

The Emergence of Digital Education in India

Dr. Shatrudha

Research Scientist, Consortium for Educational Communication, New Delhi

INTRODUCTION

India's journey toward digital education has evolved in multiple phases through different technological developments. The national efforts on development of educational technologies and programmes from the first educational broadcast through radio in India in January 1929 at Bombay station to the launched of satellite instructional television experiment commonly known as SITE from 1975 to 1976 were impactful. The period from 1947 to 1980 was marked by significant efforts to waylay the educational foundations in terms of access to education, community education, improving literacy rate and introducing new technologies such as the radio and television.

In the formal education sector, India adopted a top-down educational establishment approach in the field of higher education and technical education. The All India Council for Technical Education (AICTE) was set up in November 1945 and University Grants Commission (UGC) was established in 1956. India's first IIT was set up in Kharagpur in 1951, followed by others in Bombay (1958), Madras (1959). The first IIM was established in 1961 in Calcutta, followed by Ahmedabad. While in the non-formal education sector, much of it owes to establishment of Indira Gandhi National Open University (IGNOU). Prior to this, much of the programmes and projects were on trial or pilot based which do not have the sheen and glamour of academic nature. The objective of this paper is to highlight chronologically the educational technology adoption or transition from analogue to digital.

Country-wide Class Room

The period 1981-1990 witnessed a transitional phase from experimental projects, ad hoc and pilot projects to adoption of technology. One of the first of such programme is the Country-wide Class Room (CWCR). The CWCR is the first India's educational television (ETV) aimed at the undergraduate level. It was initiated by the University Grants Commission (UGC) in 1984 with the help of Indian Space and Research Organisation's (ISRO) INSAT television network. The project aimed to enrich education with updated information, increase education reach or access to college students in both urban and rural areas.

During its initial phase of the project, some educational films were adopted from other developed countries. Later their films were produced from some of the established audio-visual research centres (AVRCs) and educational media research centres (EMRCs) which were established later under the auspices of UGC. The programme schedules were published in all leading newspaper in both English and vernacular, in addition to regular announcements on the TV (Govindaraju, 1990).

The Consortium for Educational Communication (CEC) was set up to coordinate, guide and facilitates such educational programme production through its media centres. The EMRCs produce a wide range of programmes, including lectures, tutorials, discussions, and documentaries. CWCR programmes are designed to be interactive and engaging, and they often feature guest speakers, experts, and students.

The National Talkback (NTB)

The CWCR programme tasted a measure of success and spin-offs. It attracted a dedicated viewership from different age-group such as housewives, retired officials, etc., apart from undergraduate students. However, it was limited in many ways since the CWCR was a one-way audio-visual telecast of recorded films. Therefore, the NTB was launched by UGC and ISRO in collaboration with DECU and SAC, in 1991 between 25th to 30th November, to test the feasibility of two-way communication in the CWCR. It attempted to create or simulate a real or physical classroom environment where there is two-way interaction between the teachers and learners. After delivery of lecture, a student could ask a question and the teacher can instantaneously answer the question of the student and the entire listeners (Goel & Jaiswal, 2001; Bambawale, 1992).

The NTB experiment yielded many interesting insights (Goel & Jaiswal, 2001). However several questions were raised on feasibility and sustainability after the trial or experimental run of the programme, and it was could not be operationalised stating that NTB "is not necessary for learning process. What is really required is that ETV video library facility should be made available to colleges all over India so that productions of EMRCs which have been made at considerable cost and hours of manpower-time would be truly and fully utilised for the learning process" (Bambawale, 1992). To this day EMRCs continue to exist and place crucial role in digital education in India.

Project in Radio Education for Adult Literacy (PREAL)

The Project in Radio Education for Adult Literacy (PREAL) was a project under the National Literacy Mission (NLM) in 1988 to accelerate adult literacy in India. It was launched in 1990 to impart literacy through radio and to spread awareness of other programmes. The project was confined to Hindi-speaking regions namely the states of Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh. About 3600 Literacy Education Centres in 10 technology mission districts within the range of eight All India Radio (AIR) stations in the select states were chosen for the project.

Twenty-six radio programmes of about 20 minutes duration were broadcast twice a week for 26 weeks by all the eight concerned AIR stations. Each Adult Education Centres (AEC) was supposed to record the lessons and replay them on other days. The project was of limited success although it contributed to the pace of learning. The broadcast was not viewed as alternative but add-on to literacy programme (Patel, 2002; Communication Initiative)

Computer Literacy in School Studies (CLASS)

The CLASS project is one of India's first efforts to introduce computers into schools on a national scale. This project was initiated with the introduction of micro-computers by British Broadcasting Corporation (BBC). The project was launched in 1984-85 in the Seventh Five-year plan. The project aims to provide understanding about computer, its uses and applications in day-to-day activities, demystify wrong notion about computers and encourage school teachers to use computer as a teaching tool.

The project implementation began in 250 schools affiliated to central and state boards and few private schools situated in urban and semi-urban areas. The overall project was conceptualized through the collaborative efforts of the Department of Electronics (DOE); the Department of Education (DoEd) under the Ministry of Human Resource Development; the Computer Maintenance Corporation of India (CMC); and the British BBC Literacy Project. Around forty-two resources institutes such University of Delhi, equipped with computers were identified by NCERT to train around 750 teachers. Despite many challenges faced in the implementation phase, the project was carried forward to Eight Five-Year plan (1993-1998) (Nag, 1989).

National Mission in Education through ICT

The National Mission on Education through Information and Communication Technology (NMEICT) is a Centrally Sponsored Scheme launched by the Ministry of Human Resource Development (MHRD) in 2009. The mission aims to leverage the potential of ICT to improve the quality and access to education in India.

The NMEICT has two major components:

Connectivity: The mission provides connectivity to higher education institutions across the country. This includes providing high-speed internet access, setting up video conferencing facilities, and creating digital libraries.

Content generation: The mission also produces high-quality educational content that can be accessed by learners through a variety of channels, including the internet, television, and radio. This content includes lectures, tutorials, simulations, and other resources.

Under NMEICT several educational projects especially, in the area of digital education such as the Virtual Labs, SWAYAM, SWAYAM Prabha, e-Yantra, National Digital Library, e-PG Pathshala, etc. were launched (Ministry of Education Portal). In 2003, the National Programme on Technology Enhanced Learning (NPTEL) was officially launched by erstwhile Ministry Human Resource Development, and later subsumed under the NMEICT. NPTEL started as a joint venture of seven Indian Institutes of Technology (IITs) (viz, IIT-Bombay, IIT-Delhi, IIT-Guwahati, IIT-Kanpur, IIT-Kharagpur, IIT-Madras and IIT-Roorkee) and the Indian Institute of Science (IISc), Bangalore, funded by the Ministry of Education (MoE) Government of India. This project was started to provide a sustained and quality technical and higher education in the disciplines of science, engineering and management. The project originated when some of the IITs and IIMs desire to understand and apply technology enhanced learning (TEL) in Indian education system, especially to develop free and high-quality course content in the field of engineering and management. Deliberation and collaboration was made with the help of Carnegie Mellon University (CMU, in Pittsburgh, Pennsylvania, USA) for development (NPTEL, www.nptel.ac.in ; Krishnan, 2013).

SWAYAM

SWAYAM is a programme initiated by Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy (SWAYAM, <https://swayam.gov.in>).

IIT Bombay proposed the acronym SWAYAM (Smart Webs of Active Learning for Young Aspiring Minds). This was later modified as Study Webs of Active Learning for Young Aspiring Minds (Kanjilal and Kaul, 2016). Initially

planned to launch on 2014, SWAYAM was launched by MHRD on 9th July, 2017 (Press Information Bureau, 2014; MHRD, 2017).

There are two types of course: credit courses and non-credit courses. Credit courses are taught for at least one semester as a part of a subject/programme while non-credit courses include courses like awareness programme, continuing education programme or training of specific skill set as independent course, which are not part of any set curriculum. It can be of shorter duration (MHRD, 2017). The courses hosted on SWAYAM are in 4 quadrants – (1) video lecture, (2) specially prepared reading material that can be downloaded/printed (3) self-assessment tests through tests and quizzes and (4) an online discussion forum for clearing the doubts. Steps have been taken to enrich the learning experience by using audio-video and multi-media and state of the art pedagogy / technology (SWAYAM).

For the purpose of pooling the best course coordinators, develop the best course contents and efficient delivery of service the Ministry of Education has appointed ten (10) National Coordinators (NCs) according to its area specialization namely:

1. AICTE (All India Council for Technical Education) for self-paced and international courses.
2. NPTEL (National Programme on Technology Enhanced Learning) for Engineering.
3. NIT, Trichy for engineering courses at UG and PG levels.
4. UGC (University Grants Commission) for non technical post-graduation education.
5. CEC (Consortium for Educational Communication) for under-graduate education.
6. NCERT (National Council of Educational Research and Training) for school education.
7. NIOS (National Institute of Open Schooling) for school education
8. IGNOU (Indira Gandhi National Open University) for out-of-school students
9. IIMB (Indian Institute of Management, Bangalore) for management studies.
10. NITTTR (National Institute of Technical Teachers Training and Research) for Teacher Training programme.

SWAYAM Prabha

SWAYAM PRABHA is a group of 40 DTH channels devoted to telecasting of high-quality educational programmes on 24X7 basis using the GSAT-15 satellite. Swayam Prabha was inaugurated in July, 2017 as a part of NMEICT. New content are broadcast for at least (4) hours everyday 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 (Bhaskaracharya Institute of Space Applications and Geo-Informatics), Gandhinagar. The contents are provided by NPTEL, IITs, UGC, CEC, and IGNOU. The INFLIBNET Centre maintains the web portal (Ministry of Education, www.pmevidya.education.gov.in/; SWAYAM Prabha, [www.swayamprabha.gov.in.](http://www.swayamprabha.gov.in/)).

CONCLUSION

India's digital education landscape has progressed from experimental radio and TV broadcasts to a robust, multi-platform ecosystem supporting both formal and informal learning. Projects like CWCR and PREAL laid the groundwork for national-level digital education strategies. The establishment of NMEICT marked a significant policy commitment to ICT-enabled learning, culminating in landmark platforms such as SWAYAM and SWAYAM Prabha. These initiatives have democratized access to quality education across linguistic, geographical, and socio-economic boundaries, aligning with India's vision of inclusive, equitable, and digitally empowered learning as envisioned in the National Education Policy (NEP) 2020.

REFERENCES

- [1] Bambawale, Usha (1992). National Talk-Back Experiment. Poona-Centre Report. EMRC, University of Poona.
- [2] Goel, D.R. & Jaiswal, Kiran (2001). ISRO-UGC Talk-Back Experiment in India. In *Studies in Distance Education*. Mohanty, J (Ed). Deep & Deep Publications, Delhi, 2001, 2007 (reprint).
- [3] Kanjilal, Uma and Kaul, Pradeep (2016). "The Journey of SWAYAM: India MOOCs Initiative." Presented in University Malaysia (OUM). <http://hdl.handle.net/11599/2592>. 8th Pan-Commonwealth Forum on Open Learning (PCF8) 27 - 30 November 2016. Published by Commonwealth of Learning (COL) and Open
- [4] Krishnan, Mangala Sunder (2013). National Programme on Technology Enhanced Learning (NPTEL): OER and Beyond. . In *Open Educational Resources: An Asian Perspective*. Gajaraj Dhanarajan and David Porter (Eds). pp 225-233. Published by Commonwealth of Learning and OER Asia, Vancouver, 2013.
- [5] MHRD (2017). "The President of India, Shri Pranab Mukherjee, attending as a chief guest at the launch of SWAYAM, SWAYAM Prabha DTH Channels." <https://www.education.gov.in/president-india-shri-pranab-mukherjee-attending-chief-guest-launch-swayam-swayam-prabha-dth-channels>.
- [6] Ministry of Education, SWAYAM PRABHA TV. <https://pmevidya.education.gov.in>.
- [7] Ministry of Education. "National Mission in Education through ICT." www.education.gov.in.
- [8] Nag, B (1989). Informatics Education in India: The CLASS Project for Secondary Students. *Higher Education Policy* 2.4: 71-72.

- [9] Press Information Bureau (2014). “Highlights of the Achievements of the Union HRD Ministry.” <https://pib.gov.in/newsite/PrintRelease.aspx?relid=109585>.
- [10] SWAYAM Prabha, About SWAYAM PRABHA. <https://www.swayamprabha.gov.in>.
- [11] Patel, Ila. (2002). “Information and Communication Technology and Distance Adult Literacy Education in India.” *Indian Journal of Open Learning*, 2002, 11(2), 255-268.
- [12] Communication Initiative. Project in Radio Education for Adult Literacy (PREAL). <https://reference.cominit.com/content/project-radio-education-adult-literacy-preal>.