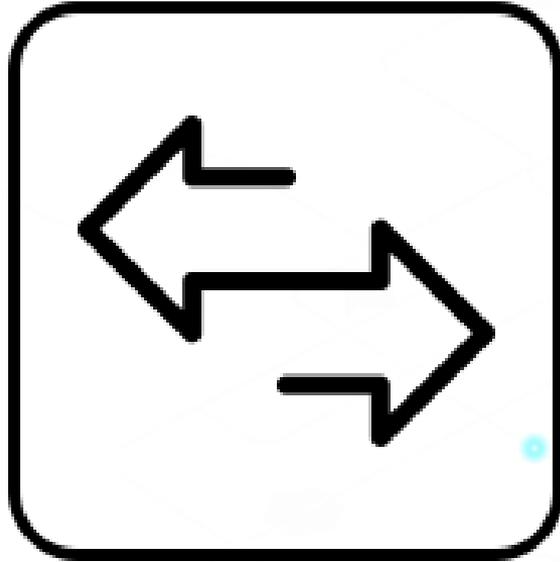


Central Institute of Educational Technology
(CIET)

Leveraging Digital Technology in Education



Education



**Technolog
y**

Thrust of Technological Interventions

**Teaching-
learning &
evaluation
processes**

**Supporting teacher
preparation &
professional
development**

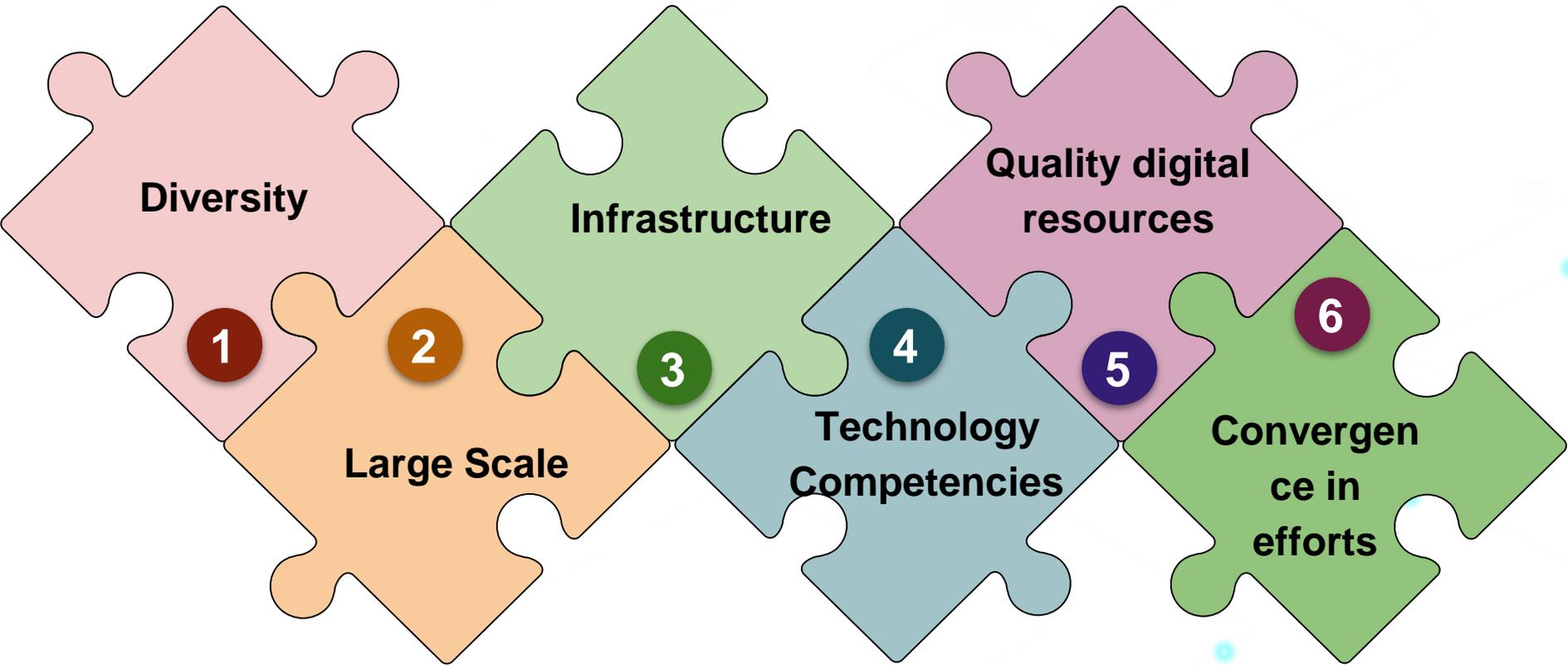
**Enhancing
educational
access**

**Streamlining
educational
management
and
administration**

**Removing
language
barriers**

**Access to
Divyang
students**

Issues & Challenges of Implementing Technology in Education



ICT Use in India: Policy Directions

ET
Scheme

1972

INSAT

1983

Class
Project

1984

NPE

1986

NPE-
POA

1992

EDUSAT,
ICT @ School
CAL NME -
ICT

2004

Revised ICT
@ School &
ICT Award

2010

2020-23

NEP - 2020, NETF
PRAGYATA
Guidelines, PM-
eVidya & NDEAR,
VSK, NCF-FS

2019

NISHTHA,
Guidelines for
Development of
eContent

2018

Samagra
Shiksha, Cyber
Safety &
Security
Guidelines

2017

SWAYAM
MOOCs,
SWAYAM
Prabha- DTH
Channels &
DIKSHA

2015

Digital India,
ePathshala &
ePG -
Pathshala

2013

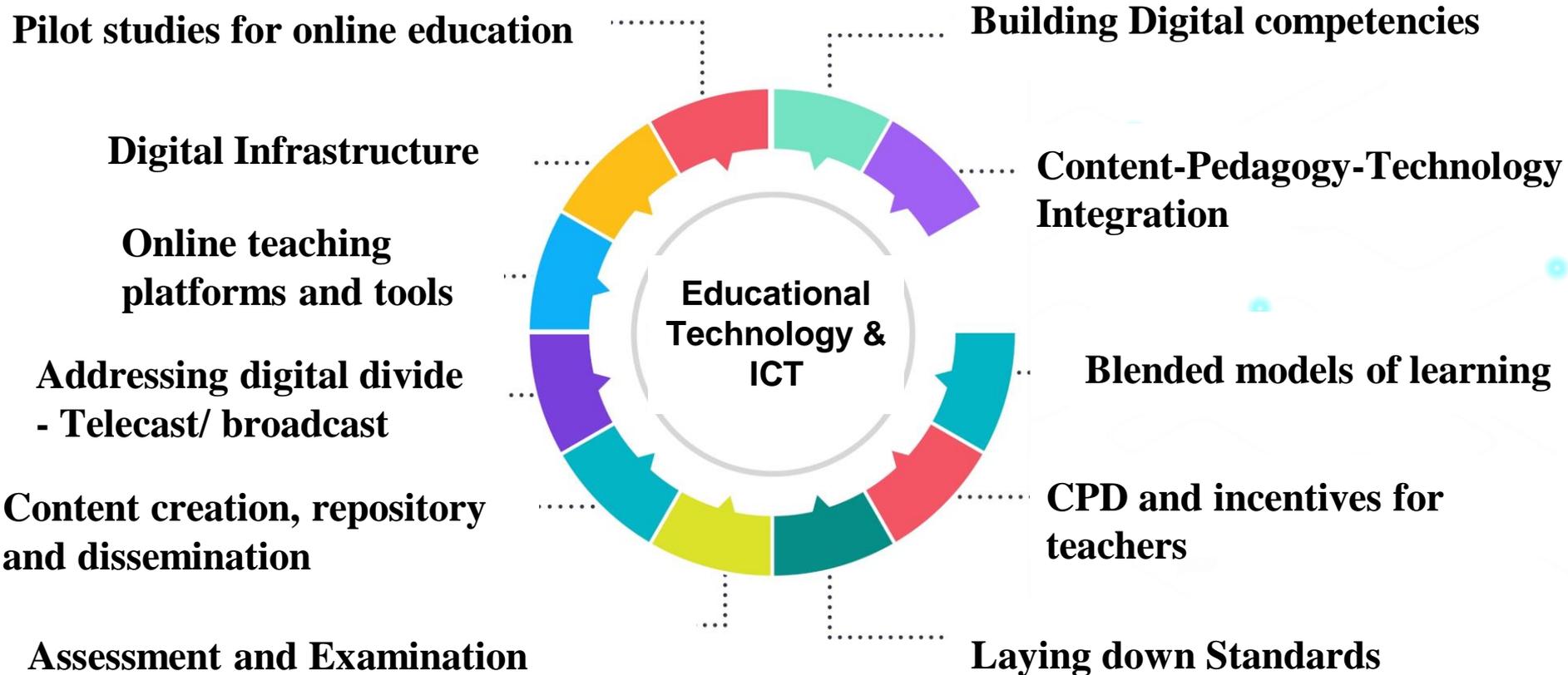
NROER &
ICT
Curriculum

2012

ICT Policy



Recommendations for Online and Digital Education



Major Digital Initiatives

1

PMeVIDYA



2

DIKSHA



3

ePathshala



4

NISHTHA



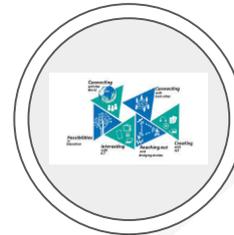
5

SWAYAM



6

ICT Curriculum



Use of Disruptive and New Technologies



Disruptive
Technology-
Artificial
Intelligence (AI)
3D/7D Virtual
Reality - has
emerged



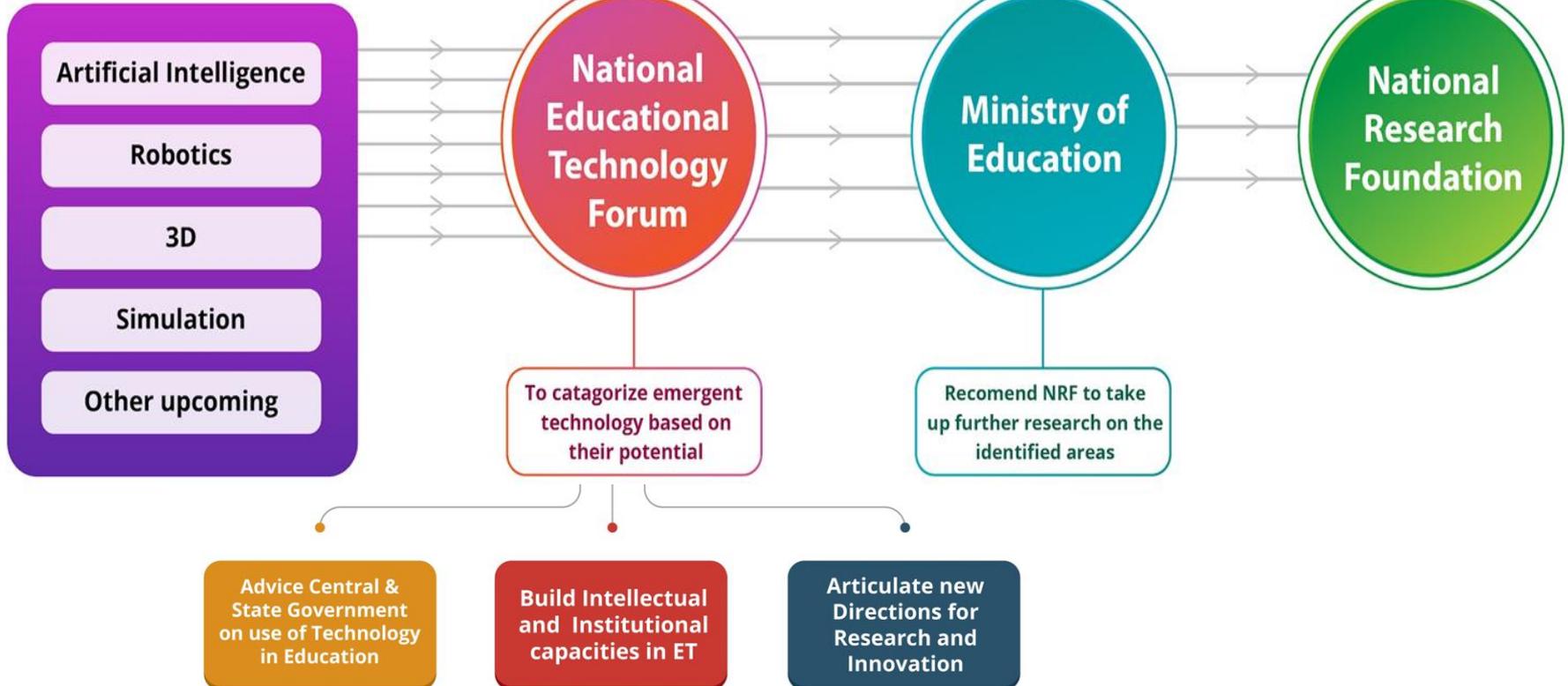
**Extensive research is
needed in New
technologies** (involving
artificial intelligence,
machine learning, block
chains, smart boards,
handheld computing
devices, adaptive
computer testing and other
forms of educational
software and hardware)



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

Knowledge Deepening

Emerging and Disruptive Technologies



Research in use of TechnOlogy

Piloting and scaling of immersive technologies like AR, VR, AI etc. in teaching, learning and assessment

Best practices with respect to developing digital infrastructure, capacity building, low cost technologies, accessibility etc.

Innovative ways of ICT integration

Process perspectives & validation of eContents

Accessibility practices in digital spaces

Data management, policies, systems and strategies

In response to | **MOE** formal recognition of a new disruptive technology, the National Research Foundation will initiate or expand research efforts in the technology

National Research Foundation

```
graph TD; A[National Research Foundation] --- B[Advancing core AI research]; A --- C[Advancing international research efforts to address global challenges]; A --- D[Developing and deploying application-based research];
```

**Advancing
core AI
research**

**Advancing
international
research
efforts to
address global
challenges**

**Developing
and deploying
application -
based research**

Response to Emerging Technologies

Role of HEIs

Play an active role in conducting research on digital 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

NEP 2020 recognises the importance of

Leveraging the advantages of technology while acknowledging the potential risks and dangers

Carefully designed and appropriately scaled pilot studies to determine the benefits of digital/ online education

Optimising and expanding the existing digital platforms and ongoing ICT-based educational initiatives to meet the current needs and future challenges

Using technology for online and digital education adequately to address concerns of equity

Digital Infrastructure

Households with

Computer/Laptop/Smartphone and a 4G Internet connection as well as a Television set with a DTH/Cable TV connection.

Smartphone with 4G network

Smartphone with limited (3G/ 2G) or no access to Internet

Television set with a DTH connection

Radio set or a basic mobile phone with FM

No digital device

- Labs and ICT facility in classroom
 - Digital learning labs
 - Operational Digital Board
 - BYOD
- Customised Operating System with all Educational Software & FOSS
- Gadgets and Applications
- Network and Connectivity
- Robust system for data storage, management, tracking
- Offline systems

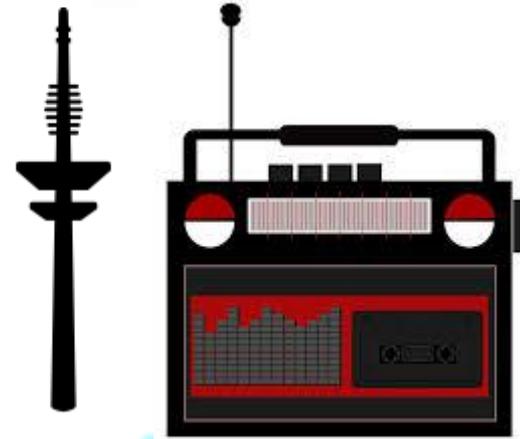
- DIKSHA - Robust interoperable, evolvable public digital infrastructure for content creation, curation, dissemination and training
- Robust LMS integrated with synchronous communication and assessment systems for adaptive learning
- Virtual Labs
- FOSS based Educational Software
- Centralised MIS
- Indian language translation tools
- AI in educational platforms and apps
- Offline portals/ apps which Sync facility



Survey conducted by Quacquarelli Symonds in connectivity:

- 1.85 per cent have no internet connectivity in India
- 15% uses broadband facility
- 9.68% uses WIFI dongle
- 72.6% uses mobile hotspot for getting connected for availing the digital education facilities
- 53% faced poor connectivity
- 3% faced cable cuts
- 11.47% faced power issues
- 2% faced signal issues while using home broadband. While using mobile hotspot
- 56.63% reported having signal issues and almost 40.18% reported connectivity issues.

Telecast & Broadcast



Building digital competencies of Students

- **Competency Framework**
- **Stage wise approach**
- **Sequential content**
- **Integrated approach with curricular subjects**
- **Practical exposure**
- **Safety & Security**
- **Ergonomics**

Coding?

Stage	Approach
Foundational	ICT as a means for delivering content
Preparatory	Digital games based approach to curricular learning
Middle	ICT courses following project based approach focusing on ICT for communication, collaboration, critical thinking and enhancing creativity
Secondary Stage - 1	ICT courses following inquiry based approach focusing on ICT for developing applications and solutions
Secondary Stage - 2	ICT courses following inquiry based approach focusing on ICT for developing applications & solutions and preparation for career path related to ET & ICT

Capacity building of Teachers

- Contextualised and Customised ICT competency framework for Teachers and School Leaders
- Capacity building programmes to build ICT Competencies, and Techno Pedagogy Integration Competencies
- Integrated, systematic and context based approach to content
- Face to face, blended and online approach to training
- Learning to be focused rather than certification

Technology use in Teaching Learning Process

- Integrated approach is appreciated rather than dealing ICT as an individual entity
- Modeling approach is encouraged rather lecturing
- Open Education culture to be encouraged
- Cyber safety and security to be embedded in relevance
- Multi-modal approach to be used with appropriate technologies based on content, pedagogy in context
- Contextualising and customising content as per the need is essential
- Meaningful integration for appropriate age group

AR/ VR?

- Content standards
 - Pedagogically structured digital contents, as per the cognitive level of learner in that age
 - Designing content as per Universal Design Language (UDL) so that each content becomes accessible to all.
 - Generic concerns - gender, environmental, ethics, values, privacy, copyrights, etc
- Technology Standards
 - Standards of Accessibility, Usability, Adaptability, Scalability, Sustainability, Interoperability.
- Digital Education Standards
 - screen time, ergonomics etc.

Questions & Discussion



Thank You