Technology Use and Integration

&

Online and Digital Education: Ensuring Equitable Use of Technology
India is a global leader in ICT and in other cutting-edge domains, such as space.

Digital India Campaign is helping to transform the entire nation into a digitally empowered society and knowledge economy. Educational technology will play an important role in the improvement of educational processes and outcomes.

Relationship between technology and education at all levels is bi-directional.

Extensive use of technology in teaching and learning, removing language barriers, increasing access for Divyang students, and educational planning and management.
Thrust of technological interventions

- Teaching-learning and evaluation processes
- Supporting teacher preparation & professional development
- Enhancing educational access
- Streamlining educational management and administration
- Removing language barriers
- Access to Divyang students
Disruptive technology - Artificial Intelligence (AI) 3D/7D Virtual Reality - has emerged.

Extensive research is needed in New technologies (involving artificial intelligence, machine learning, block chains, smart boards, handheld computing devices, adaptive computer testing and other forms of educational software and hardware).

Before scaling up interventions, the use and integration of technology to improve multiple aspects of education should be rigorously and transparently evaluated in relevant contexts.
Adoption of Emerging Technology

Emerging and Disruptive Technologies:
- Artificial Intelligence
- Robotics
- 3D
- Simulation
- Other upcoming

National Educational Technology Forum:
To categorize emergent technology based on their potential

Ministry of Education:
Recommend NRF to take up further research on the identified areas

National Research Foundation
NETF
National Educational Technology Forum

Advice Central & State Government on use of Technology in Education
Build Intellectual and Institutional capacities in ET
Articulate new Directions for Research and Innovation
Teacher’s Professional Development in DIKSHA platform

DIKSHA/SWAYAM, will be better integrated across school and higher education

Promote and expand DIKSHA as well as other education technology initiatives

Rich variety of educational software in all major Indian languages and will also be accessible to Divyang students

Teaching-learning e-content and uploaded onto the DIKSHA platform

Suitable equipment for suitably integrate e-contents into teaching-learning practices
In response to MHRD's formal recognition of a new disruptive technology, the National Research Foundation will initiate or expand research efforts in the technology.
Role of HEIs

- Play an active role in conducting research on disruptive versions of instructional materials courses including online course and assessing their impact on specific areas.
- HEIs will conduct targeted training for job readiness and address skilling, deskilling and scaling keeping in view the disruptive technologies.
- Universities will aim to offer Ph.D. and Masters programmes in core areas such as Machine Learning as well as multidisciplinary fields “AI + X” and professional areas like health care, agriculture, and law.
Schooling and continuing education will assist in raising the general populace’s awareness about the potentials and effects of disruptive technologies to facilitate informed choices/consent.

The study of current affairs and ethical issues will include a discussion on disruptive technologies, appropriate instructional and discussion materials will also be prepared for school and continuing education.

It is critical to raise awareness on issues of privacy, laws, standards and ethical issues associated with AI based data handling and data protection, etc.

Other disruptive technologies that are expected to change the way we live, and, therefore, change the way we educate students, include those relating to clean and renewable energy, water conservation, sustainable farming, environmental preservation, and other green initiatives; these will also receive prioritized attention in education.
NEP 2020 recognises the importance of:

1. Leveraging the advantages of technology while acknowledging the potential risks and dangers.
2. Carefully designed and appropriately scaled pilot studies to determine the benefits of digital/online education.
3. Optimising and expanding the existing digital platforms and ongoing ICT-based educational initiatives to meet the current needs and future challenges.
4. Using technology for online and digital education adequately to address concerns of equity.
Online and Digital Education: Ensuring Equitable Use of Technology

- Digital competencies of teachers to meet further need
- Unavailability of open and public digital resources infrastructure
- Limitation in delivering certain types of courses/subjects in online/digital space
- Online assessment on scale
- Becoming screen based education
- Bridging Digital divide
Online and Digital Education: Way Forward

- Suitable teacher training to prepare teachers as effective online educators
- Availability of affordable computing devices to eliminate digital divide
- Change in pedagogy for online/digital education
- Optimise and expand existing digital platforms and ICT based initiatives
- Online assessment in different approach
- Provide assistive tools for monitoring progress of diverse group of learners
- Blended approach with online and experiential learning
- Invest on creation of open, interruptible, evolvable, public digital infrastructure
- Leverage existing platforms for creating virtual labs
- Provide two way audio and video interface for holding online classes
- Educational programmes to be made available 24x7 in different languages
Online and Digital Education: Key Initiatives

- Pilot studies on online education
- Digital infrastructure
- Online teaching platform and tools
- Content creation digital repository and tools
- Addressing the digital divide
- Laying down standards
- Blended models of learning
- Training and incentive for teachers
- Virtual labs
- Online assessment and examinations
Implementation Plan

- Conduct research on disruptive technology and current status of ICT implementation in schools and teacher education institutes and development of eContents, strategies, training modules on content-ICT-pedagogy integration as per the new pedagogical and curricular structure recommended in NEP 2020.

- Continuous customization of architecture of digital education platforms at national level including portals, apps, labs as per the arising educational needs.

- Design, development and roll-out MOOCs for students and teachers with appropriate policy evaluation, certification and credit transfer.

- Dissemination of Digital contents through multiple modes.

- Collaboration and coordination with national and state level institutions for convergence of efforts.