

India's Digital Policy: Revolutionizing Education

Dr. B. Someshwar

Assistant. Professor Dept of Political Science, Palamuru University, Mahabubnagar-509 001,
Telangana

Introduction

Education is a crucial instrument for socio-economic development and nation-building. In the digital era, education systems worldwide are undergoing rapid transformation through technology-driven innovations. In India, digital education has gained prominence as a policy priority due to its potential to address challenges of access, quality, and inclusion in a vast and diverse educational system.

The concept of digital education dates back to the 1950s when Indian radio and television were employed as mediums of instruction. It is not an entirely new process that has emerged overnight. NEP 1986 was amended in 1992 to emphasise the successful use of technology in education to enhance quality, access, and governance (Mondal & Halder, 2020). The Indian government's initiatives to incentivise educators and learners to improve their pedagogical proficiency through digital learning.

Digital technology, to some extent, during the 1990s and 2000s, but must be keep it mind that it was limited to a few higher education institutions in urban areas. However, the situation changed from the last years of the 2000s until the end of the 2010s. On November 20, 2004, India launched a massive satellite named EDUSAT, intending to revolutionise education by delivering material and promoting ICT-based education.

The Indian government launched the 'Digital India' initiative in July 2015 to enhance online infrastructure and increment accessibility to the internet among all Indian citizens (Gawande, 2020). Campus Connectivity, Talk to a Teacher, Ask a Question, e-Acharya, e-Kalpa, FOSSEE (The Free and Open Source Software for Education), e-Vidwan, Spoken Tutorial, NAD (National Academic Depository), e-PG Pathshala, and other digital education tools are all part of the Ministry of Human Resource Development's (MHRD) major initiative, National Mission on Education through ICT (NMEICT) (Aggarwal, 2023). Department of Higher Education is putting into practice at various higher education institutions thirty Digital Initiatives that the Government of India has taken up. NCERT, UGC, CEC, IITs, NPTEL, NCERT, and NIOS are the sources of all study materials and contents (Green, 2013).

The Government of India has introduced several digital initiatives such as SWAYAM, DIKSHA, National Digital Library, and PM E-VIDYA to integrate technology into education. The COVID-19 pandemic further accelerated the adoption of digital learning, highlighting both its possibilities and limitations. Against this backdrop, this paper analyzes how digital policy is transforming education in India.

Conceptual Framework of Digital Education Policy

Digital Education Policy refers to a set of government strategies and programmes designed to utilise digital technologies to enhance teaching and learning, administrative efficiency, and governance in education. It encompasses:

- Online and blended learning platforms
- Digital content and open educational resources (OER)
- ICT-enabled teacher training

- Digital infrastructure and connectivity
- E-governance in education

The policy framework is grounded in the principles of accessibility, affordability, flexibility, and lifelong learning.

Evolution of Digital Education Policy in India

The roots of digital education in India can be traced to early ICT initiatives in the 1990s. Major milestones include:

- **National Policy on ICT in School Education (2012):** Focused on integrating ICT in schools.
- **Digital India Programme (2015):** Provided impetus to digital infrastructure and literacy.
- **SWAYAM (2017):** India's national MOOC platform.
- **DIKSHA (2017):** Digital platform for teachers and students.
- **NEP 2020:** Emphasized digital education, online learning, virtual labs, and the National Educational Technology Forum (NETF).

NEP 2020 marks a paradigm shift by institutionalizing digital education as a core component of educational reform.

Major Digital Education Initiatives in India

SWAYAM (STUDY WEBS OF ACTIVE LEARNING FOR YOUNG ASPIRING MINDS)

The three primary objectives of the Education Policy—equity, quality, and access—are to be achieved through the SWAYAM project, which the Indian government started. This endeavour aims to make the best educational resources accessible to all, even the most disadvantaged. SWAYAM aims to design digital infrastructure for students who have not yet been impacted by the digital revolution and are unable to enter the mainstream knowledge economy. All courses taught from Class 9 to post-graduation are to be hosted and accessed anytime, by anybody, anywhere. Exceeding 1000 carefully selected educators, experts and teachers from all over the nation have contributed to preparing these courses (Mondal & Halder, 2020).

The SWAYAM course provides video lectures, readings that have been exceptionally prepared and can be printed or downloaded, quizzes and tests for self-assessment, and an online discussion forum for questions.

DIKSHA (DIGITAL INFRASTRUCTURE FOR KNOWLEDGE SHARING)

is a national platform for school education, an initiative of the National Council for Educational Research and Training (NCERT), under the aegis of the Ministry of Education (MoE), GoI. Launched in 2017 by the Honorable Vice President of India – Shri M. Venkaiah Naidu, DIKSHA has been adopted by almost all the States, Union Territories, central autonomous bodies/boards, including CBSE.

DIKSHA was developed on the basis of the Strategy and Approach Paper for the National Teacher Platform released by the then Honourable Minister for Human Resource Development, Shri Prakash Javdekar in September, 2017. DIKSHA can be accessed by learners and teachers across the country and currently supports 36 Indian languages. Each State/UT leverages the DIKSHA platform in its own way, as it has the freedom and choice to use the varied capabilities and solutions of the platform to design and run programs for teachers, learners and administrators. DIKSHA policies and tools make it possible for the education ecosystem (educationist, experts, organisations, institutions - government, autonomous institutions, non-govt and private organisations) to participate, contribute and leverage a common platform to

achieve learning goals at scale for the country. NCERT Textbooks are licenced under CC BY NC-ND and all the resources are licenced under CC BY NC-SA. Under the PM eVidya initiative of the GoI, which was declared as part of the Atma Nirbhar Bharat, DIKSHA has been declared as 'One Nation, One Digital Platform'.

National Digital Library (NDL)

The Ministry of Human Resources Development, Government of India (MHRD) launched the National Academic Depository (NAD) as a way to make it easier to digitally issue, save, access, and verify academic awards that academic institutions issue. NAD is an original, creative, and forward-thinking project centred around the "Digital India" idea that aims to empower educational records digitally. The goal of NAD is to bring the concept of providing every Indian with a digital academic certificate to reality.

The youth of India are impacted by this and are given access to Digital, Online, Trusted, and Verifiable Certificates that may be accessed securely at all times. NAD pledges to eliminate the challenges or inefficiencies associated with gathering, preserving, and presenting actual paper certificates (Gawande, 2020)

PM eVIDYA

The goals of VIDWAN are to Assemble research and academic biographies of researchers, professors, and academics employed by eminent research and educational institutions in India and elsewhere; Select peer reviewers to assess research proposals and articles; and Provide resources so that scientists may network and exchange information (Mondal & Halder, 2020).

E-PG Pathshala

Under the 'National Mission on Education through ICT', MHRD launched this initiative. UGC was in charge of carrying out this project. They primarily concentrated on the curriculum and essential elements of the educational system. Curriculum-based, interactive, high-quality e-content in 70 subjects, including the arts, fine arts, social sciences, humanities, linguistics and language, and natural and mathematical sciences, has been created by subject matter experts from Indian universities and research and development centres across the country (Gawande, 2020)

V-Campus Connectivity

Under NMEICT, we established one gigabit per second of campus connectivity and twenty 512 Kbps broadband connections to colleges. As of now, 600 universities are connected by 1 Gbps optical fibre, and 22026 colleges have 10 Mbps broadband. As part of the PMO's "Digital India" initiative, the MHRD has recently been permitted to install Wi-Fi on university campuses with a 1 Gbps bandwidth.

E-KALPA

e-Kalpa is another MHRD/NMEICT effort used in India to develop a digital learning environment for design. This project combines the development of e-learning modules with online learning software.

Virtual Labs and Online Assessments

Virtual labs are online, interactive simulations of real laboratory environments, and online assessments are digital tools for measuring learning through quizzes, assignments, and performance tasks delivered over the internet. Together, they allow learners to perform experiments, practice skills, and be evaluated remotely, often with immediate feedback and rich data for instructors. Virtual labs enable experiential learning, while online assessments enhance efficiency and transparency.

Opportunities of Digital Education Policy:

The **digital inclusion definition** tells us that it is a concept that refers to **equal access** and **use of digital technologies** for all people, regardless of their age, gender, socio-economic background, or abilities.

It is also about ensuring that everyone has the same opportunities to fully participate in the digital society and take advantage of its many benefits, discoveries, and opportunities.

Regarding digital inclusion, TIC (Information and Communication Technology) companies and social institutions should be responsible for ensuring its implementation.

In broad strokes, they can collaborate in the following ways:

- **Accessibility:** Offer accessible technologies and websites for people with disabilities.
- **Digital literacy:** Provide educational programs to increase people's digital skills.
- **Infrastructure:** Improve digital infrastructure to ensure adequate and affordable Internet access in all communities.
- **Inclusive policies:** Implement inclusive policies in hiring and access to technology to ensure diversity in the technology industry.
- **Collaboration:** Work with non-profit organizations and the community to identify and address barriers to digital inclusion.

Expanding Access and Inclusion - Digital platforms overcome geographical barriers, enabling learners from remote and marginalized regions to access quality education.

Enhancing Quality of Education-Interactive content, multimedia tools, and personalized learning improve learner engagement and outcomes.

Teacher Empowerment -igital training programs enhance teachers' professional development and pedagogical skills.

Cost-Effectiveness and Scalability-Once developed, digital content can be scaled at low marginal cost, benefiting large populations.

Lifelong and Flexible Learning-Digital education supports continuous learning and skill development, aligning with changing labor market needs.

Challenges in Implementing Digital Education Policy

Digital Divide - Significant disparities exist in access to devices, internet connectivity, and digital literacy across regions, classes, and genders.

Infrastructure Deficits -Inadequate electricity, broadband connectivity, and technical support hinder effective implementation, especially in rural areas.

Quality and Pedagogical Issues - Over-reliance on content delivery without interactive pedagogy can reduce learning effectiveness.

Teacher Preparedness - Many teachers lack adequate training to integrate digital tools effectively into teaching.

Data Privacy and Cyber Security - Increased use of digital platforms raises concerns regarding data protection, surveillance, and cyber threats.

Policy Suggestions

- Strengthening digital infrastructure in rural and remote areas
- Providing affordable devices and internet access to disadvantaged students
- Continuous digital training for teachers
- Developing multilingual and inclusive digital content
- Establishing robust data protection and cyber security frameworks
- Encouraging blended learning models combining digital and face-to-face instruction

Conclusion

Digital education policy has emerged as a powerful instrument for transforming India's education system. Through strategic initiatives and technological innovation, it has expanded access,

improved quality, and enhanced governance. However, the benefits of digital education cannot be fully realized without addressing infrastructural gaps, digital divides, and pedagogical challenges. A balanced, inclusive, and well-governed digital policy framework is essential to ensure that digital transformation in education contributes meaningfully to India's socio-economic development.

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