- Set clear **targets for** higher GER for SEDGs;
- Enhance **gender** balance in admissions to HEIs;
- Enhance access by building more high-quality HEIs in **aspirational districts and Special Education Zones containing larger numbers of SEDGs**;
- Develop and support high-quality HEIs that **teach in local/Indian languages** or bilingually;
- Provide more **financial assistance and scholarships to SEDGs** in both public and private HEIs;

- Conduct **outreach on higher education opportunities and scholarships among SEDGs;**
- Develop and support **technology tools for better participation and learning outcomes.**

The action is proposed for the SEDGs and women, the group which suffer from low attainment in higher education. It suggest that target should be fixed for brigading the gender gap and the gap between SEDGs and other advanced groups .For this purpose it proposed allocation of suitable funds , among other things it should include financial assistance and scholarship to SEDGs and women both in public and private Higher education institutions , and also provide support for technology tools for better participation and learning outcomes .

It also suggest to increase the access to higher education by increasing the number of Higher education institutions in districts and zone with concentration of SEDGs population .It particularly emphasized the need to teach in local/Indian languages or bilingually;

Steps to be taken by all HEIs

- **Mitigate opportunity costs and fees** for pursuing higher education;
- Provide **more financial assistance and scholarships** to socio-economically disadvantaged students;
- Conduct **outreach on higher education opportunities** and scholarships;
- Make **admissions processes more inclusive;**
- Make **curriculum more inclusive;**
- **Increase employability potential** of higher education programmes;
- Develop more degree courses taught in **Indian languages and bilingually;**
- Ensure all buildings and facilities are **wheelchair-accessible and disabled-friendly;**
- Develop bridge **courses** for those students that may come **from disadvantaged educational backgrounds;**
- Provide **socio-emotional and academic support and mentoring** for all such students through suitable **counselling and mentoring** programmes;
- Ensure faculty, counsellor, and student gender and **gender-identity sensitisation** and inclusion in all aspects of the HEI, including in **curricula;**
- Strictly enforce all **no-discrimination and anti-harassment rules;**
- Develop Institutional Development Plans that contain specific plans for action on increasing participation from SEDGs, including but not limited to the above items.

Thus the HEIs are proposed to charge fee which is affordable, freship and financial assistance and scholarships to enable the students from socio-economically disadvantage students to access the higher education.

It asked for the **admission and curriculum more inclusive by the HEIs.**

It expect the HEIS to recognised the academic need of the socially disadvantage students and propose bridge courses and remedial academic assistance in English language and in core subjects.

It suggests the HEIs to provide socio-emotional and mentoring through suitable **counselling and mentoring** programmes;

Enforce all **no-discrimination and anti-harassment rules;** and **gender-identity sensitisation** and inclusion in all aspects including in **curricula;**

In order to undertake these activities it proposed two Funds namely (a) Gender Inclusive Fund and (b) Funds for socially and economically Disadvantage Groups

This looks a very useful agenda .However the NEP only make a list of the actions to be taken by Government and HEIs .It does not identify the problems faced by the socially and economically disadvantages groups ,women and the physically handicapped students. The suggestions are not based on the study of their problems . It only make general suggestions. This would have been possible for the Committee to know the gap in the educational attainment of different groups in term of enrolment rate, drop rate and their academic and economic difficulties. The committee could have studied the present schemes and programs for these groups and then suggest the strengthening of present set up and also proposed new ones.

Therefore in order to recommend to the Maharashtra actions by Government and the HEIs ,it is necessary that we get some idea about the situation of these groups in Maharashtra, with respect to their educational attainment , the problem that they face in terms of drop out , languages,financial assistance and scholarships and in access to admission in private educational institutions with the available data .What follows is the analysis of the status of the socially and economically disadvantage group and women for the recent year , 2017/18,which would form the basis policies for Equity and inclusiveness in higher education . .

Status of Equity and Inclusiveness in Higher Education in Maharashtra

The NEP on the Equity and inclusiveness refers to economically deprived and socially deprived group ,including the women and physically handicapped students .It proposed measures where by the education attainment rates of these groups are to be brought on par with other educationally advances groups . The question is: where do these group stands toady compared with others in Maharashtra .Once we know the gap , government can developed policies to reduce the gap between economically and socially less advance groups in higher education .The National Sample survey for the year 2017/18 provides the educational attainment rate of ST,SC,OBC , Minorities and for male and female

Educational Attainment

The educational attainment rate in higher education is measured by enrolment ratio ,which is the ratio of students in the higher education institutions in the age 18 to 22 years to population of persons in that age group.

Economically weaker sections

In 2017/18 at State level the enrolment rate (GER) in higher education is 34 percent. However enrolment rate is low for low income persons compared with high income persons. (monthly per capita expenditure is taken as substitute for income per capita) . The GER for the lowest income group (quintile 0-20 percent) is about 22 percent and it progressively increases to 24 percent for second quintile, 29 percent for third quintile, 33 percent for forth and finally 60 percent for fifth quintile.(Table 1(a)) Thus, there is clear negative relationship between the income level and educational attainment to higher education in term of enrolment rate. The GER of lower income group is almost three times less compared with highest income group.

The disparities in GER by income group is also reflected in occupations. The GER is 16.7 percent for the casual wage labour which is more than two time less compared with self employed (36%) and regular salaried workers (39.2%) (Table 1(b)

Table 1 (a) : Gross Enrolment Ratio in Higher Education: 2017-18

Social groups	GER (%)
0-20	21.9
20-40	24.1
40-60	29.0
60-80	33.1
80-100	60.3
Total	34.1

Source: 75th round NSS data, 2017-18

Table 1 (b) Gross Enrolment ration in Higher Education: 2017-18

Social groups	GER (%)
SE	36.0
RS	39.2
CL	16.7
Total	34.1

Source: 75th round NSS data, 2017-18

Gender disparities in enrolment rate:

The disparities in GER between male and female is relatively less .In 2017/18 The GER for female is 27 percent , which is less almost by 12 percentage points compared with male , the GER of male being about 39.4 percent.

The GER is also low in rural area, which is 29.6 % compared with 40 % in rural area ,which is 11 percentage point higher than rural area .(Table 2)

Table 2 : Male Female Gross Enrolment rate in Higher Education: 2017-18

Social groups	GER
Rural	29.6

Urban	39.9
Gender	
Male	39.4
Female	27.5
Total	34.1

Source: 75th round NSS data, 2017-18

Disparities by Caste, and tribes

There are obvious disparities between the caste and tribal and high castes groups. The enrolment of ST and Sc is low compared with OBC and high caste . As against the State average of 34 percent, the GER is 28.6 percent for ST, 29.8 percent for SC, 36 percent for OBC and 40 percent for high castes . Thus, GER of STs and SCs is 11 percentage points less compared with high castes .The GER of OBC is higher than SC/ST by about 5 percentage points , but it is less than higher caste by 5 percentage points . The graded inequality between the caste groups is quite evident; the GER reduces as we move from high caste to OBC to SC and finally to ST . (Table 3)

The effect of occupation (income) on education attainment is visible by caste .The GER is low for the casual wage labour for all caste .But even among the casual wage labour ,the GER of SC/ST and OBC is lower than high castes .(Table 4)

Table 3: GER in Higher Education: 2017-18

Social groups	GER (%)
ST	28.6
SC	29.8
HOBC	35.6
HHC	39.9
Muslim	21.7
Buddhists	34.7
Total	34.1

Source: 75th round NSS data, 2017-18

Table 4:GER (%) by Occupational Groups in Higher education : 2017-18

HE	SE	RW	CL	Total
ST	21.3	31.4	3.7	28.6
SC	39.3	33.7	18.8	29.8
Hindu OBC	40.6	38.1	18.3	35.6
Hindu Others	37.3	43.8	29.5	39.9
Muslim	23.3	31.0	9.8	21.7
Buddhist	47.5	44.3	22.4	34.7
Total	36.0	39.2	16.7	34.1

Source: 75th round NSS data, 2017-18

Religious Groups:

In case of religious groups, the GER is the lowest for the Muslim, (21.7%) compared with state average and also compared with SC/ST and Buddhist. It appeared that there is clear divide between the low and high income classes among the Muslim. The GER is 11 percent for lowest income group and it is about 14 % to 21 % in middle income groups , but it jump to 48 % for the highest income group .Thus the GER of lowest income class among the Muslim is almost five time less compared to top income class among the Muslims. (see tables 3 and 4)

The above analysis for 2017/18 revealed significant disparities based on income, caste, ethnic, religious and gender identity. It emerged that the GER is the lowest for the low income group. It is also low for ST followed by SC and OBC. It is also low for the Muslim , and it so much so that the Muslims GER is almost similar to that of ST.

Privatization and Unequal Access to Self –Financing Education Institution

The higher education institutions are of three types , namely government ,private aided and un aided or self financing .To capture the access of the students to the three types of institutions, we take the percentage of each category of institution in total students for 2017/18 which gives the access of students to self-financing education institutions vis-à-vis private aided and government. .We discuss GER for income group, social groups with reference to SC, ST, OBC, Others, and religious groups covering Muslim, other minorities and the Hindu.

Access to low income group :

The access to higher education varies by income level quite significantly in government, private aided and private un-aided institutions. In 2017/18 , of the total students in higher education institutions in the state , the private unaided institution account for about 15 percent, private aided 59 percent and remaining 25 percent by government institutions.

However, the share varies between low and high income groups . In case of private un-aided institutions, the share for two lowest income group is about 5 to 6 percent, compared to 10 to 14 % for middle income classes and 25 percent of top income classes, the all India average being 15%. The unequal access to lower income group in private unaided institutions is quite clear from the recent 2017/18 NSS survey.

In case of private aided institutions the story is somewhat different. As mentioned above, the private aided sector accounts about 59 % percent of total students in the higher education institutions. Due to sample the results are not consistent for income classes .

In case of the government institutions, it account about 25 % of all students in higher education institutions .The share of the bottom income group is higher than high income group ,34 to 40 % for lower classes , the GER declined to 16 to 19 % for top income classes . This indicates that the lower income classes depend more on government institutions . The lower income classes resort to government institution because of high fee structure of the private unaided institutions. In case of private aided the difference was less, 53 to 59 percent for bottom income group compared with 55 to 77 % for high income classes.

The disparities associated with income are also reflected and confirmed by occupation groups.

In 2017/18 the share the share of private unaided institution in total student in higher educated instituted is 15% . But it was only 5 percent for casual wage labour , much less than 15 % for self employed and 22 percent for regular salaried wage worker .The casual wage labourer therefore

depend more on government institutions, their share in government institutions is 33%, compared with 22% for regular salaried workers and 28% for self-employed households. The differences between the three occupations are relatively less in the case of private aided institutions (Table 5).

Table 5 : %: Share by income classes (%) in enrolment by Institutions: 2017-18

Social groups	Govt.	Aided	Unaided	Total
0-20	34.6	59.1	5.5	100
20-40	39.7	53.7	6.5	100
40-60	29.6	60.2	10.2	100
60-80	15.8	70.3	13.7	100
80-100	19.6	55.5	24.9	100
Total	25.4	59.2	15.2	100

Source: 75th round NSS data, 2017-18

Table 6: Share of quintile (%) in enrolment by Institutions: 2017-18

Social groups	Gov	Aided	Unaided	Total
SE	27.8	57.2	14.8	100
RS	20.5	56.8	22.5	100
CL	33.3	61.2	5.3	100
Total	25.4	59.2	15.2	100

Source: 75th round NSS data, 2017-18

Access to women : In the case of women, interestingly enough, their share in total female students in private unaided institutions is similar to that of males, which is 15 percent. Thus, women have caught up with men in acquiring access to private unaided educational institutions. The share is also on par with men in private aided institutions. In government educational institutions, their share tends to be little higher than males. (Table 7)

It is also found that the access of students from rural backgrounds is less to private unaided institutions, 7.3% and 29% respectively for rural and urban students. Their share in government and private aided is somewhat higher than urban students. (Table 7)

Table 7 : Share of Institution, Location & Gender: 2017-18

Social groups	Gov	Aided	Unaided	Total
Rural	27.1	65.4	7.3	100
Urban	23.8	53.2	22.8	100
Gender				
Male	23.5	60.4	15.9	100
Female	28.7	57.1	14.1	100
Total	25.4	59.2	15.2	100

Source: 75th round NSS data, 2017-18

Caste and tribal Groups: Disparities emerged quite clearly in access to private unaided education institutions for SC and ST. The share is 2 percent for ST and 10 percent for SC, which is lower than 12.% for OBC and 19.7% for high castes .Thus, the access of ST and SC to private unaided institutions is less than OBC and high castes. (Table 8)

In case of private aided institutions the inter – social group variations is less . The exception is high percentage of ST in private aided institutions , which is 75 %.

Table 8: Share of Institutions (%) in enrolment: 2017-18

Social groups	Govt	Private Aided	Private Unaided	Total
ST	22.1	75.8	2.1	100
SC	26.7	62.8	10.3	100
HOBC	27.0	59.9	12.6	100
HHC	23.6	56.7	19.7	100
Muslim	34.7	41.7	23.6	100
Buddhists	14.3	72.6	13.0	100
Total	25.4	59.2	15.2	100

Source: 75th round NSS data, 2017-18

Religious Groups

In case of religious groups, the share of Muslims in private unaided institutions is higher with 23.6 % which is higher than Buddhist (13%) In fact the share of Muslim in Private un aided institution is the highest among all groups (23.6 %) The access to private un aided institutes is quite low for Buddhist , almost half compared to Muslim . In case of private aided institute the share of the Buddhist is higher than the Muslim . But it is lower than the Muslim in government institution.

Dropout Rate

The dropout rate in education at any stage from age 5 to 35 years is about 15 percent at the state level in 2017/18 ,which means , 15 students out of 100 in that age group get drop from the studies in colleges and universities .The drop out rate in rural area is high in rural compared with urban area .(Table 9(c) .

However the drop out rate is much higher among the lower income groups compared with high income group – the drop out rate being 22.5 percent and 6 percent respectively for lower and high income group .The drop out rate varies between 13 percent to 20 percent for middle income ranges or groups .(9 (a) . The disparities in drop out rate are clearly visible for occupation group .The drop out rate is 25 percent among the students from casual wage labour families compared with 12 to 13

percent for self employed and regular salaried workers .Thus the drop out rate among the casual wage labour families is twice that of self employed and regular salaried households. (9(c)).

Similar disparities are observed between the social groups. The drop out rate is higher among the ST and SC with 25 percent and 20 percent respectively in 2017/18 .This is more than double the drop out rate for the high caste (10.8%) and about one and half time more compared with OBC (15.4%) (Table 9(d)) .

The differences in the male and female in drop out are less

Thus it emerged that the drop out rates are high for low income group , Sc and ST and casual wage labour.

Table 9(a) Drop out, Income groups: 2017-18

Social groups	Drop out
0-20	22.5
20-40	20.1
40-60	16.0
60-80	13.3
80-100	6.3
Total	15.5

Source: 75th round NSS data, 2017-18

Table 9 (b) Drop out, occupational groups: 2017-18

Social groups	Drop out
SE	13.4
RS	12.6
CL	25.5
Total	15.5

Source: 75th round NSS data, 2017-18

Table 9(c) Drop out, Location & Gender: 2017-18

Social groups	Drop out
Rural	18.2
Urban	12.2
Gender	
Male	14.8
Female	16.3
Total	15.5

Source: 75th round NSS data, 2017-18

Table 9 (d) Drop out, social groups: 2017-18

Social groups	Drop out
ST	25.2
SC	19.9
HOBC	15.4
HHC	10.8
Muslim	15.9
Buddhists	20.8
Total	15.5

Source: 75th round NSS data, 2017-18

To sum up, it emerged the situation with regard to access to private aided and un aided and government institutions in 2017/18 revealed significant disparities across income , caste , tribe and religious groups .The main feature of the disparities are as follow .

- (a) In 2017/18 , the private unaided sector accounted about 15 percent of the total students' population in higher education in the State , followed by 60 percent in private aided and 25 percent in government institutions.
- (b) The access of the relatively economically weaker sections is much lower compared with economically better off, and therefore former depend more on government institution, than the economically better off.
- (c) The access of women to private unaided institutions is nearly on par with the boys. So the girls have achieved near parity with boys in access to private unaided institutions.
- (d) The access of ST and SC to private unaided institutions has been lower than OBC and high castes, although the difference is relatively less for SC, than ST. The inter –group differences in case of private aided institutes is low . Since the SC's access to private aided and un-aided institutions is low, they depend more on government institutions than others.
- (e) The access of the Muslims and other minorities to self finance institution is higher than Buddhist .It is particularly low for the Buddhist compared with Muslim and other minorities . Given the low access of Buddhist to private aided and private unaided ,Buddhist depend in a much greater magnitude on the government higher education institutions than the rest .

- (f) The drop out rate is high for low income group and among the casual wage labourer .The dropout rate is also higher for the ST and the SC followed by Muslim and OBC

Share in Total Students in Self-financing Private Institutions:2014/15

We have seen that share of each of the three educational institutions in total students and found that the self-financing institutions account about 16 percent of the total students in the higher education institutions in the state. We also observed that the share of low income groups, ST, SC and Buddhist in private unaided institutions is relatively low compared to OBC and others. In this section, we analyse the share of each of the group in the respective total of each institution. To bring out the inequalities, we compare these shares with respect to their share in population in the age group of 18 to 22 years.

We would first discuss the share for the income class by quintile. At aggregate level in 2014, there is a positive relationship between the income class and share of each quintile in total students in private unaided institutions, which indicates that the share of bottom quintile tend to be lower compared with the higher quintile. *The bottom quintile accounts for only 8 percent of the total students in private unaided institutes, compared with 34 percent for top quintile, almost five times less for bottom quintile compared with top quintile.* Thus, the relatively poor's share is much less in the higher educational institutions.

In case of private unaided institutions, there is an inverse relationship between percentage share in total students and the quintile class. Of the total students in private unaided educational institutions the lowest income group account for 9 percent, the lower 12 percent, the semi-medium income group 14 percent, medium group 22 percent and the top income group 43 percent.. Thus, the share of lowest income group is about five times less compared to top income group . Thus, not only the lesser number of lower income classes enter in to private unaided educational institutions , but lower income classes constitute a relatively small proportion of the total students in private unaided institutions (about 9 percent for bottom compared with 43 percent for top income group).

The lower income classes also had lower share in private aided institutions, the share of lower income class was 8 percent compared with 41 percent for upper classes .

In case of government also the share of lower income classes was lower (14 percent compared to top income class (34 percent) .

Table 10 (a) : Maharashtra Share of Quintiles in Institution Type: 2014-15

Class	Govt.	Private & Aided	Private Unaided	Total
2007				
	Govt._	Private aided	Private_Un-aided	Total
0-20	3.5	5.2	1.5	3.8
20-40	7.4	5.9	2.2	5.5
40-60	9.7	17.0	9.8	12.8
60-80	21.0	31.7	12.6	23.8
80-100	58.4	40.2	73.9	54.2
Total	100	100	100	100
2014				

0-20	14.4	8.5	6.1	9.3
20-40	13.9	13.2	5.7	12.1
40-60	18.5	13.5	11.6	14.2
60-80	19.5	23.4	17.4	21.7
80-100	33.7	41.4	59.1	42.6

Source: National Sample Survey on Participation and Expenditure in Education & Survey of Social Consumption: Education

In case of **gender**, the share of male was higher (59 percent) compared with female (41 percent) at aggregate level. The disparities were quite pronounce in private aided , and government institutions , and much less in private un aided institutions. The share of the female in total students in private unaided institutions was 49 percent compared to 51 for female , almost on par with male . But their share was lower in private aided (female 39 percent and male 61 percent) and government (38 for female and 62 for male) . So the access of female did not lag behind male in private un aided institutions .

Table 10(b) : Maharashtra : Share of Gender in Institution type: 2014-15

Sex	Gov	Private & aided	Private unaided	Total
2007				
Male	45.4	58.2	72.2	57.0
Female	54.6	41.8	27.8	43.0
Total	100	100	100	100
2014				
Male	61.6	60.8	51.2	59.4
Female	38.4	39.2	48.8	40.6
Total	100.0	100.0	100.0	100.0

Source: Source: National Sample Survey on Participation and Expenditure in Education & Survey of Social Consumption: Education

In case of social groups the share of ST and SC was much lower than their population .in all type of education institutions .However the gaps was more in case of private un aided institutions . In case of private un aided institutions , the share of ST and SC is 2 percent and 9 percent respectively ,which was much below their population share , while it was 38 percent for OBC and 51 percent for others .Same is the case for private aided and government institutions .

Table 10(c) : Maharashtra :Share of Caste and tribal Group in Institution type: 2014-15 vertical

Sex	Gov	Private & aided	Private unaided	Total
2007				
ST	2.0	4.6	3.8	3.5
SC	17.1	14.6	8.8	14.1
OBC	31.7	24.6	19.9	25.4
Others	49.2	56.1	67.5	57.0
OBC+others	80.9	80.8	87.4	87.9
2014				

ST	6.5	5.2	2.0	6.5
SC	13.0	11.0	8.8	13.0
OBC	48.8	35.0	37.8	48.8
Others	31.7	48.8	51.4	31.7
OBC+others	80.5	83.8	89.3	80.5
Total	100	100	100	100

Source: National Sample Survey on Participation and Expenditure in Education & Survey of Social Consumption: Education

In case of **religious groups** the share of the Muslim (8 percent) and the Buddhist (2.5 percent) was lower than their population share in private un aided institutions , compared with the Hindu and other minorities .Again same was the situation for private aided and government institutions .

Thus, in the cases of women, ST, SC . Buddhist and the Muslim's share was lower than their population in the age group of 18 to 22 years in all institution ,particularly in self financing higher education institution .

Table 10 (d) : Maharashtra :Share of Religious Group in Institution type: 2014-15 vertical

Sex	Gov	Private & aided	Private unaided	Total
2007				
Hindu	80.0	84.8	90.0	77.4
Muslim	9.1	7.4	4.3	0.0
Buddhist	8.2	4.0	1.8	12.1
ORM	2.7	3.8	3.9	10.5
2014				
Hindu	84.5	89.6	87.0	88.1
Muslim	5.0	5.9	7.7	6.0
Buddhist	9.0	2.5	2.6	3.9
ORM	1.5	2.0	2.8	2.0

Source: National Sample Survey on Participation and Expenditure in Education & Survey of Social Consumption: Education.

Table10(e) : Maharashtra :Share of women in 18 to 23 population: 2014-15

Gender	1995	2007	2014
Male	50.2	54.2	53.2
Female	49.8	45.8	46.8
Total	100	100	100

Source: National Sample Survey on Participation and Expenditure in Education & Survey of Social Consumption: Education

Table 10(f) : Maharashtra :Share of Caste and Tribal Group in 18 to 22 population: 2014-15

Social Group	1995	2007	2014
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ST	9	9.3	12.1
SC	16.8	14.4	13.0
OBC	NA	32.2	37.7
Others	NA	44.1	37.1
Others*	74.2	76.3	74.8
Total	100	100	100

Source: National Sample Survey on Participation and Expenditure in Education & Survey of Social Consumption: Education; others* denotes others including OBC

Table 10(g) : Maharashtra :Share of religious group in 18 to 22 population: 2014-15

Religious Group	2007	2014
Hindu	80.8	81.7
Muslim	12.7	13.0
Buddhist	4.9	4.2
ORM	1.5	1.1
Total	100.0	100.0

Source: National Sample Survey on Participation and Expenditure in Education & Survey of Social Consumption: Education

Financial Assistance: Status of Scholarships in higher education Institutions:2014/15

In 2014/15 of the total students in higher education institutions in Maharashtra only 17 percent had scholarship .and rest were without scholarship. The cate wise award of scholarship is fortunately progressive in nature .The percentage of SC and ST students receiving scholarship is higher among the SC (42%) and ST(42%) compared with OBC (22.7%) and others (2.5%)

It is unfortunate that the percentage of the students with scholarship is very low in private un-aided or self financing higher educational institution with 9.6% , compared with 17 % in aided private aided institutions and 21 percent in government institutions .

Another feature that emerged is that while there is no difference in the share of scholarship between the government ,private aided and private unaided in the case of lowest income group , but the low proportion of lower income group student received scholarship from private unaided education institutions .

The third feature is that while there is less difference in the percentage of scholarship receivers from three institutes for social groups ,but the exception is the Sc A low percentage of Sc students receive scholarship from the private un aided institutes compared with ST,OBC and higher castes .Same is the case for Buddhist students .Thus Sc and SC converted to Buddhism receive much less help from private unaided higher education institutions .

Table 11 : Scholarship, social groups, Higher education, Maharashtra, 2014/15

% of scholarship receivers

Social groups	Scholarship
ST	45.8
SC	42.5
HOBC	22.7
HHC	2.5
Muslims	9.1
Total	17.0

Source: 71st round NSS data

Table 12: Maharashtra Scholarship by Institution Types: Gender and quintile: 2014-15

Scholarship	Yes	No	Total
Institution	Total		
Govt	21.1	78.9	100
Aided	17.3	82.7	100
Unaided	9.6	90.4	100
Total	16.8	83.2	100
Institution	Male		
Govt	23.6	76.4	100
Aided	18.3	81.7	100
Unaided	13.1	86.9	100
Total	18.6	81.4	100
Institution	Female		
Govt	17.1	82.9	100
Aided	15.8	84.2	100
Unaided	5.9	94.1	100
Total	14.1	85.9	100
Income class	0-20		
Govt	29.3	70.7	100
Aided	28.0	72.0	100
Unaided	31.9	68.1	100
Total	29.1	70.9	100
Institution	20-40		
Govt	39.6	60.4	100
Aided	33.6	66.4	100
Unaided	17.2	82.8	100
Total	34.3	65.7	100
Institution	40-60		
Govt	22.0	78.0	100
Aided	14.9	85.1	100
Unaided	23.9	76.1	100
Total	17.7	82.3	100
Institution	60-80		
Govt	24.4	75.6	100
Aided	21.3	78.7	100
Unaided	13.2	86.8	100
Total	20.7	79.3	100
Institution	80-100		
Govt	7.4	92.6	100
Aided	9.5	90.5	100

Unaided	3.1	96.9	100
Total	7.7	92.3	100

Source: National Sample Survey on Social Consumption: Education: 2014-15.

Table 13: Maharashtra Scholarship by Institution Types and by Social Groups :2014/15

Scholarship	Yes	No	Total
Institution	Total		
Govt	21.1	78.9	100
Aided	17.3	82.7	100
Unaided	9.6	90.4	100
Total	16.8	83.2	100
Institution	ST		
Govt	65.4	34.6	100
Aided	38.2	61.8	100
Unaided	44.3	55.7	100
Total	45.8	54.2	100
Institution	SC		
Govt	45.7	54.3	100
Aided	48.9	51.1	100
Unaided	15.8	84.2	100
Total	43.8	56.2	100
Institution	OBC		
Govt	21.9	78.1	100
Aided	22.9	77.1	100
Unaided	19.0	81.0	100
Total	22.0	78.0	100
Institution	Others		
Govt	0.6	99.4	100
Aided	4.0	96.0	100
Unaided	0.3	99.7	100
Total	2.8	97.2	100
Institution	Hindu		
Govt	18.9	81.1	100
Aided	16.7	83.3	100
Unaided	9.9	90.1	100
Total	16.0	84.0	100
Institution	Muslim		
Govt	10.3	89.7	100
Aided	9.6	90.4	100
Unaided	8.1	91.9	100
Total	9.4	90.6	100
Institution	Buddhist		
Govt	50.2	49.8	100
Aided	64.6	35.4	100
Unaided	14.0	86.0	100
Total	52.1	47.9	100
Institution	Orm*		
Govt	4.7	95.3	100
Aided	8.8	91.2	100
Unaided	0.0	100.0	100
Total	6.2	93.8	100

The award of freeship is similar to that of scholarship .The percentage of freeship holder is high among the SC (24.4%) and ST(13.4%) compared with OBC (6.4%) and high castes.(2,7%)

Table 14 : Freeship, social groups, Higher education, Maharashtra, 2014/15

	Freeship
ST	13.4
SC	24.4
HOBC	6.4
HHC	2.7
Muslim	6.1
Total	7.2

Source: 71st round NSS data

Status of Marathi as Medium of learning

The NEP policy for Equity and Inclusiveness favoured the teaching in Marathi language. This suggestion will indeed promote equity and inclusiveness of the students particularly from the rural area and from socially and economically depressed background .The Maharashtra Government has followed the policy of three language formula with teaching in Marathi ,with Hindi and English a second language .

However, the reality at the ground level is different .There has been a major shift away from teaching in Marathi, and increasingly English medium began to occupy the prime position. The National Sample Survey Report on Higher Education for 2017/18 tells the story. In 2017-18, of the total students in higher education in Maharashtra, about 60 percent learn through English medium, 38 percent through Marathi medium and 1.6 percent through Hindi Medium.(Table 21) . This shows that despite the declared policy of promoting teaching in Marathi only 38 percent entered in to Marathi medium higher education institutions . In fact in urban areas the proportion of teaching in Marathi is only 17 percent, and English 80 percent. It is only in rural areas that the percentage of Marathi medium is about 60 percent and English 38 percent.

Who opted for the English medium? It is clear from 2017/18 NSS Survey that it is the high-income groups, which opted for English medium. In 2017/18 of the total students in high-income group (80-100 quintile), about 94 percent passed though the English medium, followed by next group (60-80 quintile) with 59 percent. On the other hand of the students in lower income brackets (0-20 and 20-40) only one third goes through English medium. (Table 22)

Similarly, among the social groups a high percentage of high castes and OBC students go through English medium. On the other hand, the proportion is low for Scheduled castes and Buddhist Scheduled castes; the percentage is 40 % for former and 27 % for the later. By comparison, a high percentage of High caste and OBC students go through English medium, 65.5 % and 55 % respectively. (Table 23)

The roots of the high proportion of students from English medium education of economically better off classes and higher castes and OBC are to be found in school education. (see table 25 to 26) At elementary and at secondary/higher secondary level about 30 percent goes through English medium.

But the percentage of those going through English medium is very high for self financing or un-aided schools, 87.6 % for elementary level and 71 % for secondary and higher secondary . By comparison, the percentage is low for government and private aided schools. It is clear that privatisation of school education in a category of unaided schools has increased the percentage of English medium students. The 2013 Self Financing Schools Act has given boost to the English medium schools in Maharashtra . We are now see, in recent years a large number of government schools and aided schools have been closed down due to increasing competition from English medium schools both in rural and urban area .

In this background reiteration of Marathi as medium of teaching in the NEP is encouraging .But it will require major steps on the part of the government.

Table 15 (a) :Enrolment (%) in Higher education by language, Sector & Gender: 2017-18

Social groups	Hindi	English	Others	Marathi	Total
Rural	1.2	38.0	0.2	60.6	100
Urban	2.1	80.5	0.5	16.9	100
Male	1.5	60.2	0.4	37.9	100
Female	1.9	58.6	0.2	39.3	100
Total	1.6	59.6	0.4	38.4	100

Source: 75th round NSS data, 2017-18

Table 15(b) : Enrolment (%) in HE by language, income groups: 2017-18

Social groups	Hindi	English	Others	Marathi	Total
0-20	1.1	28.3	0.13	70.5	100
20-40	4.0	31.3	0.17	64.5	100
40-60	1.6	33.0	0.6	64.8	100
60-80	2.6	59.3	0.41	37.7	100
80-100	0.4	93.7	0.33	5.6	100
Total	1.6	59.6	0.35	38.4	100

Source: 75th round NSS data, 2017-18

Table 15(c) :Enrolment (%) in HE by language, Social groups: 2017-18

Social groups	Hindi	English	Others	Marathi	Total
ST	0.17	64.6	0	35.2	100
SC	0.09	40.4	0.54	59.0	100
HOBC	1.4	55.4	0.13	43.2	100
HHC	2.3	65.5	0.14	32.1	100
Muslim	4.4	72.2	2.46	20.9	100
Buddhist	0.21	27.3	1.52	71.0	100
Total	1.6	59.6	0.35	38.4	100

Source: 75th round NSS data, 2017-18

Table 15(d) :Enrolment (%) in HE by language, occupational groups: 2017-18

Social groups	Hindi	English	Others	Marathi	Total
SE	1.9	54.1	0.31	43.8	100
RS	2.3	73.8	0.4	23.5	100
CL	0.45	22.9	0.69	76	100
Total	1.6	59.6	0.35	38.4	100

Source: 75th round NSS data, 2017-18

School sector

Table 15(e) : Enrolment in school Institutions, I-XII, Maharashtra 2017-18

I-XII	Govt	Aided	Unaided	Total
ST	65.2	29.1	5.7	100
SC	63.4	28.6	8.0	100
HOBC	52.1	36.5	11.4	100
HHC	41.2	34.3	24.5	100
Muslim	42.9	33.7	22.9	100
Buddhist	65.2	29.9	4.9	100
Total	50.2	33.6	16.1	100

Source: 75th round NSS data on Education, 2017-18

Table 15(f) : Enrolment, Institutions, I-VIII, Maharashtra 2017-18

Elementary	Govt	Aided	Unaided	Total
ST	79.5	15.8	4.7	100
SC	68.8	23.2	8.0	100
HOBC	60.3	27.1	12.5	100
HHC	43.6	28.3	28.1	100
Muslim	46.9	28.3	24.5	100
Buddhist	72.1	23.6	4.3	100

Total	56.3	25.9	17.7	100
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Source: 75th round NSS data on Education, 2017-18

Table 15 (g) : Enrolment ,school Institutions, IX-XII, Maharashtra 2017-18

SHS	Govt	Aided	Unaided	Total
ST	40.1	52.4	7.5	100
SC	51.6	40.2	8.1	100
HOBC	36.3	54.6	9.1	100
HHC	37.0	44.7	18.2	100
Muslim	31.8	48.9	18.6	100
Buddhist	52.8	41.3	6.0	100
Total	38.2	48.6	13.0	100

Source: 75th round NSS data on Education, 2017-18

Proposed Policies based on the Recommendation by NEP and the present status of higher education in Maharashtra

In the preceding section we have examined the issues which the NEP highlighted for correction through policies by the Government and Higher Education Institutions for Equity and Inclusiveness .The NEP also proposed the spheres where the policies could be adopted by the Government and the Higher Education Institutions. The above analysis revealed the status in the spheres where the NEP suggests measures for promoting equity and inclusiveness.

The above analysis indicate the status of higher education with respect to education attainment rate .It revealed significant disparities based on income, caste, ethnic, and religious groups .

- (a) It emerged that the GER is the lowest for the poor.
- (b) The GER is also low for ST followed by SC and OBC.
- (c) The GER is low for Muslim, which is fairly close to ST.
- (d) Between the three institutions, namely government, private aided and private unaided, the private unaided sector is emerging at a faster rate and gradually replacing the private aided and government sector.

- (e) The access of the economically weaker sections to private unaided institutions is much lower compared with economically better off, and therefore former depend more on government institutions, than the economically better off.
- (f) Since the access of economically worse off is low and that of economically better off is high , the economically better off account a high proportion of students in private self financing higher education institutions in the state . Thus economically better off receive quality education in greater degree than economically worse off students.
- (g) Similarly, the access of ST and SC to private unaided institutes is lower than OBC and high caste. Since the ST and SC's access to private unaided institutions is low, they depend more on government institutions than OBC and others.
- (h) The access of the Muslims to private unaided institutions is lower than other minorities and the Hindus, so they also depend more on government educational institution.
- (i) The access of women to private unaided institutions has been nearly on par with the men, so the women have achieved near parity with men in access to private unaided institutions.
- (j) It also emerged that the financial support in the form of scholarship by the private unaided institutes is much small.This is particularly is in the case of the students from SC and ST communities.
- (k) The share of the students with English medium is much higher than Marathi medium. These include mostly students from high income groups, OBC and high caste. Low percentage of students from low income group ,SC ST and Muslim student go through English medium .Conversely the students from income group, SC,ST and Muslim students resort to government and private aided higher education institutions .

Policy Recommendation for the Government to promote Equity and Inclusiveness

The NEP has recommended policies for enhancing an access of those with low enrolment to higher education. Based on the present situation in 2017/18 we suggest the following policies to increase the enrolment rate of groups suffering from low enrolment in higher education

(a) Policy to increase the Enrolment Rate between Low income groups

It emerged that the educational attainment in higher education of low income group is low compared with high income groups .There are obvious income based inequality in educational attainment.

The NEP suggest measures to reduce the gap between low income and high income groups.In 2017/118 the GER for low income group is 22 percent compared to 60 percent for top income group , Similar gap is there between bottom income group and middle income group .The GER rate of casual wage labour is also low with 16% compared to 36 to 39 percent for self employed and regular salaried household .The Government need to develop policies to increase the GER of students from bottom income group and casual wage labourer .

(b) Policy to increase enrolment rate of ST, SC,OBC and Muslim

The enrolment rate of ST, SC and the Muslim is low compared with high caste , and the State average .The GER of ST,SC and Muslim is 28 %, 29 % and 22 % respectively compared with 40% for high castes .This gap needs to be bridge through policies .

- (c) **Women** :In case of women the gap is much less, which mean present policies have helped women to catch up with men, so present policies of helping women higher education should continue .

The NEP has proposed increase in the **funding to increase** an access to higher education by the student from low income group and ST ,SC and Muslim to bring them on par with high caste others and state average .This could be done by scholarship, constructing of hostels and through other forms of support .

The NEP also proposed to increase the number of higher education institutions. Indeed there is need to increase the number of educational institutions. However the number of government and private aided institutions need to be increased where the share of poorer classes is relatively high due to affordable education.

If the expansion of private un aided self financing higher education institutions is on agenda, it should be made financeable affordable to the poorer sections by regulating the fees and other support .This could be done by adopting the income based tuition based policy for the self financing private institutions .The principle of “ability to pay” will be useful for enabling the poor student to access the self financing private higher education institutions . The private self financing institution through income base differential tuition policy could subsidies the education of those poor students who get in to these institutes on the basis of merit.

The private unaided institutions may also help the poor students through subsidized hostel, meal and books and scholarship and freeship.

As a supplementary measure, the liberal loan facilities could be used as additional option by the government .However, the present method of educational loan by commercial banks with subsidy on interest by the government will not serve the purpose. The government should set up a Financial Institution on the pattern of Canada or Australia with sizable amount of funds to provide interest free loans returnable after employment in reasonable instalments to all. These measures should help to provide access to poorer sections particularly to professional and technical courses by private unaided Institutions . These changes in policy for equity and inclusiveness in higher education are necessary.

Inclusive policy on Language

As we have seen above ,the NEP has reiterated the use of Marathi as medium of teaching in higher education institutions as mentioned above. But if the recommendation of the New Education Policy of teaching in Marathi is to be followed, we need a policy, which will reverse the present mega shift towards self-financing English medium schools. About 60 percent of the students opted for learning in English, and only 40 percent in Marathi medium. This means that the expansion of schools under 2013 Self-financing School Act needs to be restricted .Beside a definite policy and steps are necessary to promote teaching in Marathi in higher education institutions.

At the same time, we should also recognise the significance of English and Hindi as second language .Therefore in the school English and Hindi as second language should be introduced right from the 1 st standard. The teaching of English from 1st standard till 12th standard, and later for three years in college –that is for about for 15 years will help students to know English

and understand the necessary books in English and prepare them for learning through English in professional courses such as engineering, medical and similar technical subjects. In this regard three policy steps are essential:

- (1) First is to develop a policy to promote teaching in Marathi in higher education institutions, that is, colleges and universities.
- (2) At the same time, Teaching of English and Hindi as second language should be made compulsory right from 1st standard to 12 th standard , and later also during three/four years of college education.
- (3) . The policy should be developed to enforce the Self-financing or private schools to resort to teaching in Marathi medium along with compulsory teaching of English as one of the languages .

Policies by the Higher Education Institutions

The NEP has also recommended policies for the higher education institutions to enhance low enrolment of some groups .These include economically weaker section ,ST,SC. OBC and the Muslim . We recommend the following measures for high education institutes , particularly the self financing private institutions .

- (1) The high cost of education in self financing institution reduce the access of the poor students. The private institutions should adopt the income base tuition policy . The principle of “ability to pay” should enable the access of poor student to self financing private higher education institutions . The private self financing institution may follow differential tuition policy for the economically weak and economically better off students and cross subsidies the education of those poor students who get in to these institutes on the basis of merit.
- (2) The private unaided institutions may also help the poor students through hostel and subsidized meal and books.
- (3) As suggested by the NEP ,the education institutions should provide scholarship and freeship to poor students .We have seen that the private self financing Institutions provide less scholarship compared with government and private aided collages .Unfortunately this is the particularly the case for the Sc students .

Inclusive policy on Marathi Language

As we have seen above ,the NEP has reiterated the use of Marathi as medium of teaching in higher education institutions. But if the recommendation of the New Education Policy of teaching in Marathi is to be followed, we need a policy, which will reverse the present mega shift towards English medium schools and higher education .In 2017/18 about 60 percent of the students opted for learning in English, and only 40 percent in Marathi medium.

So three policy steps which higher education institution should adopt :

First the institutions should develop practices to promote teaching in Marathi in their colleges and universities.

Secondly the Higher education institutions should undertake teaching of English and Hindi as second language.

Thirdly the the Self-financing or private institutions should resort to teaching in Marathi medium along with compulsory teaching of English as one of the languages.

Remedial academic Assistance program

The NEP proposed academic assistance to the students .The University Grant commission has a scheme under which the university provide assistance to improve the skill and capacity in English language and in core subjects for those students who need academic assistance to catch up with the courses .We have seen above that some students from rural area ,SC and ST and OBC students need academic assistance .This will also include concealing to the students for their specific problem .So every college and universities should set up Equal Opportunity Office to run this academic assistance program .

Equal Opportunity Office

As we have seen above the NEP suggest to implement the practices of non discrimination and monitor it .The studies shows the evidence on discrimination faced by SC and ST students in education institute .Similarly girls and the physically handicap students face discrimination . The University Grant Commission has a scheme under which the colleges and universities are required to set up "**Equal Opportunity Office**" to deal with problems of SC ST, Women and physically handicap students. *The Equal Opportunity Office (EOO) is run by a Committee consisting of a head which is a faculty and students from SC,ST ,Girl and physically handicap background .*

The EOO can also run a course in "Civil Right Education" for all students to develop sensitivity among the student about the problem of inequality and discrimination including diversity and build up the respect and practice of constitutional principles of equality, liberty and fraternity. The colleges and the universities offered courses on "Citizenship education" after they realize the practice of discrimination based on race, colour, gender with growing diversity of students on higher education campuses .

Policy Implications of "Other policies" for Equity and Inclusiveness

We have discussed the recommendations of the NEP for Equity and Inclusiveness in the preceding section .However there are other recommendations by the NEP which have implications for the equity and inclusiveness .In fact some of policy recommendations of NEP tend to be counterproductive for the goal of Equity and Inclusiveness .We discuss some of these policy suggestions and seek modifications in them.

(a) Switch over from existing Teaching and Affiliating Universities to Large size Unitary Multidiscipline Universities.

One of the suggestions of the New Education Policy is the replacement of present Affiliating State public universities by large multi-displinary unitary universities. At present we have multiple structures of universities, which is as follow:

(a) Teaching and affiliating universities, which mostly include state public universities with affiliated collages, while the department in universities look after master and PhD teaching, the collages mainly undertake undergraduate teaching. Some of the collages also have master and PhD Program. Many state universities have Post graduate off campuses outside universities.

(b) Second pattern is Unitary universities .In this we have two types ,first include central public universities with post graduate and PhD Program , and other Deem universities and state private universities which have undergraduate , post graduate and PhD program under one shed ,without affiliating collages .There are isolated example such as Delhi university ,which is central university but has constituent and affiliating collages .

(c) Third type is degree awarding Institutions like IIT and IIM and other which runs under graduate ,post graduate and PhD program .

(d) In addition there are many private institutes which offered certificate and diplomas of various duration which are not part of any university system.

The NEP favoured large unitary universities with multi discipline with a minimum of about 3000 students with undergraduate, post graduate and PhD program –all teaching and degrees under one shed .The Education Policy proposed that state public universities which have affiliating collages will be converted in to unitary universities with in fifteen years offering undergraduate, post graduate and PhD digress . So it proposed disconnecting affiliated collages from the state public universities and converting them in to Cluster universities from affiliating collages .It also proposed making some collages the degree awarding institutions. This will happen in stages . First it will create Cluster Universities by bringing affiliated collages together- by de-affiliating from their state universities. Second it will convert some quality collages/institutions into degree awarding institution .So in the end , the present State Public Universities ,new cluster universities and degree awarding collages or institutions will be unitary institutions offering under graduate , Post graduate and PhD Program under one umbrella. Finally a new Model public universities called Multidisciplinary Education and Research Universities will be set up in each district of the state .

Thus by 2030 or 2040 entire higher education system will move towards large multidisciplinary unitary universities comprising state Public universities, Private universities , Cluster universities and degree awarding institutions . There is a suggestion that these universities will be developed in to two segments, namely research cum teaching and teaching universities.

Apparently this look to be good system. However there are issues, particularly related to equal access to higher education to students from rural area and the students from socially and economically disadvantage background .

Creating a unitary state university necessarily involve locating universities at district places and may even involve closing down some collages in large villages , small and medium towns.The system in which collages are regionally scatter in district , tahsil , small and medium town including large villages has an advantage . It provide essay and cheap access to higher education to the students. Therefore the state universities located in district places with under graduate ,post graduate and PhD program (as is proposed by NEP) will reduce the essay and cheap access to the students from rural and small towns .Therefore while we should adopt the idea of unitary universities which offered all degrees ,that is undergraduate ,post graduate and PhD under one shade , this need to be adopted with some modification to ensure equal and essay access to the students from rural and small town .

In the past and in the present ,the state governments have used other alternative (somewhat different than the one proposed by New Education Policy) to reduce the burden on state universities of affiliating collages .This method is of carving out new universities from the affiliated colleges . The process of creating universities by de-affiliating the colleges and grouping them into new universities is a process which has been followed in Maharashtra and in many states. This system has double advantage. First the State universities have been able to shed the burden of large affiliating collages and retain an optimum size, which it could manage with administrative efficiency.

The Second most important advantages of affiliating system is geographical spread of collages in large villages, small and medium towns (beside districts and large cities) .This physical proximity to rural and small and medium towns greatly improved the access of the student to college (and also universities) education at lower cost . In Maharashtra half of its population still live in rural area.

Therefore for inclusive education what we need some changes in the unitary system proposed by the NEP . We should convert some good collages with high grade from the NCKK and collages which Autonomous status as degree awarding collages .But this would be a small number .Rest of the collages will still remained afflicted to state universities .The second alternative as suggested by the committee should be to convert the affiliating collages into cluster universities .We may form one cluster university for each district which will offer under graduate ,post graduate and PhD programs. The present state universities may stat undergraduate program on moderate scale .This process will covert present state universities and new Cluster universities and Degree awarding collages into Unitary Universities institutions offering all digress from undergraduate to PhD .

This reform will convert degree awarding collages, present state universities and new cluster universities in unitary system in which they offer undergraduate , post graduate and PhD degree .However while this reform will meet the goal of essay access to higher education to students ,it may not ensure quality education and goal of quality education may not be fully realised .This may not happened because of chronic problem of shortage of supply of teachers in universities and collages. We know about the problem related to teachers. First is that there is high scarcity of teachers in collages and state universities .Secondly there is inter-collage variation in number of teachers and quality of teachers .Out sourcing of teaching to Post –Doctoral student , system of contact teachers with low salary or period wise salary is known to all which is used by collages and even state universities. This has affected quality and brought disparities in quality among the collages .Therefore there is need to ensure quality teaching though qualified teachers in collages and also universities where there is shortage of teachers .For this purpose we may develop a new method of inter-college sharing of teachers for teaching. The teachers from the state universities could also used for sharing of teaching by teachers from various institution. For the sharing of teachers by the cluster universities, some changes would be necessary .First step will be to develop the Department for each subject from the cluster colleges. Once the Departments are developed, the teachers from different collages could be used for teaching .So collages will be only a teaching places, which will used the services of the teachers from various collages and from present state universities in each individual subject. This will provide teaching by a best teachers in the subject and improve quality .Thus this reform will meet duel objective , namely of ensuring equity and inclusiveness and also access to quality education.

It is necessary to mentioned that ,this process will be greatly facilitates by distance mode teaching technology .The student will have access to knowledge from best of the teachers in the subjects any where in the state .This is the best way to overcome the problem of scarcity of teachers, which has been there for several decade despite promise to correct it .

To put in brief ,for putting this system into practice we should follow following three steps .

First we accept the method of inter-collages teaching in new cluster or state universities .

Second we should adopt the concept of Department and create departments in each individual subject from different collages (such as department of economic , politics, sociology , and similarly for sciences and humanities and other subjects).All collages teaching one subject like economics will constitute a Department of economics .

And thirdly once Departments are formed in each subject ,teaching will be shared by the teachers for teaching in each subject in the department from all collages/state universities where such department exit .This will involve sharing of teachers from the collages in cluster or new state universities in a district .

This will be facilities by the availability of distance mode teaching and enable to use teachers as resources from anywhere in the state . This will serve double purpose, namely it will ensure equal and easy access to the students to higher education (by retaining the collages in small towns and large villages) and quality education by sharing the resources of the teachers from various collages and state universities in a district .

The structure and lengths of degree programmes and Equity and Inclusiveness

The New Education Policy has suggested a major change in duration of the undergraduate and post graduate degree. The new duration is as follow

- (2) The undergraduate degree will be of 3 years and also of 4-years duration, It introduced multiple exist and entry and award of certificate, diploma and degree
- (2) **Certificate:** Exist after one year of undergraduate with Certificate
- (3) **Diploma:** Exist after two years of undergraduate with diploma
- (4) **Bachelor Degree:** Bachelor's degree after a 3-year programme. :Exist after three years
- (5) **4-year Bachelor degree**
- (7) **Five year** integrated Bachelor degree

Master's programmes:

Master degree will be of two year duration , which is as under

- (d) **One Year Master Degree** :For students completing a 4-year Bachelor's Degree with Research, Master Degree would be of one 1-year duration;
- (b) **Two year Master Degree** : For students completing a 3 year Bachelor's Degree , Master program will be of 2 -year .
- (c) **Two year Master Degree** : Two year Master Degree for those who possess an integrated five-year Bachelor's/Master's programme.
- (e) **Ph.D.** shall require either a Master's degree or a 4-year Bachelor's degree with Research. It offers multiple entry and exit points, thus removing currently prevalent rigid boundaries and creating new possibilities for life-long learning. The student could exit after first, or second or third year with a certificate , two year diploma and three years bachelor degree respectively .The students could join back to complete his/her bachelor degree of 3 years duration or 4 years duration or diploma after certificate of one year.Thus New Policy has Bachelor and Master degree of multiple duration .It also introduced exit and entry at multiple level.

Apparently there are issues in this suggestion from the point of view of equity and inclusiveness .The system may affect the access to higher education of economically weak families and SC/ST students .Firstly the NEP proposed Bachelor degree of 3 year duration , and 4 year duration, and Master of 1 year duration and 2 year duration ,and there by it create gradation and hierarchy in Bachelor and Master Degree and affect the student differently in employment and other matter. Creating Bachelor and post graduate degree of various duration will affect the poor students, as they are likely to end up with 3 year bachelor .The students with 4 year bachelors or one year post graduate may be preferred in employment in the market compared with 3 year bachelors or two year post graduate.

Beside the increase in the duration of bachelor degree from 3 to 4 years will raise the cost of degree as student will have to spend one more year .This will affect the weaker section more .

We understand that the 4 years Bachelor degree is introduced for the convenience of the students who want to pursue Master in USA, which required 4 years Bachelor. We should not penalised our large majority of student for those who seek admission in USA .We should have 3 years Bachelor degree ,and those who want to go to USA for Master , there is facility for them to do one –year pre-Master in USA to get in Master program .

The method of multiple exists and entry for the first year and the second year is convenient system but it has to be implemented with due care and caution. The exit should be allowed with due care .As far as possible the students should be encouraged to complete Bachelor degree. For those who want to exit for special reasons, the benchmark should be relatively low after first year and exit with diploma after two year .High marks condition may results into drop out which is already high for weaker section. We have seen that enrolment rate in higher education of poor and SC/ST and the Muslim is low .Our purpose should be to increase the enrolment rate among the weaker section like Scheduled castes and tribes. The unreasonable exit after one or two years will not improve the enrolment of weaker sections in higher education, which is already low

The National Testing Agency (NTA)

The New Education Policy proposed a high-quality common aptitude test, as well as specialised common subject exams in the sciences, humanities, languages, arts, and vocational subjects, at least twice every year for admission in the universities .. The NTA will serve as a premier, expert, autonomous testing organisation to conduct entrance examinations for undergraduate and graduate admissions and fellowships in higher education institutions. It will be left up to individual universities and colleges as to whether they see value .The UGC has already introduced the system for 42 central universities in using NTA assessments for their admissions in universities and college.

However NTA system may affect the access of the students particularly from poor and SC/ST to higher education institutions. At present the admission to under graduate and master program is done by colleges and universities in the state and by central universities and colleges .It is the colleges and state universities which decide the criteria for admission .It is also fixable .The introduction of National Assessment Test by Agency and the grade obtained as a criteria for admission all over the country in universities will have adverse effect on admission of the students particularly the weaker sections .It may lead to exclusion from admission due to mechanical all India test.The power of admission with universities and colleges give liberty to take into account the local situation which facilitate admission .Therefore we favour freedom of the universities and colleges to give admission .

Multi-disciplinary and holistic curriculum:

Reforms in Curriculum

The most important reform proposed by the Committee is **Multi-disciplinary Syllabus**. The New Education Policy mentioned that:”A holistic and multidisciplinary education, as described so

beautifully in India's past, is indeed what is needed for the education of India to lead the country into the 21st century. Even engineering schools, such as the IITs, will move towards more holistic and multidisciplinary educations with more arts and humanities, while arts and humanities students will aim to learn more science - while all will make an effort to incorporate more vocational subjects and soft skills. India's rich legacy in the arts ”.

The most important suggestion of the committee is the multi disciplinary courses. This is not a new suggestion. The system of multi- disciplinary courses has been used in many universities and other education institutions .For instance in IITs there are separate department in social sciences and students are required to take courses . In some universities the multi-disciplinary courses are opted by the students from other departments .Sometimes these courses are modified to suits the requirement of students from the social sciences and language. The committee seems to suggest a course which is mixed of arts, languages, social sciences, and sciences.

While the multidisciplinary approach is welcome, the courses outside the main discipline should be offered where ever necessary; they should be limited in number and voluntary. The special courses should be prepared to suit the requirement and level of the students both from social science and science background. Compulsory learning of multidisciplinary subject may lead to failure particularly among the students from rural ,poor background .So the learning of multi disciplinary courses should be voluntary and optional, otherwise it may results in drop out .

Equity and Inclusiveness and Curbing commercialization of education

We have three types of education institutions, (universities and colleges), namely Government universities /collages, Private aided collages and self Financing or private universities /collages. The New Education Policy emphasized the public education ,which is a good policy for equality and inclusiveness . But it also has a policy to promote the nonprofit private education institution .These private institutions will be allowed to earn surplus, to be invested in the institutes itself and not to invest outside the Institutes. This is precisely the present model ,As we have seen this has created problems of low access to the economically weaker sections .The New Education Policy has not deal with present problem of poor access to economically weaker sections . To improve access ,it has made some suggestions but has not given a specific plan .This is because the Committee has not studied the institution wise disparities in access to higher education in private institutions and their attainment rate .

Above we have made some suggestion to ensure equal access to self financing private institutions. The same method are reiterated also here .

Equity and inclusiveness and Internationalisation

The National Education Policy has also proposed the internationalisation of higher education .As a part of this it proposed that Top 100 universities in the world will be permitted to operate in India.

- (1) Student exchanges between Indian institutions and global institutions will be promoted through special efforts.
- (2) Credits acquired in foreign universities will be permitted, counted for the award of a degree.

Like the private universities , the foreign universities will also affect the access of economically weaker section due to high cost .There are two alternative method of allowing foreign institutions .One way is to allow foreign universities to set their campuses in India .Second way is to have collaboration of Indian universities/collages and /institutes with foreign universities and offered degrees singly or duel . For the purpose of equity and equal access to economically weaker section to foregin institutions the method of institutional collaboration between the Indian educational institutions and foreign universities /institutions is useful.The collaborative model will result in strengthening of the Indian institutions through sharing of curriculum ,faculty and pedagogy .The experience of the countries is that not many foreign universities have been set up the campuses with quality education and India will not be an exception. So institutional collaboration of our institutions with foreign universities is useful method ,as it will strengthen our institutes .

Secondly since the fee level in foreign universities in India will be high ,the weaker students will stand excluded from access to these foreign universities .The access to weaker section will be easy in collaborative Model .Under collaborative programs of joint degree the students from weaker section will need . Therefore specific measures should be developed so that meritorious students from weaker sections get equal access to collaborative degree awarding program .

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8. Language and Arts

Final Notes and Recommendations of Sub-Committee on Languages & Arts For NEP

Implementation Committee for Maharashtra

21/1/2021

Introduction and Acknowledgements

The Languages and Arts Sub-Committee for NEP Implementation was asked to focus, deliberate, plan and recommend a road map for the State of Maharashtra on matters related to language, arts and culture with respect to Higher Education, based on the NEP 2020.

It has been a privilege to work with the illustrious members of the Committee and Sub Committee on this challenging area. I am grateful to Dr Mashelkar for having shown his confidence in me to carry out this task. Am also delighted to have been given the opportunity to work with renowned and eminent academicians: Dr Sukhdeo Thorat, Dr Ganesh Devy, Dr Suhas Pednekar, Dr Rajan Welukar and Dr Dilip Dhondage as well as institution builders like Shri Vijay Kadam, Dr Vijay Patil, Dr Abhay Pethe, Dr Abhay Wagh and other members.

Many issues relating to Language, Arts and Culture have been worked on and deliberated upon from the perspective of what is needed to be devised, developed, invested in, and implemented for the State of Maharashtra to deliver consistent, permanent and abiding value to all stakeholders in this context.

Some of the ideas and plans are long term in nature, some are ambitious and others innovative. The Sub Committee has taken on board matters of importance for not only the current situation, but also looked into the past policy declarations, reports and decisions of the Central and State Committees and Programs in this area in order to devise initiatives that will gel with the ethos and intent of all concerned.

We appreciate the assistance of Shri Mahendra Dabhade and Shri Amte as well as Dr Abhay Wagh and Dr Dhanraj Mane for their support with information, transcripts and coordination in these times of Covid.

Nitin Pujar

Distinguished Members of the Sub Committee are as follows:

Dr Sukhdeo Thorat

Dr Ganesh Devy

Dr Vijay Patil

Dr Nagnath Kothapalle

Shri Vijay Kadam

Dr Dilip Dhondage

The Recommendation Points

The Following points have been laid out as areas that are critical for the NEP implementation context and include recommendations for the Main Committee to include into its deliberations and recommendations. These are starting points and we will welcome additions and modifications after due deliberations from and with members of the Main Committee.

The Areas of focus and discussion in the context of the NEP goals and declarations with emphasis on Language and Arts for Maharashtra, and related Initiatives to be undertaken are as follows:

1. The 3 Language Formula Implementation

The Key 3 languages focus is well and truly being followed by the State of Maharashtra and will continue to be built up as time moves forward. Maharashtra has been one of the few states that have been following the 3 Language Formula with focus on Marathi, Hindi and an English third language. The third language is either English, Sanskrit or a Foreign Language or a Modern Indian Language. This is generally practiced across the board with due resources for all languages available, albeit in a limited way.

The Committee reiterate the adoption of the three-language formula, with teaching in mother tongue, and learning of Hindi, and English as supplementary languages.

1.1 The Marathi Teaching Learning Situation NSS 2017/18 Survey Data and its implications for implementation of 3 Language Formula

The Maharashtra Government has followed the policy of three language formula. However, in practice and reality at the ground level there has been a major shift away from the policy of teaching in Marathi, and increasingly English medium began to occupy the prime position. The National Sample Survey Report on Higher Education for 2017/18 tells the story. (Detailed Extracts of Data Tables are annexed to this Note)

In 2017-18, of the total students in higher education in Maharashtra, about 60 percent learn through English medium, 38 percent through Marathi medium and 1.6 percent through Hindi Medium. This shows that despite the declared policy of promoting teaching in Marathi only 38 percent receive teaching in Marathi. Infact in urban areas this proportion of teaching in Marathi is only 17 percent, and English 80 percent. It is only in rural areas that the percentage of Marathi medium is about 60 percent and English 38 percent.

Who opted for the English medium? It is clear from 2017/18 NSS Survey that it is the high-income groups, which opted for English medium. In 2017/18 of the total students in high-income group (80-100 quintile), about 94 percent passed through the English medium, followed by next group (60-80 quintile) with 59 percent. On the other hand of the students in lower income brackets (0-20 and 20-40) only one third goes through English medium.

Similarly, among the social groups a high percentage of high castes and OBC students go through English medium. On the other hand, the proportion is low for Hindu Scheduled castes

and Buddhist Scheduled castes; the percentage is 40 % for former and 27 % for the later. By comparison, a high percentage of High caste and OBC students go through English medium 65.5 % and 55 % respectively.

The roots of the high proportion of English medium followership for economically better off classes and higher castes and OBC are to be found in school education.

At elementary and at secondary/higher secondary level about 30 percent goes through English medium.

But the percentage of those going through English medium is very high for self- financing or un-aided schools, 87.6 % for elementary level and 71 % for secondary and higher secondary .

By comparison, the percentage is low for government and private aided schools. It is clear that privatisation of school education in a category of unaided schools has increased the percentage of English medium students.

The 2013 Self Financing Schools Act has given boost to the English medium schools. We are now seeing, in recent years that a large number of government schools and aided schools have been closed down due to increasing competition from English medium schools.

So, if the recommendation of the New Education Policy of teaching in Marathi is to be followed, we need a policy, which will reverse the present mega shift towards self-financing English medium schools. This means that the expansion of schools under 2013 Self-financing School Act needs to be restricted and a definite policy and steps are necessary to promote teaching in Marathi in higher education institutions.

At the same time, we should also recognise the significance of English. English and Hindi as second language in the school should be introduced right from the 1st standard. The teaching of English from 1st standard till 12th standard, for 12 years will help students to know English and understand the necessary books in English and prepare them the learning through English in professional courses such as engineering, medical and similar technical areas.

So three policy steps for good implementation are essential:

1. First is to develop a policy to promote teaching in Marathi in higher education institutions, that is, colleges and universities.
2. At the same time, Teaching of English and Hindi as second language should be made compulsory right from 1st standard to 12 th standard (or equivalent) , and if necessary also during three/four years of college education.
3. The policy should be developed to enforce the Self-financing or private schools to resort to teaching in Marathi medium along with compulsory teaching of English as one of the languages from 1st to 12 standard (or equivalent).

1.2 Bilingual Enablement for English-Marathi, Marathi-English

Maharashtra's use of English is also wide and of aspirational interest to its citizens as a language to engage with science, technology and the global world of work and business.

English is a key focus area for both commercial and global engagement for citizens at large. Its use is surprisingly limited at the base level and needs to be made accessible to citizens who look at it as an aspirational enabler for a better life and livelihood.

The current pedagogy limits need to be reworked and made available as a mass enablement specially the conversational and functional English. The language is of immense importance for academic enablement for teacher for teacher, researchers and administrators as well as legal and medical fraternities. English is currently "learned" through a very tough path for 'other language' students and citizens. The pedagogy followed is a self-learning shifted book based curriculum which is either too technical or too academic.

This needs to change.

Bilingual learning of English through Marathi has never been formally studied and offered. An effort to gain English as a language for substantive use as a language for 'work', 'business' and 'global' engagement cannot be denied.

Teachers at school levels, college levels and in technical programs need to be equipped and trained to use English confidently and extensively. This may start with B.Ed., M.Ed. etc. with clear goals for learning Functional English, Conversational English and Academic /technical/ business English. This may need an extensive foundational English learning push with Marathi to English learning/ Teaching Contexts across all HEIs and Secondary School levels.

We recognise the need to teach English as an enabler for the masses of Maharashtra, especially within the Higher & Technical Education Sphere.

We recommend Teaching of English as second language and to make English compulsory right from 1st standard to 12th standard (or equivalent) , and if necessary also teaching of English during three/four years of college education. We should follow three language formula with a bilingual focus on English as an enablement language.



2. Marathi First: Asserting Marathi, Promoting Marathi

Marathi as a language is distinct and has a soft power that represents a unique cultural context that is both energising and positive, it has its own fascinating range of dialects and influences that it has merged into itself and offered to other languages. It has a literary and expressive range of content in various forms: poetry, plays, books, cultural practices and music, over the ages that continues to evolve and enrich India and the world.

2.1 Maharashtra Jagatik Marathi Prasar Vyaspeeth

The State should create a Global Marathi Promotion Mission, which encourages use of Marathi, and promotion of Marathi by both public and private universities and institutions. All Maharashtra Universities and HEIs should create a Consortium to execute this vision of celebrating Marathi and making Marathi easy to learn and enjoy for India as well as the World at large.

The Jagatik Marathi Prasar Vyaspeeth (World Marathi Promotion Platform) is a proposed key body that may be formed by a State Level Consortium of Universities in Maharashtra to promote Marathi at all levels and across all geographies. The scope should include:

- a. Promotion of Marathi in Maharashtra and India along with the world at large as a literature and culture level akin to British council and award

outstanding work and support key projects in the observation studies, evolution research, development, research, propagation of Marathi.

- b. Create a well funded that technical and linguistic research entity under it that will be the mother institution that works on Marathi language history, lexicography, dictionaries and grammar documentation along with researching dialects and allied areas of study. We have several versions of Marathi –spoken and written –rural and regional. There is need to develop a common Marathi language both spoken and for teaching. So our efforts should be directed to develop a common Marathi language, which will be easy for all. The purist Marathi need not be the language of common use. Dalit literature is one such example, which has opened up the gates of a somewhat different form of spoken and written version of the Marathi language. There are other social groups, from which we should draw to develop common Marathi language.
- c. Create a Global Multilingual Marathi teaching & learning platform for students from K 12 to PhD levels and use digital and social media technology to promote 'good' use of Marathi. This will help propagate Marathi amongst all states of India and the world, and appropriately introduce Marathi language and literature across all interested people.

2.2 Marathi Higher Education Text Books, Resource Material Development & Translations: an Urgent time-bound State Level Project

In order to improve the quality of teaching material there is an urgent need to prepare Text Books and Comprehensive Resource Material in all subjects in Marathi - humanities(languages), sciences, engineering, medical education, management education, commerce and other subjects. The Textbooks and material should be prepared by experts on the subjects. It should cover the latest knowledge in the particular subject, nothing should be left out from beginning to end, so that students receive everything –the knowledge that exists in the subject. If we favour teaching in Marathi, in that case all that exists in the English

language should include in the textbook and allied material. It is only then the quality of knowledge will enhance, otherwise it may not offer any value at all.

The focus of Marathi Translations and Resource Material projects should be on:

A. **Preparation of quality Text books and resource material** in Marathi, this will be a key to making the entire Higher Education Space accessible to all Marathi language speakers as has been mandated by the MUPA 2016,

And

B. **Translation of all reference books and supportive books** Particularly the classical, technical books from English to Marathi in all disciplines or subjects. Translation of main books, particularly classical reference books into Marathi. This is necessary so that students could enjoy access to original books from which the Textbooks are prepared. This will improve the knowledge of the students by securing access to original books in all subjects. Translation in Marathi will not deprive the students of knowledge of particular subjects in English languages.

A Special Set up for Marathi Higher Education Text Books, Resource Material Development & Translations Task will need to be created:

This will involve major work of large proportions. In our view the Preparation should be the responsibility of the State Government and not The universities.

The State Government should set a **Marathi Higher Education Text Books, Resource Material Development & Translations Office** as a Government Department or as a special cell at YCMOU or as a separate State Level Board.

For this purpose, Expert Committees in all the subjects should be set up to prepare the Text Books, Resource Materials and Translations. This will be one timework to be done with care. This work should be over within a few years through parallel Expert Committees. Later the only ongoing work would be the revision from time to time, as and when new knowledge is produced.

Preferably, the all such material should be prepared in English and translated in Marathi, so that students have advantage of both English and Marathi. The project of translation of selected books in each subject will be through expert translators with the help of experts as and when required. This will be an ongoing process.

In our view the Task of Text book, Resource Materials and Translation of original books is very crucial for the promotion of quality of teaching and standard of the education in the state. This is what the other countries have done, while they retained the teaching in their own language. This is an excellent investment in education, which will yield high return in quality for the future generation of learners also.

2.3 Boards of Marathi Studies at all HEIs in Maharashtra

Create Boards for Marathi Usage in HEIs as a mandatory requirement. These Boards will lead all initiatives regarding delivery of all courses in Marathi through enabling internal faculty, students and Administration to teach/learn through Marathi.

These Boards will also coordinate with resource material collaboration projects by the State and various entities from time to time as expert bases for translations and textbook making as envisaged by the State.

2.4 Encourage and Enable Collaborations and MOUs with YCMOU for all HEIs in Maharashtra, Central, State and Private for Marathi Text Books, Study Materials and Teaching Resources

Enable YCMOU material to be made available to all HEIs, as they already have a large body of work available in Marathi for immediate use for Arts, Commerce and Management and more. All other university students may be allowed access as Audit/Adjunct students to YCMOU and thus make the entire repository available in Marathi, immediately.

This translational capability and capacity is a rich well-planned institutional capability that can be mobilised and enriched with Emerging Digital Technology and Tools for immediate value and mobilisation across all Maharashtra HEIs. Wherever needed YCMOU may be deployed in a collaborative arrangement with HEIs/Universities/Autonomous Colleges that may need technical expertise or start up help.

YCMOU may also be considered to be enabled to be the lead entity for the Marathi Higher Education Text Books, Resource Material Development & Translations Project.

2.5. Translations & Interpretations Institutions/Departments/Boards at all HEIs

A School/Board of Translations and Interpretation may be mandated in each HEI in order to be able to focus on language matters that will need specialists and experts. These will be language experts and will be linguistics experts as separate from language experts or literary scholars and academics alone.

Especially working on lexicons of Marathi and other dialects is a vast area that will need high talent and vigour for benefit to society. This will be needed across HEIs and can work under State and National Level like the proposed Maharashtra State Marathi Higher Education Text Books, Resource Material Development & Translations Entity or Indian Institute of Translational and Interpretation/Transliteration matters.

2.6. Develop and Operate a Massive Continuous Digital State Level Translations Mission to and from Marathi

This capacity needs to be built through language technology based on Digital & AI based capabilities that are emerging across the world and India.

This will be the quick and effective way to translate all required and recommended reference reading and textbook as well as reference material into Marathi. The past as well as current pace of manually doing this is as slow as 4 books per year by a department at the translations unit of a leading university, for example. This is a bottleneck that has come in the way of learning as well as teaching pace for a number of scientific, technical as well as humanities areas.

The initiative should focus on getting this done through distributing the translation work and gathering it back to be able to make it available to all students and faculty online across devices through a tech portal/platform that will use the latest tools as they emerge in the linguistic translation technologies.

This is expected to solve the availability and access to material in Marathi in one go to all HEIs: public and private, as well as common citizens.

The State has already included the mandate of teaching all Higher Education subjects in Marathi in the MUPA 2016. Due to key challenges has been the low availability of translated texts, reference books and recommended reading material in many subjects including science and technical.

The **Massive Digital Marathi Translations Mission** seeks to solve for this need through using technology to be able to accelerate translations in a fraction of the time it may take for the achieving this goal, quickly.

A goal of getting 5000 books/textbooks translated in Marathi is a must for the mass Maharashtra Higher Education students. The conceptual understanding and learning outcomes are bound to improve across all subjects of study.

A total of about 10000 books is estimated as an overall requirement, maximum if this were to be done manually with, the normal methods this way take as much as 4-8 years.

The Technological Innovation available to us is to enable us to take this project online and through the use of technology to do massive translation work – distribute and create a collaborative platform that will make accurate well- reviewed translations available digitally to all teachers, learners and lovers of languages.

India has been leading this technology area with local proven India lead ventures such as Reverie Technologies who have agreed to do the needful in terms of offering the know-how and method detailing for Marathi as a cause. There are many initiatives for using technology with C-DAC Pune too that may be brought in to enhance this effort as well as seek localisation of other content such as videos, films and spoken word.

3. The Mainstreaming of Sanskrit

As an ancient syncretic basis for a number of Indian languages, Sanskrit has had a wide acceptance as a root language and as such will need to be given its due as a key classical root language for Maharashtra education and research institutions to focus on.

Sanskrit is a gateway to the repository of Indian Ancient Culture and as such still has a role in understanding historical and pre historical contexts of Asia, South Asia, and South East Asia.

The fact that Sanskrit also has been contributing to both Dravidian and other Indian linguistic traditions cannot be denied. The linguistic base of grammar and the large body of literature that Sanskrit involves is also considered to be worthy of deeper study as a classical language.

Hindu Religious Knowledge System as indicated by Sanskrit should be balanced through offering a constitutional construct that focuses on all religious traditional knowledge ancient as well as modern to avoid Constitution's Article 28 issues.

We need to draw a distinction between Sanskrit as a language, and, Sanskrit as a knowledge system (or the knowledge contained in Sanskrit language). Sanskrit as language should be taught like any other language, the knowledge (written in Sanskrit language) in sciences and social science may be taught in each of the discipline in the respective department. The teaching and research of religious philosophy of Ancient Religion like Vedism or Buddhism, Jainism, Sikhism, Christianity or Islam should be confined to Department of Religion and Department of Philosophy. Same should be the case for other languages like Pali, Persian.

Further the teaching of religious philosophy contained in Sanskrit should not be mainstreamed under the Education policy. If this happens, it would mean teaching of one religion in educational Institutions, which is specifically

prohibited by Constitution under article 28 (1). Teaching of one religion under the protection of teaching of language would be unconstitutional.

Sanskrit should be taught as one of the optional languages, like any other classical language, such as Pali, Prakrit and other classical regional languages.

The three-language formula comprising Regional language, Hindi and English should continue without any change.

The option of replacement of either Hindi, as link language, and English as link language by Sanskrit is not advisable. Sanskrit should be taught only as one of the languages, and not as substitute to Hindi and English.

The B.Ed. with dual degree in Sanskrit should instead be offered as a multilingual language option, and not made compulsory. It may be offered along with other classical language options like Pali, Persian/Arabic, Tamil etc. as has been mentioned in the NEP as well as in State Language, Marathi.

3.1 State Level Advanced Sanskrit Centres

It is proposed that Sanskrit Research and Documentation as well as its analysis as a traditional, systematic linguistic platform be recognised as a special area of study through State level Advanced Sanskrit Studies Centres at all universities.

The Centres will, focus on access to learning Sanskrit to the masses while also encouraging

International collaborations on the technical and linguistic strengths that are being recognised the world over.

The Centres will also work towards supporting studies on other languages that have Sanskrit roots and conduct research on the history and past documentation of such linguistic evolution.

4. Protecting and Promoting Languages as Heritage, Legacy and Currency of Culture

Maharashtra has, from its inception, dealt with diversity and unity in its identity as an open yet confident State. It is aware of its numerous native languages and dialects as well as its migrant-origin population through history.

Marathi as a language and Marathi 'Asmita' has always shown respect for other languages as either root or native languages. In many cases these languages have merged and assimilated into a syncretic but unique Marathi dialect of a given region, or has maintained its place proudly with very distinctive languages along its border districts.

Each dialect, language, boli or style has a place in society as a cultural peg that makes everyone unique and yet together. This is the ethos with which one will make space for the study and careful nurture of of various languages in Maharashtra.

4.1 A Language Observatory for Maharashtra

A Central Language Observatory should be created for determining specific language needs of the native languages spoken in Maharashtra and the language spoken by migratory work force that contributes to Maharashtra.

A language observatory is an institution, which is built or implemented to observe and measure language activities in society, its role in making language planning and measuring its impact while documenting endangered and rich linguistic treasures is crucial for better societies.

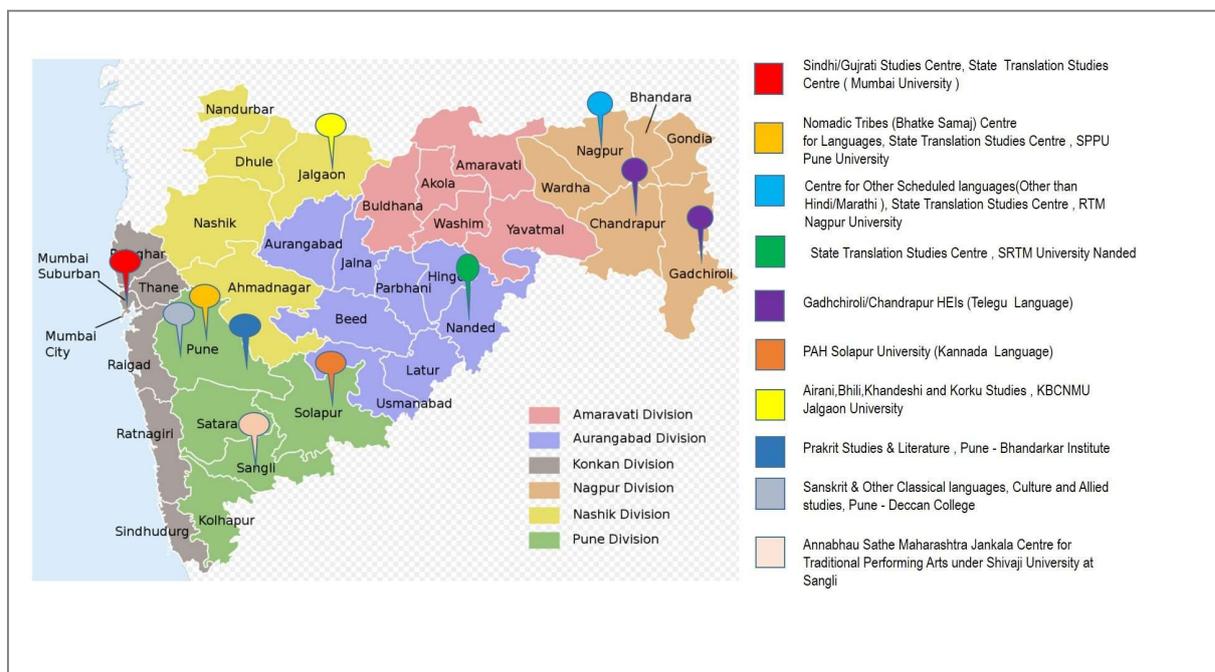
This can be instituted as a semi-government body or taken up under a suitable existing body or department.

4.2 The Public University Centres for Languages for Maharashtra

Maharashtra Public Universities to be Lead Language Centres for various languages and house State Language Initiatives and a unique Jan Kala Initiative:

University of Mumbai	Sindhi/Gujrati Studies Centre, State Translation Studies Centre
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SPPU Pune	Nomadic Tribes (Bhatke Samaj) Centre for Languages, State Translation Studies Centre
RTM Nagpur University	Centre for Other Scheduled languages (Other than Hindi/Marathi), State Translation Studies Centre
SRTM University Nanded	State Translation Studies Centre
Gadhchiroli/Chandrapur HEIs	Telugu
PAH Solapur University	Kannada
KBCNMU Jalgaon	Airani,Bhili,Khandeshi and Korku Studies
Pune - Bhandarkar Institute	Pali & Prakrit Studies & Literature
Pune - Deccan College	Sanskrit & Pali and Other Classical languages, Culture and Allied studies
Sangli (Under Shivaji University)	Annabhau Sathe Maharashtra Jankala Centre for Traditional Performing Arts under Shivaji University



5. Arts and Culture Initiatives in Higher Education

Arts and Culture always bring about the belongingness and syncretic unity amongst people living in a state. While Language is at the core of being able to communicate, manifestation of feelings and pride and bon homie are often found in arts, performing arts and cultural activities.

Whether it is films, television, theatre, music or even craft and design, expressive arts and performing arts thrive and energise every citizen equally. As societies move to digital and beyond the role of entertainment and communication will only grow and it will also provide employment and livelihood while burnishing cultural roots.

Professional and high quality excellence in arts is possible only through bringing the best of technology, creative frameworks and projects for all constituents of society, in an organised and formal manner.

5.1 Establish Creative, Performing Arts & Content Institutions of Excellence

Establishing State Level Maharashtra HE Institutes/Universities of Creative & Performing Arts and Contents needed to bring forth the potential for excellence in Maharashtra's Art and Culture Capability.

This may be worked out to take the arts and performing arts field of Maharashtra into a new direction based on Research, Technology and Multi- disciplinary mode as a HEI that will bring hitherto uninvolved disciplines and technological advances into play.

This will include performing arts across media that will include not only theatre, Films, TV, Dance, Music and Allied content but will also enable research and newer formats of expression including personal channels and publishing across digital and social media. It will also include art and design and the whole area of digital and technology creative content.

Today 'content creation' for education, entertainment as well as projecting soft power is a critical and growing space across the world. This is expected to take performing arts and culture to the people professionally and through academic rigour.

Typical performing arts professional acquires skills beyond the prime art form like say dance: The fitness, The Makeup, Lighting, Garments, Set Design, Music, commercial aspects teaching pedagogies, etc. These need to be built into learn/teach modes to make a full skilled professional in this space.

The Establishment of Four MERU level Institutions at Mumbai/Raigad, Nagpur, Single/Kolhapur and Solapur In this space is recommended for wide and accessible reach and representation of the regional diversity in Maharashtra.

These can be de-novo institutions that will bring literary as well as cultural value to the state and offer employment pathways to millions in the post digital society that is emerging.

5.2 Create and Sponsor a Time bound Historical and Longitudinal Study of the Origins, Civilisation, History and Culture of Maharashtra from pre-historic times.

While studies may have been done in the past as documentation of the history and

geographical detailing with limited archaeological detailing, a need to assert and understand the in-depth long view is overdue. A scholar of repute or a team of various experts may be commissioned to do the above.

5.3 Antar-Bharati Classics and Literature Translations Centre: Pathways To Marathi and From Marathi

The Need for Indian Literature Classics to be Studied and translated from Marathi into various languages is also an important area of cultural push for Maharashtra to be better understood by other states and the world at large.

On the other hand, Maratha Empires have ruled and connected with large swathes of India from Odisha to Bengal, Madhya Pradesh to Delhi/Rajasthan and the Deccan to Thanjavur, Marathi influence is found almost everywhere. Their literature carries influences of Marathi in language and narratives and food practices too. These linguistic connections will also bring the syncretic and pluralistic cultures of our nation together.

An Antar-Bharati Classics and Literature Translation Centre should be created and named Sane Guruji Anatar Bharati Anuvad Kendra and be located at Mangadh (where A Sane Guruji Centre is already active). A MoU may be signed with the existing organisation there, which will bring the projects to deliverable stage with minimum time lost.

5.4 Asiatic Society Resource Centre, a Bureau for Literary Artefacts and Manuscripts

The Asiatic Society of Mumbai should be asked to become a Lead Resource Literature Centre for the purpose of archiving of manuscripts and providing library resources for cultural studies programmes.

This will enable various scholars and centres and HEIs across Maharashtra to work better and have a resource centre that will be available immediately for expert handling and access to manuscripts with due care.

6. The Funding Way forward for Languages, Arts and Culture related initiatives for Maharashtra: Options

The ideas offered above will need a careful study and investment approach that should not burden the State while making sure the State invests in all areas in a timely and value accretive manner for all its citizens.

Some ways of allocating of funds for all of the above have been mentioned in each case where possible, but the overall investments may be done over a period of time keeping resources and capabilities in sync rather than in asynchronous mode of mismatch of capabilities and investments.

It is best that the Universities and the State work towards keeping a 1 % of the Universities' budget aside for Languages and Arts Investments every year and the State offer a match grant system for Initiatives and projects as they start operationalising projects. Thus taking

inspiration from ‘incubation of ideas’ seen in venture capital mode, each initiative will operate through contribution from University budgets to these project accounts and the State will offer to match the same every year so as to maintain progress and accountability for execution as per plans and projections. This will make 2% of the Universities’ budget allocation available for these initiatives regularly.

Another option is to seek to allocate funds through various Ministries such as Ministry of Marathi, Culture and Minority Affairs where the projects may be aligned to such Ministries’ Goals.

The Prabodhankar Thackeray Maharashtra Jagatik Marathi Prasar Vyaspeeth initiative will need special one time budgetary allocation and will be a State Project.

: End of Note:

ANNEXURE-I

LANGUAGE USE IN EDUCATION IN MAHARASHTRA NSS 2017/18 DATA

Enrolment (%) in HE by language, Sector & Gender: 2017-18

Social	Hindi	English	Others	Marathi	Total
Rural	1.2	38.0	0.2	60.6	100
Urban	2.1	80.5	0.5	16.9	100
Male	1.5	60.2	0.4	37.9	100
Female	1.9	58.6	0.2	39.3	100
Total	1.6	59.6	0.4	38.4	100

Source: 75th round NSS data, 2017-18

Enrolment (%) in HE by language, income groups: 2017-18

Social	Hindi	English	Others	Marathi	Total
0-20	1.1	28.3	0.13	70.5	100
20-40	4.0	31.3	0.17	64.5	100
40-60	1.6	33.0	0.6	64.8	100
60-80	2.6	59.3	0.41	37.7	100
80-100	0.4	93.7	0.33	5.6	100
Total	1.6	59.6	0.35	38.4	100

Source: 75th round NSS data, 2017-18

Enrolment (%) in HE by language, Social groups: 2017-18

Social	Hindi	English	Others	Marathi	Total
ST	0.17	64.6	0	35.2	100
SC	0.09	40.4	0.54	59.0	100
HOBC	1.4	55.4	0.13	43.2	100
HHC	2.3	65.5	0.14	32.1	100
Muslim	4.4	72.2	2.46	20.9	100
Buddhist	0.21	27.3	1.52	71.0	100
Total	1.6	59.6	0.35	38.4	100

Source: 75th round NSS data, 2017-18

Enrolment (%) in HE by language, occupational groups: 2017-18

Social	Hindi	English	Others	Marathi	Total
SE	1.9	54.1	0.31	43.8	100
RS	2.3	73.8	0.4	23.5	100
CL	0.45	22.9	0.69	76	100
Total	1.6	59.6	0.35	38.4	100

Source: 75th round NSS data, 2017-18

Schoolector

Table: Enrolment, language, Elementary, all schools, 2017-18

Elem	Hindi	English	Others	Marathi	Total
ST	1.6	7.3	0.29	90.7	100
SC	4.2	18.6	0.03	77.2	100
HOBC	3.3	24.0	0.46	72.2	100
HHC	3.5	42.5	0.61	53.5	100
Muslim	11.1	33.7	24.9	30.3	100
Buddhist	2.2	15.4	0.01	82.4	100
Total	4.3	28.9	3.6	63.1	100

Table: Enrolment, language, **Secondary & HS**, all schools, 2017-18

SHS	Hindi	English	Others	Marathi	Total
ST	1.5	8.0	0.08	90.4	100

SC	3.2	23.2	0	73.6	100
HOBC	2.8	25.4	0.08	71.8	100
HHC	6.4	35.2	0.23	58.2	100
Muslim	6.2	33.0	28.5	32.3	100
Buddhist	3.8	27.4	0	68.9	100
Total	4.1	27.8	2.7	65.3	100

Source: 75th round NSS data, 2017-18

Table: Enrolment, language, Elementary, Govt. & aided schools, 2017-18

Gov + Aided	Hindi	English	Others	Marathi	Total
ST	1.7	3.6	0.3	94.4	100
SC	4.5	12.4	0.0	83.0	100
HOBC	2.9	15.7	0.4	81.0	100
HHC	4.0	24.1	0.6	71.4	100
Muslim	13.1	16.7	32.4	37.7	100
Buddhist	2.3	11.6	0.0	86.1	100
Total	4.5	16.3	4.3	74.9	100

Source: 75th round NSS data, 2017-18

Table: Enrolment, language Secondary & HS, Govt. & aided schools, 2017-18

Gov + Aided	Hindi	English	Others	Marathi	Total
ST	1.7	8.1	0.1	90.2	100
SC	3.5	19.5	0.0	77.0	100
HOBC	2.9	21.1	0.1	76.0	100

HHC	6.9	26.2	0.3	66.7	100
Muslim	7.3	20.8	34.1	37.8	100
Buddhist	4.0	23.5	0.0	72.5	100
Total	4.4	21.3	3.0	71.2	100

Source: 75th round NSS data, 2017-18

Table: Enrolment, language, Elementary, Unaided schools, 2017-18

Unaided	Hindi	English	Others	Marathi	Total
NMST	0	85.0	0	15.0	100
NMSC	0	90.1	0	9.9	100
HOBC	5.9	82.6	0.88	10.6	100
HHC	2.1	89.6	0.56	7.8	100
Muslim	5.1	85.9	1.2	7.8	100
Buddhist	0	99.1	0	0.9	100
Total	3.3	87.6	0.68	8.5	100

Source: 75th round NSS data, 2017-18

Table: Enrolment, language, Secondary & HS, Unaided schools, 2017-18

Unaided	Hindi	English	Others	Marathi	Total
ST	0	6.7	0	93.3	100
SC	0	66.2	0	33.8	100
HOBC	1.7	68.0	0.06	30.2	100
HHC	4.2	76.1	0.06	19.7	100
Muslim	1.5	86.8	1.68	10.0	100
Buddhist	0	88.0	0	12.0	100
Total	2.51	71.4	0.26	25.8	100

Source: 75th round NSS data, 2017-18

Overview:
Annexure –II

Massive Marathi Translation Concept Note

Maharashtra Higher Education

The National Education Policy 2020 is the first education policy of the 21st century that aims to address the many growing developmental imperatives of our country. This Policy proposes the revision and revamping of all aspects of the education structure, including its regulation and governance, to create a new system that is aligned with the aspirational goals of 21st century education, including SDG4, while building upon India's traditions and value systems.

Multilingualism and the power of languages has been the core of this policy as it is well understood that students learn and grasp nontrivial concepts more quickly in their home language/mother tongue. Home language is usually the same language as the mother tongue or that which is spoken by local communities.

Maharashtra as a state, will follow the three-language formula and will continue to follow and implement these instructions while keeping in mind the Constitutional provisions, aspirations of the people, regions, and the Union, and the need to promote multilingualism as well as promote national unity.

In addition to this, as specified under Chapter-1 of Maharashtra Public Universities Act, 2016, the state shall promote the study of Marathi and the use of Marathi as a medium of instruction, study, research and examination, in adherence to the policies of the State Government.

Objective:

Massive Open Online Courses have been growing rapidly in size and impact. Yet the language barrier constitutes a major growth impediment in reaching out to all students across the state. NEP aims at tackling this impediment by developing high-quality translation of all types of text genre including the textbooks, question banks, course material, online tests etc. from English to multiple Indian Languages.

Over a period of time, phrase-based and syntax-based statistical machine translation models will be developed for addressing language diversity and supporting the language-independent nature of the methodology.

An innovative multi-modal automatic and human evaluation schema will further ensure translation quality. For human evaluation, an innovative, strict-access control, time- and cost-efficient crowdsourcing setup will be used. Translation experts, domain experts and end users will also be involved.

To take this initiative forward, the Sub-committee formed for Language and Arts, Chaired by Shri Nitin Pujar, under the directions of The Mashelkar Committee for NEP implementation of the Government of Maharashtra to work on the implementation of the NEP 2020, seeks to address and detail the key challenges relating to multilingual higher education delivery. Creating innovative methods for localization of educational textbooks, reference books and course content material of high volumes in Marathi is the key task identified as a game changer.

This will help in providing access, expansion & improve the reach of education throughout the state, including in the regions where people do not have easy access to good quality regional content.

The Gross Enrolment Ratio (GER) in higher education is above 40% in developed countries whereas; in India it is approximately 24.83%, which is calculated for 18-25 years of age group. This initiative should help the government to achieve a proposed target of 50% GER in the coming time.

Challenges of using the conventional methods:

1. **Very large volume:** Approximately 10,000+ books is estimated to be available across various subjects. On an average, if we consider that each book has 200 pages and approximately has 300 words on each of those pages, this amounts to an estimate of 60+ Crs of words. A traditional approach for localization will always have a challenge in terms of translating the content in a shorter time and maintaining the consistency across the translated content.
2. **Turnaround time:** Localization, especially translation, is a time-consuming activity and resource intensive as well. Skilled translators are able to work with speeds in the range of 2000 to 2500 words per day (8 hours). At this speed, a group of 100 translators can only translate approximately 6 to 7.5 Cr words in a year. At this pace, in a year, a maximum of 1000 to 1200 books can be localized in ONE language.
3. **Quality:** Usage of content is quality dependent. If a large number of translators are working on a project, it gets very difficult to ensure translations with same or similar quality across the bench of translators. This impacts the final outcome seen in the localized books, which will have inherent issues in the context of translations, improper use of terminologies and even loss of intent at some places.
4. **Unavailability of Technology:** A key challenge existing today is the availability of a robust technology tool/platform which can provide the digitization & translation teams the means and ways to look beyond the status quo and innovate. Hence the air gap exists between the enormous content & the probable users. In addition to this, there is no opportunity to leverage any benefit from continuous learning, which could significantly improve efficiency with progressive usage of more content.

Alternate Approach - Technology Based Localization:

1. **Integrated Digital Platform:** Localization, especially translation, is a time-consuming activity and resource intensive as well. An integrated platform that provides tools such as 'Glossary building', 'in-built Indian language keyboard', 'spell checker', 'translation memory', 'removing duplicity' etc. makes automated localization easy, accurate, time & cost-effective.
2. **Consistency in quality:** Program Management and tracking of deliverables is difficult in case of multiple translators working on multiple projects in different languages. This impacts the final outcome. A rule based approach is essential to achieve standardized translations.
3. **Higher productivity:** The AI powered tools help us in increasing the translation speed by 3- 4X across all Indian languages. The resource availability will be the highest on such platforms to be able to cater to high volume requirements.
4. **Sustainable outcomes from knowledge acquired:** Over a period of time, we aim to localize content within a very short span of time and also enable translators to easily translate in multiple languages. Parallel content creation may be possible at source, while the author is writing books. The platform, at every step, should 'learn' as more and more data is

processed. The modules integrated on the Translation platform should be AI based which can build high efficiency over a period of time.

5. **Scalability:** The translation platform should be designed to be scalable to n-levels. It should have the capability to allow parallel processing of data in real time, across a very large pool of people working in parallel, without losing quality. This will be a key factor to processing very high volumes of data, which is the case here.
6. **Employment Generation:** The execution of these projects will require a large bench of people to do parallel processing of content. We aim to help generate income at state level, by individuals taking up translation as a source of employment. Every individual, after a level of education, can earn by doing content translation in the languages they learn and also create content in the same.
7. **Building an Ecosystem:** The content translation activities are highly dependent on the number of people working in these process elements. Once our processes are stabilized over the initial period, more partners can be easily made a part of the process, thus generating additional business in the market, without compromising on the quality and consistency of the output.

Reverie's Background Capabilities:

Reverie has been working for over a decade now on Indian language technologies, with a mission to make the internet in India easy to use by every Indian in their own languages. Reverie's unified language platforms and solutions provide superior localization services, allowing for smooth

implementation and on-boarding process for various Government Portals and seamless experience for its users. Reverie's experience building solutions for Indian language users is built around providing a localized experience that lets an Indian language user interact with a platform with the same ease an English user does.

Salient features of our technologies:

- Completely 'Made In India' technologies
- Trained & built for Indian languages
- AI & ML powered Language-based Solutions
- Accents & Dialect agnostic solution
- Secure Integration

Strong Backbone of Experience & Support:

Reverie Language Technologies, a leader in Indian language localization & user engagement technology solutions for over a decade is working towards a vision to create Language Equality on the Internet. Their language practice is dedicated to helping clients to future-proof their rapidly expanding content by combining cutting-edge technologies like Artificial Intelligence and Machine Translation (MT) with best-practice approaches for optimizing content and business processes.

Comprehensive Indian language NLP solutions cover the entire online journey of an Indian language user – from business discovery, content creation and consumption, interaction, and communication. The 1st company in India to provide a unique AI-powered Translation Marketplace, Prabandhak, aimed at breaking the scalability barrier of language translation services. Our platform provides localization services such as Local-language content Translation, Transliteration, Text, and Voice interfaces for user input, Search, and Natural language understanding through a set of interfaces that are available both over the cloud and on-premise. The platform integrates with the existing systems of businesses to enable end user's engagement in Indian languages.

The technology providers digital language solutions for Indian languages have touched the lives of over 124 million Indians, helping them engage better with online services through deployments at large enterprises across industry segments such as BFSI, Retail and eCommerce, Logistics and Supply Chain, Media and Digital Entertainment as well as Central and State Government bodies.

Highlights of the accolades bagged by the technology provider:

- In 2011, won the YourStory TechSparks 2011 challenge and Unplugged Top 5 Products Award from Qualcomm through the QPrize competition for the most innovative idea.

- In 2012, received the Manthan Award 2012 for South Asia & Asia-Pacific (winner) in the E- localization category.
- In 2013, recognized by NASSCOM as an innovative emerging company and listed in Emerge “League of Ten” list.
- In 2014, recognized and honored with the Microsoft Code of Honor Award for the services offered in the government sector.
- In 2018, adjudged as one of the top 3 winners in the ‘Citizen Voice Challenge’ organized by Nasscom and MyGov. Also, the only end-to-end solution provider for the requirements mentioned in the challenge.
- In 2019, successfully obtained the patent for the Indic Keypad solution and also in the same year won Microsoft Diversity and Inclusion Changemaker Partner of the Year.

In Jan 2018, announced the #PledgeToTech, an initiative to educate literate Indians about typing in Indian languages. Internet users were encouraged to teach how to type in their own language and access the internet as well.

Proposed next-step:

To demonstrate our capabilities, Reverie would like to initiate this project by translating 25 books into Marathi Language. The project can be executed and delivered within 45-60 days using the technology-based localization approach whereas it would take 4-6 months to deliver the same using the manual conventional methods.

*******END OF Concept Note *******

The NEP Implementation Initiatives for Maharashtra relating to Language & Arts and Action Suggested									
Sr No	Change	Activity	Priority	Implementing Authority / Body	Timeline	Pre-requisites	Resources/Funding	Capacity Building	Remarks
1	Develop Local Language Translations and Vocabulary Scientific/Technical/Other subjects (Marathi)	a. Bilingual Learning to be developed English-Marathi- English or Local Languages	1	Universities/HEIs, Specialist Translation Entities, Projects and Language Experts	Immediate and should start functioning in 2022	Learning and Teaching Materials to be translated on large scale	Establish Translation Centres and Invest in mass translation projects	Develop Mass Translation talent and teams	Under Departments of H&T Education
		b. Establish Boards of Marathi at all HEIs in Maharashtra	1	Universities and HEIs	Immediate and start operations in 2022	Already possible as entities, but need enablement with statute changes	None	Training for Translational Abilities as added expertise	
		c. Make currently available material for various UG/PG courses at YCMOU available to all Universities in Marathi	1	YCMOU/Dept. of H&T Education	Immediate and establish Translation Consortium in 2021 and start by 2022	None	None	MOUs and Collaboration Systems to be worked out	
		d. Translation	1	All Universities	Immediate	None	None	Bilingual	

		Boards in all HEIs for continuous translational projects in Marathi and Other Languages for border bilingual populations			and should be operational by 2022			Material development in secondary local languages	
		e. Massive Translations Mission for Mass Books/Reference Books/Study Material on Large Scale through new digital and language technology tools	1	Leading Language Technology entities from digital domains and YCMOU+HEIs and Universities forming new consortia on PPP basis	Immediate Pilot may be commissioned on no obligation basis and Start full project by 2022	Formation of entity for PPP under YCMOU with private entities needs to be properly worked out	Initial establishment funding may be needed as capital for the new entity and then it will operate on a self-funded basis	Translational technology experts will be needed to be on boarded at YCMOU for transition into this new area	
2	Mainstreaming of Sanskrit	a. State Level Sanskrit Centres should be started at all HEIs and Universities	3	Universities/HEIs	Immediate with establishment by 2022	Centres can be based in existing Sanskrit Departments or Language Schools	None	Sanskrit may be made optional language of study for all arts/humanities programs	

		b. Kaviguru Kalidas Sanskrit University may be made the Lead Institution	3	All Universities and HEIs can seek collaborative support from	Immediate	Mous may be initiated to enable suitable arrangements	None	Sanskrit Teaching and Learning methods and materials	
		for Sanskrit Pedagogy and Teaching and Curriculum support for all HEIs in Maharashtra		the KKSU		ts with HEIs		need to be standardised for mass mainstreaming	

3	Indian Knowledge Systems Focus	a. Sponsor and Conduct a Longitudinal Study of Maharashtra and Central India's evolution from the post Ice Age times to today in order to understand and showcase the Indian Heritage beyond the current narratives that exist. Leading Cultural and Linguistic scholars are to be bright in for this true knowledge project	4	Can be done under one of the universities' auspices such as Mumbai or Pune.	Feasibility and Project detailing Immediate and based on findings and support from NRF and other funding bodies start in 2022	Will need a Pre Study through an Experts Committee	The Scope of the study may decide the funds but it will not be above RS 50 Lakhs	None	This may be a project that can be started under any University department that will fit the scope
		b. The Asiatic Society of	3	Asiatic Society and the State	Immediate	Will need to work out a	Mainly through Department of	Resources and Experts will	

		Mumbai should be made the reference and resource centre for manuscripts and material that may be sourced and stored and made available for all to conduct further studies and research on the Indian Knowledge System		Government		mode of collaboration with the Institution	Higher Education and Ministry of Culture	need to be brought in with the focus on Indian Knowledge Systems	
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4	Languages Research , Teaching and Access to be strengthened and empowered	a. Create and Establish Language Centres in all Public Universities by allocating focus of specific Languages/Groups of Languages to each University or HEI (This is made into a detailed list of Centres and is tabulated in the Main Sub	2	All Universities and State Government	Immediate and start by 2022	Will need new entities to be formed under the Universities	University Budgets can be supported for establishment	New Language Faculty and Experts may need to be added	Needs Special capability investments and support from NRF and other funding and States also
		Committee Report)							

		b. Invest in a Language Observatory in the State in order to track, trace, research, document and measure language use and development in all its glory from the past to the present and use this to enrich language capability and policy for the State.	4	State Government with NRF	Feasibility Study Immediate and start based on scope and funding and teams available	Maharashtra State Government	To be estimated (ranging from 25 cr to 50 cr)	International Bodies Networking and support development will be needed	
		c. AntarBharati Centre for Literary Translations into other languages from Marathi and from other languages into Marathi for encouraging trans-lingual and multilingual	2	Sane Guruji Rashtriya Smarak Vadghar at Mangaon	Immediate	Maharashtra State Government	To be estimated based on scope and project size but the entity is well established will all facilities for quick start	Only Tech and Experts in Translations across languages will need to be invested in	This is a well established entity like the Sanskrit university and so may be utilised for the State immediately with only marginal investments

		studies to celebrate cultures emanating from Maharashtra and India.							and very little time to start
5	Promotion of traditional Arts forms/Lok Kala and Lok Vidya	Establish a Jan Kala HEI level Institute or Academy under Shivaji University to bring together all the local and traditional art forms and traditions for study and propagation and knowledge at Sangli	3	Shivaji University	Feasibility Immediate and based on report start	Maharashtra State Government	Will need to be studied by a suitable expert committee and devised as a special entity under MERU concept	New Expert Teams will need to work on this as a de novo institution	This is a new and crucial area for traditional and local dialect and rare languages support also
6	Promote Local Languages	Establish Prabodhankar Thackeray Maharstara Jagatik Marathi Prasar Vyaspeeth as Lead Global Marathi Language Promotion Body like the British Council/Alliance	1	Should be a State Government Body	Immediate establishment of the body and start in 2022	Maharashtra State Government	Will need an initial Corpus of Rs 50 crore and then it will be a self-funding entity	Universities and Mandal's as well as Prominent Literary Institutions may be brought on board of a multi-dimensional activation and	Needs Empowered Ministerial Support from various Ministries like Marathi, Culture and Education

								celebration of	
		Française /Goethe Institute etc for both Marathi Culture and Language Prominence in India as well as Abroad.						Marathi	

7	Push for Arts and performing Arts professionally including space for Artists and performers to develop and thrive	Create 4 Performing Arts, Arts and Content Institutions, in 4 regions of Maharashtra, as MERU level Institutions for the film, televisions and digital content space that will create and deliver a stream of high quality professional talent	2	Should be new HEIs which may be either under existing University auspices or Standalone entities	Start groundwork and feasibility studies immediately and start by 2023-24	Maharashtra State Government	Will need funds for establishment in initial phase and then will be self-funded	New HEIs need to be carefully devised for maximum value to the state and citizens so detailed studies should be done about viability before hand	De Novo HEIs and so may need experts to study the actual implementation challenges
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9. Finance

Finance Sub-Group Report

Members of the Finance Sub-group¹

Abhay Pethe

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(Submitted for further discussion to the Committee)

Preamble: The issues of Raising funds and Utilization of funds will always be there, but in an environment where Private Participation in managing higher education services is already high, the case for very high quality and mass affordability/equitable access will only be solved through efficient financial models followed by all HEIs, private and public. We need to come up with a series of recommended fund raising and utilization methods for this. Indeed, *various postures and pronouncements of Maharashtra Government would have us believe that within Education sector, Higher and Technical education segment would best be left to the private sector going forward.* Thus, the moot point here then is arms-length enabling regulatory framework for private agencies rather than allocating larger public funds for this segment. Having said this, even a minimalist approach would require that government provide adequate funds for fulfilling its commitments. Guided by the scope so demarcated, we proceed to provide basic issues, tenets and principles that provide the backdrop and then recommend action in each of the components covered in the scope delineated.

Backdrop: Basic Issues and Principles

- The Finance Issues and Challenges are threefold:
 1. Creating/Designing truly Sustainable Financing Models for the ambitious NEP goals relating to quality, research-intensity and increase in supply of education places for Maharashtra. Ideally for the whole spectrum of Colleges to Public Universities.
 2. Moving the HEIs from a passive grant-accepting attitude in financing to a more active vision/ambition based fund raising capability is the challenge. Offering a guided model on how to finance operations for better outcomes for all stakeholders will be critical.
 3. Bringing more transparency to finance and cost measurement and reporting ratios that will be simple for all to track and follow is another core capability that needs to be developed.

¹ We would like to appreciate and acknowledge the able logistical assistance provided by Shri. Mahendra Dabhade

- The underlying principles for all the recommendations will be:
 1. All stake holders will perform their expected roles in transparent and **self-binding** and accountable manner
 2. Principle of **Ring Fencing** or tying specific funds to specific objects of expenditure/ outcomes
 3. Principle of '**Additionality**' implying that when some funds are made available for a specific purpose, they shall be in addition to what would normally be available through budgetary or other process and no substitution or in particular reduction in budgetary allocation will be carried out for the reason of these additional funds being made available.
 4. **Needs blind** approach (as recommended in Sam Pitroda's NKC Report) this is relating to scholarships or freeships and financial support for students based on their potential rather than their ability to afford higher education. To further elaborate, this implies that any student who is otherwise merits admission to a course shall not be denied for want of economic means.

- **The Extant situation:** In order to recommend the reforms/ action points pertinent to this subgroup, we need clearly to be aware of the extant situation that prevails. We know that there are (in the recent past and continuing) substantial vacancies existing in the HEIs in Maharashtra. The funding pattern has been stable at 1/3rd:2/3rd when it comes to Centre and States. The overall spend for education in recent years has been around 15% for India as a whole and around 18% for Maharashtra when compared to budgetary allocations and around 4.5% of GDP and 2.5% of GSDP for India and Maharashtra respectively. Of this an overwhelming proportion (around 89%) is 'committed expenditure' i.e., related to salaries and pensions. The implication is that even the commitments by the government toward providing non-salary grants are unfulfilled. This also means that target – generally accepted and also envisioned by NEP – of overall education spend reaching 6% of GDP and 20% of total public expenditure is not only not very ambitious and indeed could be achieved in a Business As Usual (BAU) scenario, but also that in the likely scenario that Higher Education will not get a larger pie, due to other exigencies and priorities, will mean that even the minimal expectations may not be fulfilled. **We clearly need to be more ambitious in our advocacy of larger fund allocation for the Education sector.** For Higher education sector in Maharashtra the contribution is around 3% of budgetary allocation and only about 0.35% of the GSDP in 2018-19. This is quite small but perhaps sits well with the thinking of the government as mentioned in the preamble. Also, it is well to remember that whereas we focus only on the specific departmental allocations here, the overall expenditure on education comes from other departments too. We thus come to our first recommendation²:

- **R1: We strongly recommend that a white paper on finances of the educational sector (Government, Universities and Colleges) be commissioned.** This could be undertaken by the

² R & T in bold obviously reflect the recommendation and relevant time lines respectively. In working out time times we have realistically considered the current FY as a wash out for COVID reasons (and also time for us to submit the report)

RUSA State Office helped by DHE and DTE as well as the Budget Section of the government. Clearly in order to make any recommendations going forward, we need a good fix on where we are. It should at the least cover comprehensive information (aggregate and disaggregated) on the following:

1. Total vacancies, and projected requirements as per GER aims of over 50%, in all the HEIs (Universities and Colleges in Maharashtra to estimate additional expenditure requirement to fulfil its minimal committed obligation).
2. % allocation to the H & TE department as a proportion of GSDP, Budget (to gauge hike possibilities)
3. Actuals vs. Allocation - Analysis of past years and proposed (including estimating absorption capacity by all the stakeholders based on past records)
4. Division between sources: Own and other sources of revenues. (dependency by stakeholders on State provisions)
5. Overall spend on Higher and Technical education by other departments (as a proportion of total public spend and %of GSDP)³
6. Some research and analysis on private sector too, by the government?

- **T1: Between March 2021 to December 2021**

- The first point above is important because the minimum expectation from the government is to fulfil its obligations can be concretely estimated. Also this leads us to a recommendation:

- **R2: Make a Self-Binding commitment and provision of additional budgetary resources to Fill up all the vacancies in a step wise and time bound manner (in a monotonically non-decreasing manner)**

- **T2: Starting Budget March 2021 ending Budget March 2024**

The Question raising funds: We now consider fund raising through other sources

- Maharashtra has been possibly one of the more successful states in volume terms as well as funding availability (accepting new salary scales) in spite of low central institution funding (allocation and absorption) compared to other states. As mentioned in various forums and papers on the matter the issue is application and absorption of funds for better quality outcomes, not only the availability of funds. In fact some papers refer to the fact that the HEI leadership often plans their goals based on available funds rather than based on academic ambition. This leads us to another recommendation:

- **R3: Set up a State level Higher Education Finance Mission/ Board** which will work (under the auspices of functioning MAHEAD) to:

1. Enable all HEIs (Public and Private) to seek well-researched best practices across the world

³ I have requested the DTE to check with the budget section of his office and get us some of the data.

2. The goal of this mission will to analyse the entire gamut of Costs, Investments, Income (including fees and other sources), Funding, etc. across various HEI types.
 3. Create a well-designed investment friendly ecosystem that will attract impact investors, donors, philanthropists, formal funding institutions like banks and more. This will solve for availability of funds as well as accountability of funds.
 4. Study the fiscal and other incentives for CSR, Alumni and Philanthropy as possible sources of funding as also broad suggestions for items of expenditure and create a template for its practice by studying existing models.
 5. Help create capacity for absorbing entitled Grants: At present the grants available to various colleges and university are not realized due to various non-compliances. Training and handholding for such purposes improving the absorption capacity of all the stakeholders.
 6. Help all stake holders with more efficient expenditure management by
 - (i) Creating a Revenue Model to be created for both universities & colleges especially through leveraging technology for efficiency.
 - (ii) Template for rendering Investment committees functional (in HEIs)
 - (iii) Template for relevant expenditure with benchmarks
- **T3: September 2021 to December 2021** (Under and after MAHEAD starts functioning fully; expectedly by September 2021)

Enabling Optimum Monetization of Assets, owned by Public Universities.

They can be classified in two categories:

- a. Unutilized Space: Could be rented to Private Education ventures amongst others (indicative list without over-codification). Transparent, online process of open bidding can be resorted to. It might be better to go in revenue sharing model, than fixed amounts. Options of shorter tenures, to be rolled over upon regular payment of revenue share, are more advisable than long leases. Can Industries be invited over to set up their R & D Departments?
 - b. Constructed space: Letting out process should be developed and maintained on the websites. For considerable portion of constructed spaces, like auditoriums and classrooms, 'available time' can be identified well in advance. Interested parties can pay fixed revenue in advance or bid for the space within given time limit.
- **Creating a Cess linked Education Fund:** Although applying Cesses is deemed to be not a very good practice in public finance (taxation) we could make an exception here since given the priorities it may be difficult to bargain for too much of a greater allocation within the State budget for Higher and Technical Education. This cess could be collected from the teachers and final year students with perhaps a matching grant from the employer (management). To fashion these cesses Maharashtra has a good deal of experience in other spheres like labour et al, (although the end results have not been encouraging). This fund has not only to be ring fenced for specified purposes such as bursary for needy students, but must be deemed as an additional funding source (apart from the routine flow from the State government). While the cess has to be imposed by the State the transparent and accountable collection and use should be left to the individual HEI.

- **Employment Opportunity Fund:** The employment opportunity to educated persons in Maharashtra should be covered by a tax and ring fenced in this fund. This money will be easy to collect by the employer and should be a contribution from the employer and employee. The utilisation of fund can be for various educational projects earmarked and clearly put out in the public domain.
- **Resource raising (or Active Tuition Income Raising) via Industry-Society connect:** Universities and generally HEIs are societal institutions in a very intrinsic way. They ought, by definition to have a connection with the multiple agents and agencies in the society. We can leverage this basic need in several ways in order to raise resources for the components of core functions of HEIs. In today's parlance we need to reinterpret and optimally use this learning and development space. Innovative courses can be designed and administered. These of course must be demand based. The arena here is huge and spans from **life and employable skills to finishing** type of courses to **life-long/ adult** learning types to **industry and other kind of coaching** to the much wanted **Executive Education:** The current education post qualification doesn't provide for new age developments. These domains are not large but expanding and really retrained only by the capacity of the Universities and HEIs. Many in this sphere can be money spinners and generate revenue and make the educated and not so educated stay relevant in their jobs. In crass economic terms, the market for these kind of courses is huge globally, nationally and at the State level. With technology leveraging such courses in e-forms or hybrid ones can really transgress the traditional constraints of geography. By happy concurrence, this will also provide the opportunity to stay connected with the wider community.
- **R4: In all of the four points above enabling provisions by the State will have to be made and the funds so raised must be ring fenced autonomously by HEIs but with the proviso that this must be done with utmost transparency and accountability and for publicly declared educational purposes. These funds, to repeat, will be in addition to the routine fund flows to the HEIs from the State government.**
- **T4: Begin the process June 2021 to finish by December 2021**

Rationalization of Student/ Course fees and related matters:

1. Attempt should be made to cover as much proportion of the actual costs while providing safeguards to satisfy the tenet of needs blind approach. Using the usual tenets of economic principles for tariff setting for public utilities, including in-built gradual approach for rationalization (increase) in fees. In this context, differential pricing could be tried (using the means test).
2. Fee Regulation Authority and Funds Management by the Private Institutions (Enabling attitude should be informed by 'trust but verify' principle).
Some points/ template creation relevant to the book-keeping, fund management and accountability of the finances of the institutions, running self-financed courses.

- a. Major expense heads and the minimum proportionate expenditure should be defined and made recommendatory. If an institution wishes to deviate significantly from those proportions, it should be required explain the reasoning to the FRA. Further, it is required to maintain that minimum proportion at least once in a span of, say, 3 years.
 - b. Members, with better knowledge of finance and accounting, need to be on the FRA.
 - c. The principal of reimbursing the expenditure of past year as Fees for the next one is distorted in practice. It might be better to allow fees based on budgets and ensure that they are followed.
 - d. FRA Proposal needs to be independently audited by Chartered Accountants, who will ensure that the reporting fulfils separate prescribed set of accounting standards.
 - e. Where does the surplus money go? Is there a drain of wealth from more number of less resourceful students to the less number of more resourceful ones? That needs to be observed diligently, at least where government grants, taxation benefits, infrastructure is available.
 - f. In the interest of transparency and accountability, FRA proposals, utilization schedules, etc., should be displayed physically and open to access digitally.
 - g. In setting up FRA (structure/ number of persons) have some redundancy/ latitude to be realistic in terms their capacity to carry out their mandate in a timely manner.
- **R5: Enabling provisions towards the above rationalization of fees and restructuring and reforming the FRA and provision of additional funding as an incentive for encouraging the best practice carried out in a transparent manner.**
 - **T5: Begin in June 2021 to end by June 2022** will involve setting up a committee.

Public Private Partnership:

In some sense in most case of HEI's there is already existing PPP element in the sense that there is a concessionaire agreement in terms of land lease or other benefits in return for certain duties that could be followed up. The corporates and university and colleges could tie up for developing their own training centre, creating a supply chain for future employment and turning institutions profitable with appropriate revenue sharing formulae. There needs to be more learning about PPPs generally, in terms of especially risk sharing, arbitration and renegotiation. PPPs in general have not been greatly successful and the Vijay Kelkar report on revisiting and revitalizing PPPs need to acted upon. In education this will be a relatively virgin area of application and requires greater study and not a little innovation. Of course the catastrophic COVID-19 is a dampener but hopefully not for too long.

- **R6: A quick study needs to be commissioned to tailor this arrangement (PPP) in the context of Education Sector that will consider specificities as well as import learning around PPPs in other sectors.**
- **T6: June 2021 to December 2021**

Now for something slightly off-beat:

1. **Education subsidy option scheme:** Calculate the cost per student, factoring in the running and proportionate/amortized capital expenditure incurred by the State Government, directly or indirectly. Reduce the actual fee charged from the student. Differential amount would be Education Subsidy option, written by the student, as she/he takes admission. PAN of the student generates all the information in AIR (Annual Information Report) with the Income Tax Department. As per AIR, if the student's taxable income crosses a certain multiple of the option written by her/him (say, 10), then the option kicks in and students is required to pay that component, over a pre-defined period of time. This is a variant of the Differential Pricing suggested earlier which involves a means test. Could the outcomes and payments be made public legally? Lessons from Bangalore Property tax experiment may be useful.
 2. **Education Bonds/ Venture capital/ Listing on the market:** These are futuristic and without vibrant thick and efficient secondary debt market In India, Education Bonds are not likely to be successful route for the moment at any rate. Venture capital and listing becomes too risky with State education involved for the moment. But it is worth initiating a dialogue especially with a view to underlining the consequence of ushering in market discipline leading to accountability and compliance on the part of the stake holders.
- **Finally, the financial implications of suggestions and recommendations from other subgroups could mean that we may have to continue with the work going forward** (unless they themselves provide financial estimates). Some of the things that we can easily anticipate as candidates requiring substantial resource provisioning are:
1. Digitalization (Universal investment in hard/software)
 2. Setting and Operationalizing State level Organizations: State Research Fund amongst others
 3. Marathi Language Centre: Set up and personnel
 4. Governance mechanism/ personnel within HEIs
 5. Strengthening HRDC for capacity building and training (Pedagogic & Research)
3. **Post-Script:** The focus of our subgroup has been on Public (State) Universities and HEIs. Perhaps we could have had a brief discussion on the Source of funding for the private sector but clearly comprehensive data may not be available and hence our analysis would have to be dependent on a small (sketchy?) sample. Typically we would have liked to get some idea and hence set some kind of bench marks for CAPEX, OPEX for core and other related activities. This would further allow us to have analyse and set parameters such as ROIs, time frame for viability. This would also allow us to understand their approach towards education and normatively set guard rails for them and compare and contrast with the governmental approach. If deemed to be useful by the Committee we could attempt this (with sufficient support) at a later stage (as indicated in the previous para we may have to continue with the work going forward). *For the moment our position is that minimal restraint and oversight from a distance should be the guiding principles for the government. Certainly the guidelines for the private sector should be more liberal and appropriately enabling compared to what we have recommended for the public Universities and HEIs.*

Abbreviations and Acronyms

ABC Academic Bank of Credit

AI Artificial Intelligence

AMS Assignment Management System

ASSOCHAM Associated Chambers of Commerce and Industry of India

BAU Business As Usual

BVC Board of Vice Chancellors

CBCS Choice Based Credit System

CBSE Central Board of Secondary Education

CII Confederation of Indian Industry

CP Credit Points

CROM Consortium for Research Olympiad Missions

CSCM Central Sponsored Centrally Managed

CSR Corporate social responsibility

CSSM Central Sponsored State Managed

EBoSF E-Board of Studies Forum

ECTS European Credit Transfer System

EOO Equal Opportunity Office

ETS Education Testing Service, Pearson

FICCI Federation of Indian Chambers of Commerce & Industry

FRA Fee Regulating Authority

GL Gamified Learning

GDP Gross Domestic Product

GER Gross Enrolment Ratio

GER Gross Enrolment Ratio

GoM Government of Maharashtra

GSDP Gross State domestic product

HEI Higher Education Institutions

HRDC Human Resources Development Centers

IIM Indian Institutes of Management

IIT Indian Institutes of Technology

IPR Intellectual Property Rights

IQAC Internal Quality Assurance Cell

IRT Item Response Theory

KBCNMU Kavayitri Bahinabai Chaudhari North Maharashtra University

KSSL Knowledge , Skills , Self-awareness, learning to Learn Framework

KYC Know Your Customer
MAHED Maharashtra State Commission on Higher Education and Development
MCTS Maharashtra Credit Transfer System
MDCC Maharashtra Deans Consultative Committee
MEAT Maharashtra Educational Alliance for Technology
MERU Multidisciplinary Education & Research University
ML Machine Learning
MOOC Massive Open Online Courses
MPUA Maharashtra Public Universities Act, 2016
MSCDHE Maharashtra State Council for Development of Higher Education
MSCTE Maharashtra State Council for Teacher Education
MSDE Ministry of Skill Development and Entrepreneurship
MSFDA Maharashtra State Faculty Development Academy
MSRRIC Maharashtra State Responsible Research and Innovation Council
NAAC National Assessment and Accreditation Council
NAPS National Apprenticeship Promotion Scheme
NASSCOM National Association of Software and Service Companies
NCTE National Council for Teacher Education
NEP National Education Policy 2020
NOS National Occupational Standards
NRF National Research Foundation
NSDC National Skill Development Corporation
NSQF National Skills Qualification Framework
NSS National Service Scheme
NTA National Testing Agency
OBC Other Backward Class
ORCID Open Researcher and Contributor ID
PAH Solapur Punyashlok Ahilyadevi Holkar University, Solapur
PPPs Public Private Partnership
PRN Permanent Registration Number
PVC Pro Vice Chancellor
QCI Quality Council of India
QPs Qualification Packs
R& D Research and Development
RBCs Role Based Credits
RTM Nagpur Rashtrasant Tukadoji Maharaj Nagpur University
RUSA Rashtriya Uchchatar Shiksha Abhiyan

SBT Skill based aptitude tests
SC Scheduled Caste
SCERT State Council of Educational Research and Training
SEDGs Socio Economically Disadvantaged Groups
SEO Search Engine Optimization
SIQAAS Smart Internal Quality Assessment and Assurance System
SOUL Society Partnership Council
SPPU Savitribai Phule Pune University
SRTM Swami Ramanand Teerth Marathwada University
SSCs Sector Skill Councils
SSSM State Sponsored and State Managed
ST Scheduled Tribe
TC Training Centers
TEI Teacher Education Institutions
TET Teacher Eligibility Test
TIFAC Technology Information Forecasting and Assessment Council
TOT Training of Trainers
UGC University Grants Commission
UPSC UNION PUBLIC SERVICE COMMISSION
VC Vice Chancellor
VR Virtual Reality
WebGL WebGL is a JavaScript API for rendering interactive 2D and 3D graphics
within any compatible web browser
WebVR WebVR is a JavaScript API that makes use of any VR headset and a
VR capable device
YCMOU Yashwantrao Chavan Maharashtra Open University