

16 Digital Initiative in Higher Education You Must Know

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16 Digital Initiative in Higher Education

Digital Initiative in Higher Education Through NMEICT

MHRD, is responsible for the overall development of the basic infrastructure of Higher Education sector, both in terms of policy and planning. Under a planned development process, the Department looks after expansion of access and qualitative improvement in the Higher Education, through world class Universities, Colleges and other Institutions through various Digital Initiative in Higher Education.

To expand the Higher Education sector in all its modes of delivery to increase the Gross Enrollment Ratio (GER) in Higher Education to 15% by 2011-12 to 21% by 2016-17 and 30% by the year 2020.

The aim to raise the Gross Enrollment Ratio (GER) in the higher education from 24.5 (2015-16) to 30 by 2020, and the quest to enhance the quality of education would require a large scale expansion of the high quality education opportunities.

However, physical expansion of such facilities is fraught with both infrastructural and human resource limitations.

Fortunately, in the days of fast expanding IT facilities, the technology can be leveraged to address these twin concerns of enhancing access and quality.

Heads up! You can also refer other ICT topics based on latest UGC NET Exam syllabus

With a view to improve the quality of education using the ICT and to translate the power of IT into expanded learning opportunities, the National Mission on Education through ICT (NMEICT) was launched. Over the last 5 years, the NMEICT has made significant gains by developing IT interventions that have potential to change the higher education scenario.

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Below is the list of Digital Initiative in Higher Education launched & dedicated to the Nation in the field of Higher education

Top 16 Digital Initiative in Higher Education

#1 Study Webs of Active Learning for Young Aspiring Minds(SWAYAM)

SWAYAM is an indigenous (Made in India) IT Massive Open Online Courses (MOOCs) Platform for providing best quality education that can be accessed by anyone, anytime and anywhere using the IT system.

The Concept of Massive Open Online Courses (MOOCs) involves online delivery of interactive learning content to large number of people simultaneously. It allows sharing of best quality education with everyone, thereby bringing in equity as far as the quality of education is concerned.

Learning Made Easy With SWAYAM, An MHRD Initiative



learning made easy with SWAYAM

SWAYAM platform is developed by Ministry of Human Resource Development (MHRD) and All India Council for Technical Education (AICTE) with the help of Microsoft .

Its ultimately capable of hosting 2000 courses and 80000 hours of learning: covering school, under-graduate, post-graduate, engineering, law and other professional courses.

All the courses on this platform are interactive, prepared by the best teachers in the country and are available, free of cost to the students in India.

More than 1,000 specially chosen faculty and teachers from across the Country have participated in preparing these courses.

Not only this; In order to ensure best quality content are produced and delivered, Nine National Coordinators have been appointed: They are-

Courses under SWAYAM would be available in the following levels: For each level, there is a National Coordinator, who would be responsible for the quality of content:

- Out of school Children: for classes 9th to 12th (National Coordinator: National Open School Society)
- School children in classes 9th to 12th (National Coordinator: NCERT)
- Undergraduate (non-engineering) courses (National Coordinator: CEC)
- Post graduate (non-engineering) courses (National Coordinator: UGC)
- Engineering Courses (National Coordinator: IIT Madras)
- Management Courses (National Coordinator: IIM Bangalore)
- Out of college students (National Coordinator: IGNOU)
- Teaching the teachers (National Coordinator: NITTER Chennai)

[Official Swayam website – <https://swayam.gov.in/>]

There are 4 quadrants in the MOOC pedagogy:

- Video tutorials covering a whole course – normally having about 20 hours of instruction in series of lectures, each lecture not exceeding 30 minutes.
- E-Content: reading material that could add to the learning imparted through the video tutorials.
- Self-Assessment: Quizzes/assignments that intersperse the course
- Discussion forum for posting queries

All the courses delivered through SWAYAM are available free of cost to the learners, however students wanting certifications shall be registered, shall be offered a certificate on successful completion of the course, with a little fee.

At the end of each course, there will be an assessment of the student through proctored examination and the marks/grades secured in this exam could be transferred to the academic record of the students. you can see the latest notification by UGC around this.

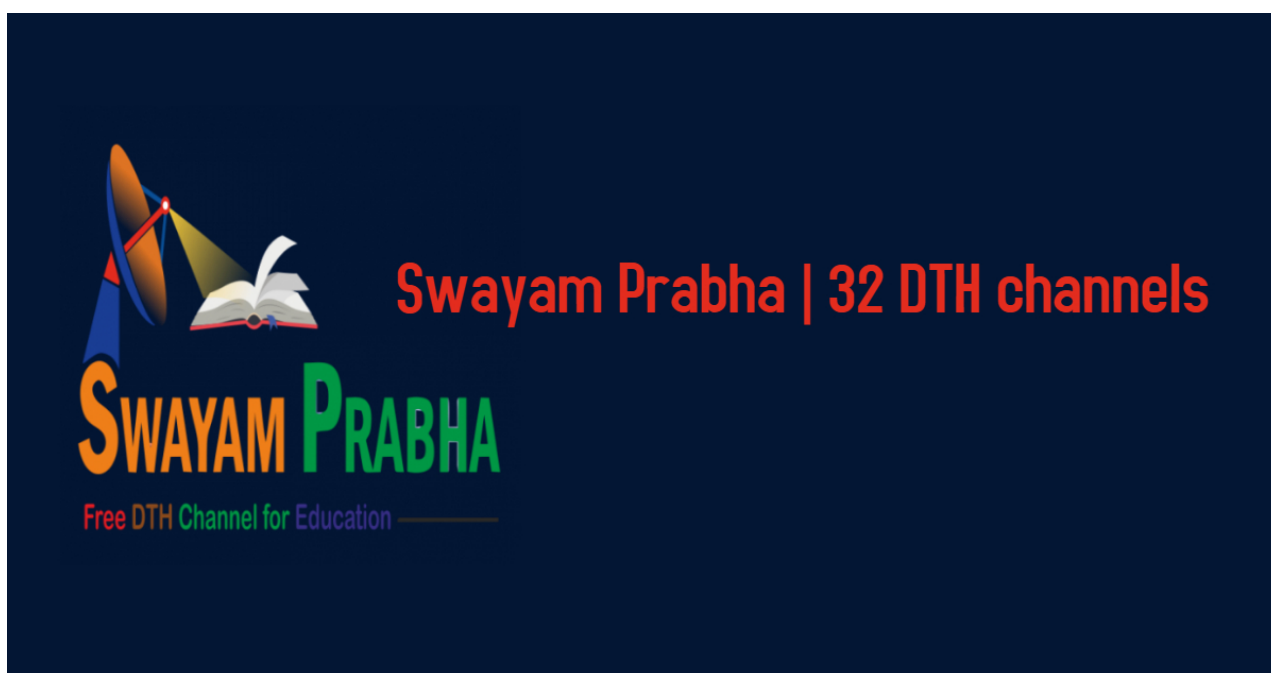
University Grants Commission (UGC) has vide Gazette Notification dated 19th July, 2016, notified Regulation, 2016 regarding 'Credit Framework for Online Learning Courses through SWAYAM'. Accordingly, a student studying at a recognized institute anywhere in the country and having cleared the Online Course through SWAYAM, shall be awarded Credits and the credits earned by such a student shall be transferred from the Host Institute to the Parent Institute where the student is studying.

- However, at present, the Credits up to 20% of the total courses can only be earned in a Semester by such students through online learning delivered on SWAYAM platform
- You can also download SWAYAM applications from popular app stores to help to pursue your course while you are on the move.

#2 SWAYAM Prabha: the 32 Educational DTH Channels

The SWAYAM PRABHA is a group of 32 DTH channels devoted to telecasting of high-quality educational programmes on 24X7 basis using the GSAT-15 satellite. Every day, there will be new content for at least (4) hours which would be repeated 5 more times in a day, allowing the students to choose the time of their convenience. The channels are uplinked from BISAG, Gandhinagar.

The contents are provided by NPTEL, IITs, UGC, CEC, IGNOU, NCERT and NIOS. The INFLIBNET Centre maintains the web portal.



Swayam Prabha- 32 DTH channels

The DTH Channels cover: –

- Curriculum based course contents covering diverse disciplines such as arts, science, commerce, performing arts, social sciences and humanities subjects, engineering, technology, law, medicine, agriculture etc. in higher education domain (all courses would be certification-ready in their detailed offering).

- School education (9-12 levels) modules; for teacher training as well as teaching and learning aids to children of India to help them understand the subjects better and also help them in better preparedness for competitive examinations for admissions to professional degree programmes.
- Curricula and courses that can meet the needs of life-long learners or Indian citizens in India and abroad.
- IIT-PAL – to assist the students in the Classes 11 and 12 aspiring to join IITs by encouraging scientific thinking and conceptual understanding critical to answer the ‘tough’ questions of JEE Advanced, so that good quality students enter the portals of IITs. The four channels under this would be on Mathematics, Physics, Chemistry and Biology.

The project was conceived and completed within 3 months with the active participation of the Bhaskaracharya Satellite Application Centre and Geoinformatics (BISAG) Gandhinagar and ECIL Hyderabad.

[Official website- <http://www.swayamprabha.gov.in/>]

Mobile app- https://play.google.com/store/apps/details?id=com.bisag.introslider&hl=en_IN

#3 National Digital Library (NDL)

Ministry of Human Resource Development (MHRD) under its **National Mission on Education through Information and Communication Technology (NMEICT)** has initiated the National Digital Library of India (NDL India) pilot project to develop a framework of virtual repository of learning resources with a single-window search facility.

The Project titled “Development of National Digital Library of India, Towards Building a National Asset” has been sanctioned to IIT, Kharagpur under NMEICT by MHRD.

NDL is the **Single Window Platform** that collects and collates metadata from premier learning institutions in India and abroad, as well as other relevant sources. It is a digital repository containing textbooks, articles, videos, audio books, lectures, simulations, fiction and all other kinds of learning media.

NDL India is designed to hold content of any language and provides interface support for leading Indian languages. It is being arranged to provide support for all academic levels including researchers and life-long learners, all disciplines, all popular form of access devices and differently-abled learners.

National Digital Library in India aims to collect, preserve and disseminate entire intellectual output of our country and provide online access from school level to post graduate level, including technical education.



National
Digital Library
of India



The project aims to develop

- overall framework to collate large number of e-contents for school, college and higher education, e-content, virtual library, covering needs of learners with differing abilities
- Design & development of “OAI-PMH” Server for Metadata Harvesting, Indexed etc.
- Serve as a pan-India virtual teaching-learning-evaluation-knowledge platform and for key national asset and
- Collect resources from other Ministries such as Ministry of Culture, Health, Rural Development & Department of Science & Technology on this portal.
- Filtered and federated searching is employed to facilitate focused searching so that learners can find out the right resource with least effort and in minimum time.

There are more than 72 lakh digital books available through the NDL. The contents cover almost all major domains of education and all major levels of learners from school level to the highest level of education including life-long learners.

More than 15 lakh students have registered themselves in the NDL. The NDL is available through a mobile app too.

#4 National Academic Depository

National Academic Depository (NAD) is an initiative of Ministry of Human Resources Development, Govt. of India (MHRD) to facilitate digital issuance, storage, access and verification of Academic Awards issued by Academic Institutions.

NAD is a Unique, Innovative and Progressive initiative under “Digital India” theme towards achieving Digital enablement of the Education Records. NAD aspires to make the vision of Digital Academic Certificates for every Indian a reality.



NATIONAL ACADEMIC DEPOSITORY
Transparency & Transformation Through Digitization

ONLINE STORE HOUSE OF ALL ACADEMIC AWARDS

NAD-ONLINE STORE HOUSE OF ALL ACADEMIC AWARDS

- This touches the lives of Indian youth and empowers them with Digital, Online, Trusted, Verifiable Certificates which are accessible in a secure manner at all times.
- NAD promises to do away with difficulties / inefficiencies of collecting, maintaining, and presenting physical paper certificates.

#5 e-Shodh Sindhu

Based on the recommendation of an Expert Committee, the MHRD has formed e-ShodhSindhu merging three consortia initiatives, namely UGC-INFONET Digital Library Consortium, NLIST and INDEST-AICTE Consortium.

More than 15,000 international electronic journals and e-books are made available to all the higher educational institutions through the e shodh Sindhu initiative. This allows access to be best education resources in the world using digital mode.

The INFLIBNET, Gandhinagar, Gujarat is implementing the Scheme.

Official website – <https://www.inflibnet.ac.in/ess/about.php>

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#6 Virtual Labs

Physical distances and the lack of resources make us unable to perform experiments,

especially when they involve sophisticated instruments. Also, good teachers are always a scarce resource. Web-based and video-based courses address the issue of teaching to some extent. Conducting joint experiments by two participating institutions and also sharing costly resources has always been a challenge.

With the present day internet and computer technologies the above limitations can no more hamper students and researchers in enhancing their skills and knowledge. Also, in a country such as ours, costly instruments and equipment need to be shared with fellow researchers to the extent possible.



VLAB-Under the National Mission on Education through ICT

Web enabled experiments can be designed for remote operation and viewing so as to enthuse the curiosity and innovation into students. This would help in learning basic and advanced concepts through remote experimentation.

Today most equipment has computer interface for control and data storage. It is possible to design good experiments around some of these equipment, which would enhance the learning of a student. Internet-based experimentation further permits use of resources – knowledge, software, and data available on the web, apart from encouraging skillful experiments being simultaneously performed at points separated in space (and possibly, time).

Virtual Lab does not require any additional infrastructural setup for conducting experiments at user premises. One computer terminal with broadband Internet connectivity is all that is needed to perform the experiments remotely.

Over 205 virtual labs in 9 Engineering & Science disciplines, comprising about 1515 experiments are operational and currently being accessed by more than 6 lakh students.

Official website- <http://www.vlab.co.in/>

#7 e-Yantra

An MHRD initiative under NMEICT Programme, named “e-Yantra” is implemented to incorporate Robotics into engineering education with the objective of engaging students through exciting hands-on application of mathematics, computer science, and engineering principles. Creation of robotic platforms has been very successfully demonstrated during Phase-I of the project. Presently, e-Yantra has been implemented in 100 colleges.



Sponsored by MHRD under the National Mission on Education through ICT
Information and Communication Technologies program.

eYantra-Sponsored by MHRD under the National Mission on Education through ICT

eYantra is creating skills by setting up lab infrastructure for project based learning and training teachers in these 100 engineering colleges.

Going ahead, MHRD sees the core skills developed by IITB as generating, distributing and analyzing content to further create manpower with practical skills. All the projects and code are available on the e-Yantra web-site www.eyantra.org as open source content.

#8 Campus Connectivity

The National Mission on Education through Information and Communication Technology (NMEICT) aims to leverage the potential of Information and Communication Technology (ICT) in teaching and learning process. The Mission also aims to provide 20 Broadband connections of 512 Kbps speed to over 25,000 colleges and 2000 polytechnics and optical fiber connectivity one Gbps to 419 universities/ university level institutions in the country which includes internet facility.

On the lines of ‘Digital India’ initiative of the PMO, the MHRD has now decided that the campuses of Universities, (having 1 Gbps bandwidth) shall be made WiFi enabled campus. Already all the IITs, IIMs, and NITs have established WiFi campuses.

The process of laying the optical fibre and provision of the WiFi in Central Universities is currently underway.

#9 Talk to a Teacher

Talk to a Teacher developed by IIT Bombay, is an initiative of the National Mission on Education through ICT, funded by MHRD to provide free access to a few selected graduate and postgraduate courses, taught at IIT Bombay by distinguished faculty members and scholars at large.

It uses A-View collaboration tool developed by Amrita University for providing virtual classrooms to the faculty across the country. These courses can be viewed absolutely free of charge at lower bandwidths on a personal computer/laptop having a headphone and Internet connection.

Registration is not required as it does not have any evaluation/certification process. The courses are recorded live in the classrooms of IIT Bombay and may not reflect entire content of the course.

Apart from the core courses in engineering and computer science disciplines, the program also covers Humanities & Social Sciences discipline. More than 80,000 teachers have been trained, so far, under this project, involving synchronous delivery of courses from IIT Mumbai & IIT Kharagpur.

#10 Ask A Question

Ask A Question is a unique platform through which students from science and engineering colleges all over India can ask questions and faculty from IIT Bombay answers them. Students can ask questions either through an online forum or during an interactive live session. Interactive live sessions are held on every Thursday from 4:00 P.M to 5:00 P.M in the field of Electrical Engineering and every Friday from 4:00 P.M to 5:00 P.M in the field of Physics.

#11 e-Acharya

e-Acharya also called 'Integrated e-Content Portal' of NMEICT, is the official repository of NMEICT e-content and all content produced under NMEICT is being put at this Repository platform at INFILIBNET Centre Gandhinagar, so to apply basic tenets of preservation for digital content, implement standard Metadata schema of different types for the digital content and ensure their long-term availability.



The INFLIBNET Centre has developed a web-based interface called "e-Acharya: Integrated e-Content Portal" for all e-content projects, developed / funded under the National Mission of Education through ICT.

e-Acharya-Integrated e-Content Portal

All the Project Investigators awarded development of e-Content under NMEICT have been requested to ensure the deliverables are placed, at the earliest, in the Integrated Portal/e-Acharya of MHRD. Further the NCERT shall provide e-content Links to e-Acharya and the NOIS shall providing the content on HDD to the e-Acharya repository and both shall ensure that all the content including e-Books are made available on e-Acharya.

The eAcharya besides a repository of content shall also have the Metadata of all

these contents and it shall form a vertical of 'National Digital Library' (NDL), being implemented by the IIT Kharagpur.

The e-Acharya shall be backed by a robust 24X7 Data Centre, which shall be integrated with NMEICT, Cloud network, set up at NIC / NKN Data Centre by the IIT-Delhi and called 'Baadal'. The MOOCs being produced under NMEICT shall also be uploaded on e-Acharya.

#12 E-Kalpa

Another MHRD/ NMEICT initiative named "e-Kalpa" creating Digital-Learning Environment for Design in India has successfully demonstrated the achievement of the following project objectives, on completion of its phase-I:

1. Digital online content for learning Design with e-Learning programs on Design
2. Digital Design Resource Database including the craft sector
3. Social networking for Higher Learning with collaborative Learning Space for Design
4. Design inputs for products of National Mission in Education through ICT

As on December 2015, the content of e-Kalpa website named “D’source” includes 160 Courses on Design Learning in different domains, more than 400 Resources in the form of fine examples of Design and crafts, 110 Case studies of Design Projects undertaken by professionals and design students, 50 Video lectures and presentations by subjects experts and 600 examples of a visual Gallery that has documented works of the rich tradition of art and design seen across different regions of India.

#13 The Free and Open Source Software for Education (FOSSEE)

FOSSEE project sanctioned to IIT Bombay has been promoting use of open source software in educational institutions (<http://fossee.in>). It does through instructional material, such as spoken tutorials, documentation, such as textbook companions, awareness programmes, such as conferences, training workshops, and Internships. Textbook Companion (TBC) is a collection of code for solved examples of standard textbooks.

About 2,000 college students and teachers have participated in this activity & close to 1,000 TBCs have been created in Scilab and Python alone.

The FOSSEE Project promotes the use of the FOSS tools to improve the quality of education and research & reduce dependency on proprietary software in educational institutions.



Part of the National Mission on Education through Information and Communication Technology (ICT), Ministry of Human Resource Development (MHRD), Government of India.

FOSSEE has made all the TBCs open source and has made them available for free download. Scilab and Python TBCs are also on the cloud, so that one needs only a browser to access/execute the codes of TBC.

OSSEE is promoting the well-established open source software: OpenFOAM, an alternative to the proprietary software Fluent for computational fluid dynamics; DWSIM, an alternative to the proprietary software Aspen Plus, for chemical process simulation.

FOSSEE has also undertaken several new open source software activities as well: raising Scilab toolboxes to that of Matlab; development of eSim, an electronic design

automation software, an alternative to ORCAD; development of Sandhi, a software for data acquisition and control, an alternative to LabVIEW.

The FOSSEE team works on open source hardware projects, such as Open PLC and Arduino as well. Through all of these projects, a large number of students across the country have been trained.

#14 e-Vidwan

The 'Information and Library Network' (INFLIBNET) Centre took the initiative called "Vidwan: Expert Database and National Researcher's Network" with the financial support from NMEICT.



VIDWAN is the premier database of profiles of scientists / researchers and other faculty members working at leading academic institutions and other R & D organisation involved in teaching and research in India.

VIDWAN is the premier database of profiles of scientists

The objectives of VIDWAN is to

- collect academic and research profiles of scientists, faculty and research scientists working in leading academic and R&D organizations in India and abroad;
- quickly and conveniently provide information about experts to peers, prospective collaborators, funding agencies, policy makers and research scholars in the country;
- establish communication directly with the experts who possess the expertise needed by research scholars;
- identify peer reviewers for review of articles and research proposals; and
- create information exchanges and networking opportunities among scientist.

The database can be used for selection of panels of experts for various committees and taskforces established by the Ministries / Govt. establishments for monitoring and evaluation purposes.

Further, the availability of single point expert database will help the policy makers and funding agencies in decision-making and policy intervention. As on 31st December 2015, the database contains more than 17,500 profiles of experts from 2,000 leading academic institutions, universities, R&D organizations including IITs, CSIR, DRDO, etc

#15 Spoken Tutorial

Spoken Tutorial is a multi-award winning educational content portal. Here one can learn various Free and Open Source Software all by oneself. Our self-paced, multi-lingual courses ensure that anybody with a computer and a desire for learning, can learn from any place, at any time and in a language of their choice

The Spoken Tutorial project is the initiative of the ‘Talk to a Teacher’ activity of the National Mission on Education through Information and Communication Technology (ICT), launched by the Ministry of Human Resources and Development, Government of India.

Spoken Tutorial Forums is a friendly online discussion forum. You can join existing discussions or start new topics, and get lots of replies from the Spoken Tutorial community. Registration to Forums is completely free and takes only one minute.

Forums is very easy to use, even for computer newbies. It’s very easy to format forum posts with fonts, colors, and many other options. You can attach files to your posts directly from your computer.

#16 Central cloud Infrastructure

Central cloud Infrastructure: The MHRD under NMEICT has awarded a project to IIT Delhi, to set up a robust 24X7 backed Data Centre and the activities have been put up at NIC / NKN Data Centre, and the cloud is called ‘Baadal’. The IIT Delhi cloud is hosting e-content and video content of e-Acharya.

NIRF

launched on 29th September 2015 by MHRD, this framework intends to outlines a methodology for ranking the institutions across our country. The Core Committee set up by MHRD arrived at the broad level understanding and hence give overall recommendations. Then only the methodology has been driven.

The objective is to identify the broad level parameters for the ranking of Indian universities and institutions. The parameters that are broadly covered include- “Teaching, Learning and Resources,” “Graduation Outcomes,” “Research and Professional Practices,” “Outreach and Inclusivity,” and the “Perception”.

GIAN

Aimed to tap the talent of the strong academic network of the country-scientists,

entrepreneurs, at international level. To encourage their overall engagement with Higher Education Institutes in India so that country's existing academic resources can be augmented and accelerate the pace of the quality reforms. Further to elevate India's technological and scientific capacity to gain the global excellence.

Through this, the best international academic experience can be brought into our education systems. It will enable the interaction of students and the faculty with that of the world level best academic and industry experts and also learn through their experiences motivate people to draw solutions to the Indian problems.

UAY

The major objectives of the UAY scheme are to promote innovation & development in IITs addressing the issues of the manufacturing industries; to spur the innovative mindset; to coordinate the action between the academia & industry and to strengthen the labs & the research facilities.

IMPRINT

IMPRINT-Impacting Research Innovation & Technology

First of this kind Pan-IIT + IISc joint initiative supported by MHRD to address the major challenges in science and engineering. These challenges are must to fix and India must champion in that to enable and empower the country for self-reliance and inclusive growth. This novel type of initiative containing two-fold mandate is intended at:

- (a) Developing the new engineering educational policy
- (b) Creating a fine road map to pursue the engineering challenges

This scheme provides the overarching vision in higher education that can guides research into the areas which are socially relevant predominantly.

Technical Education Quality Improvement Programme of Government of India (TEQIP)

launched by MHRD in December 2002. It was aimed to support and upscale ongoing efforts in improving the quality of technical education in India and enhancing the existing capacities of the technical institutions to become more dynamic, quality conscious, demand-driven, forward-looking, effective and responsive. It can bring into the rapid economic and technological developments occurring at both national as well as international levels.

PMMMNMST

PMMMNMST- Pandit Madan Mohan Malviya National Mission on Teachers & Teaching

Envisaged to address all issues related to teachers, teacher preparation, teaching, and their professional development comprehensively. The Mission caters current and urgent issues- supply of the qualified teachers, fetching talent into the teaching profession and raising the quality of teaching at schools and colleges level. Also building a strong professional cadre of a quality teacher with performance standards.

RUSA

Rashtriya Uchchatar Shiksha Abhiyan. It is the Centrally Sponsored Scheme planned by the Central Government has to implement -the strategic funding, reforms, and improvements in the Higher Education sector at the state level.