ROLE OF IT IN DISTANCE EDUCATION

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Abstract

Purpose: The purpose of this paper is to highlight effort being done in India for raising literacy levels through distance education (DE) by utilizing different information technologies available in the country.

Methodology/ Design/ Approach: This article discusses the emergence of correspondence courses/open universities, education scenario, government initiatives for IT enablement of education and DE, participating institutions and communication technologies available in India. It examines the status of network facilities, participating institutions, virtual classrooms, technological solutions and educational institutions for spreading DE in India.

Findings: This research paper strongly suggests the need for digital libraries and exclusive network service for distance education.

Practical implications: There is need of policy guidelines to use IT for quality education. The backbone for developing DL already exists in India. Declining prices of PCs and networking devices makes it economically feasible to use Information technology. It will be helpful to deliver quality education to unreachable populations and enhance the quality education.

Originality/value: This paper offers practical solutions for spreading DE for participating institutions, policy makers and implementers and distance learners.

Keywords: Distance Education, Digital Library and Information Technology.

Paper type: Theoretical

Introduction

In the age of globalization and liberalization, information has become the key factor to success. Teaching and learning nowadays has become a lifelong process. These are no longer confined to the classroom or the school and college. Distance education (DE) has been in existence for more than a century. The improvement in communication and information networks demolished the barriers of physical distance. DE has made remarkable progress over the last two decades and has now gained widespread acceptance as a viable alternative delivery system and alternative to the conventional system. Further, the use of information technology (IT) is giving this system an edge over the conventional system. Information technology can be used both for instruction and document delivery and libraries play a vital role in this context. The rapid expansion of IT, computer literacy and access to the internet offers immense opportunities for online delivery of DE and training. The real-time web-based courses are a matter of reality on the internet and the virtual university is no longer a fiction. There are many synonyms used for distance education such as distance learning, distributed learning and remote education. Distance education can be defined broadly as: Any educational or learning process or system in that the teacher and instructor are separated geographically or in time from his or her students; or in that students are separated from other students or educational resources; the learning is affected through the implementation of information and communication technologies to connect teacher and student in either real or delayed time or on need basis; and the content delivery may be achieved by integrating various technologies, including audio, electronic transmissions via telephone lines, postal service etc. DE is a modality consisting of a broad, mixed and category of methods to deliver learning.

Objective

The objective of the paper is to provide an overview of India's efforts in raising literacy levels through DE by utilizing various technological choices available in the country.

DE through broad based technologies

(1) Audio-visual medium: The need of audio-visual communication like TV is increasing day after day that is evident from the increase in cable TV in India. India has a large population living in urban and rural areas and Digital TV has become a medium of education, information and entertainment to the masses.

(2) Satellite technology: It facilitates quickest delivery to any geographical location in the shortest period of time. An unlimited number of classrooms and individual students can participate in any given lesson. It provides equal access to all, including populations in remote areas. The course material is available on demand due to any time access to system's databases and communications facilities through e-mail and internet browser.

(3) Integrated communication networks (ICN): The need for an ICN in India is due to:

- Majority of population in India are residing in rural and semi-urban areas
- DE and learning is the only mode for increasing literacy at remote and tribal inhabitations
- An ICN acquires information in various signal formats (video, image, text, audio, voice, data, internet), seamlessly integrates and disseminates by using efficient and cost effective communication modes to various destinations for public use.

Indian scenario

In 1962, the University of Delhi (www.du.ac.in) initiated DE in the form of correspondence courses; In 1982, the first Open University was established in Andhra Pradesh as Andhra Pradesh Open University, subsequently renamed as Dr. B. R. Ambedkar Open University (BRAOU) in 1985, the Indira Gandhi National Open University (IGNOU) (www.ignou.ac.in); and in 1987, the Kota Open University - renamed as Vardhman Mahaveer Open University (VMOU), Rajasthan, came into existence. Since then, the DE system has grown substantially and by the year 2002 there were 10 Open Universities and 64 correspondence courses directorates or institutes attached to different Universities providing courses through distance mode (Department of Education, India, 2003). Initially, these Universities reached their students through post offices and begun to supplement their courses in recent years with classes that use radio and TV broadcasts. In India there are four types of institutions offering distance education, namely: IGNOU, State Open Universities, Directorates of DE functioning under conventional Universities (Dual Mode Universities) and private professional institutes. However, only the IGNOU uses third generation tools (Internet based education) and the Directorates attached to conventional universities are still at correspondence model (Srivastava, 2002).

Government initiatives

Several Government initiatives are actively pushing for the IT enablement of school and University education in India on an unprecedented scale. The Working Group on IT for Masses, constituted by the Government of India in May 2000, made recommendations while stating "in a large country like India, technologies, such as distance learning, need to be used in a major way to address the problem of limited educational material and resources for use in different parts of the country".

Many educational experts are of opinion that the best way quality education can be delivered to the masses cost-effectively is to leverage mainly IT, communications and broadcasting (Government of India, 2001).

The Ministry of Human Resource Development (MoHRD) allocated a budget of Indian Rupees (INR) 450 crore for IT enablement of education and DE, and for strengthening of computing and networking infrastructure in Category II and INR 700 crore in Category III institutions over the next three years. To enhance University education, the MoHRD has drafted a set of recommendations to build digital libraries (DLs) and interconnect 50 Category II and 200 Category III institutions. This will expand the existing educational backbone network Education and Research Network (ERNET).

The University Grants Commission (UGC), the apex policy and funding agency for higher education in India, plans to build a very small aperture terminal (VSAT) and terrestrial network to connect all Universities under its umbrella in a scalable Wide-Area Networking (WAN), wherein even remote areas can be covered as easily as urban locations. This facilitates data transfer, internet access, video conferencing and DE programmes at all major Indian Universities.

Participating institutions and technology choices

IGNOU (New Delhi): The University has about over 4 million distance learners and 29 other countries through a network of 67 regional centers and over 2667 study centers, all over India about 35,00,000 students. It deploys TV broadcast technology to deliver some of its courses to students around the country. It has built two-way audio and video conferencing facilities at 175 nodes across India to facilitate interaction between faculty and students. Under its "Virtual Campus" initiative, digital content delivery through multimedia CDROMs and the internet, and further seeks to combine the internet, teleconferencing and broadcasting into a composite learning experience.

ERNET India (www.eis.ernet.in): ERNET was conceived in 1986 and play the role of an indigenous internet, limited to academia and R&D institutions. It serves as a critical infrastructure bearing a direct role in the higher education sector. It is setting up UGC-Infonet in partnership with UGC; "Vidya Vahini" an Intranet and internet for schools by providing IT in education; "Gyan Vahini" an integrated internet and Intranet tools and computer aided techniques into the learning environment (www.eis.ernet.in) and "Navodaya Vidyalaya Samiti" – Net (www.eis.ernet.in).

Europe *Star (www.europestar.com): Europe*Star provides point-to-point and multipoint delivery of data, voice and video content for video conferencing, internet broadcasting and video streaming directly to PCs. It is more cost-effective in setting up a satellite dish of 45-60 cm in rural villages around India than to build a whole terrestrial network and the rollout rate may be 50,000 schools a year. Europe *Star has footprint across the Indian subcontinent, Middle East, Africa and Europe, and become a major player in the emerging DE scenario.

EDUSAT (www.isro.org): The first Indian satellite built exclusively for serving the educational sector to meet the demand for an interactive satellite based DE system. It carries five Ku-band transponders providing spot beams, 1 Ku-band transponder providing a national beam and six extended C-band transponders with national coverage beam. It provides six exclusive channels for primary, secondary, higher education, technical education and e-governance.

Skymantra: Skymantra is a broadband network from Bharti Data and Broadband Group that can be used for connectivity in DE. Bharti is an enabler, associates with content creators like the Manipal Group, Delhi Public School (DPS) and others, deploys a state-of-the-art broadband VSAT infrastructure and terrestrial network of the telecom group to create a sustainable business model. It enables teachers and students to access distant libraries and databases on a global scale and remains interactive with peer groups.

Solutions facilitating DE:

SpaceTeach: A national virtual classroom can be created with SpaceTeach through that institutions make available talent across the country by deploying satellite video multicast facilitates. A centralized instruction resource combines the best quality and content for the audience. Moreover, the video/chat return channel offers benefits of interactive learning. HCL Comnet has set up SpaceTeach at IIT Bombay and IIT Kharagpur (HCL Comnet Ltd., 2004).

DiRECWAY Global Education: It is a comprehensive training and education service and utilizes a blend of broadband satellite technology and interactive learning technologies, targeted at companies and individuals. It is being implemented at Indian Institute of Management, Kozhikode to offer interactive distance learning educational courses, Xavier Labour Relations Institute, Jamshedpur for satellite-based management programmes and Apollo Group, Inc., USA to provide high quality education services in the country (Hughes Escorts Communications Ltd., 2001).

BGAN program: BGAN specifically useful where VSAT is not an ideal option and volumes of data are small. Inmarsat's footprint is across India, the Middle East, Europe and North, Central and West Africa. It has been used in many villages where there was no local infrastructure. It supports multiple users from one unit through a router, thereby reducing costs for each user (Franchi and Sengupta, 2001).

Educational channels

Educational channels have been in existence in India for over five years (MoHRD, 2003). The select channels include:

(1) Gyan Darshan: Launched in 2000, as an educational TV in India. It is public co-operative involving major educational institutions: IGNOU, UGC/Consortium of Educational Communication, NCERT/Central Institute of Educational Technology, Directorate of Adult Education, IITs, Technical Teachers' Training Institutes and other developmental organizations to contribute programmes. The transmissions are uplinked from the earth station of Electronic Media Production Centre-IGNOU, New Delhi. Gyan Darshan comprises four channels:

- **Gyan Darshan-1:** serves different categories of users such as pre-school kids, primary and secondary school children, college/university students, youth seeking career opportunities, housewives and adults;
- **Gyan Darshan-2:** devoted to interactive distance education with one-way video and two-way audio satellite-based interactive systems;
- **Gyan Darshan-3 or Eklavya:** the technology channel dedicated to technical education. It features lectures of the courses taught at the IITs situated at Kharagpur, Bombay, Kanpur, Delhi, Guwahati, Roorkee and Madras (paniit.iitd.ac.in)
- **Vyas:** launched in 2004 with 85% curriculum based content and the rest being enrichment programmes.

(2) Gyan Vani: Launched in 2001 as an educational FM Radio channel operating through 10 FM stations from various parts of the country with a further expansion to 40 stations by 2007. Gyan Vani stations operate as media cooperatives, with day-to-day programmes contributed by various Ministries, educational institutions, Non-Governmental Organizations and national level institutions and Open Universities. The broadcast duration is in the range of 8-12 hours.

(3) Interactive Radio Counseling (IRC): IGNOU and All India Radio run a collaborative venture called IRC, each Sunday, from 4 p.m. to 5 p.m., on 189 radio stations. The programmes are produced in Hindi and English, and the AIR stations broadcast IRC in the language suited to their region.

Role of libraries in DE

In distance education, learners are far away from their teachers and instructions are imparted through multi-media approaches. Hence, the role of libraries becomes a basic requirement to fulfill this gap. Library facilities to distance learners vary from country to country, based on policies and availability of communication technologies. Most libraries in developed countries are fully computerized and use various technological devices to provide information to distance learners. And India is following suit.

Natural language interfaces

Natural language technology is of great use in DE and has a tremendous potential for rural India. NLIs help people to communicate with the machine in a language that is natural to them. The interfaces can be intelligent tutoring systems and virtual reality systems, and of great use to build various customized training applications for the rural Indian.

Issues in library services providing distance education

(1) Access to materials and document delivery: Some countries monitor or restrict access to downloaded contents from internet sites. The electronic information sources such as e-books, databases, virtual libraries, Web pages, etc., are commonly used in developed countries. Distance library services must be sensitive to these realities and establish delivery of services through mail, fax or phone for enquiries and print copies or audio/videotapes of materials can be sent through regular mail or by courier.

(2) Consultation services: These can be extended through e-mail, toll-free telephone services, pre-packaged mail-out information or scheduled remote site visits depending on distance from parent institution.

(3) Reference services: Students can use forms (print or electronic) to make research queries and the prompt ones replace face-to-face assistance in helping the student to properly complete a request. Institutions that have dedicated library telephone services may use them for reference queries.).

Indian Library situation

The library of the study centre is normally located at the college where the study centre is located. The college library also acts as the library of the study centre. These libraries mainly contain study material, textbooks, audio-visual aids and other reading material. The organization of important library services in various study centers scattered over far-flung areas by creating full-fledged study centers is a difficult task. However, the distance education system can select some college libraries or district libraries for rendering library services to various students residing in the territorial jurisdiction of a particular college or district library.

Integrated digital libraries

Integrated digital libraries create a shared environment by linking resources from a personal information collection and to a large worldwide database. At present the development of DLs in India is in the nascent stage. However, efforts are on to develop network based learning environment for the distance learners. The implementation of the INTEND was planned in two phases, spreading over ten years. As part of the INTEND project the Open and DE system in India has decided to set up the Open Education Network (OPENET). The INFLIBNET will be integrated with the INTEND-OPENET in the future (Rao, 2001).

Conclusion

The declining price of PCs and networking devices makes it economically feasible for countries like India to use IT to deliver quality education to previously unreachable populations and to enhance the quality of education in existing teaching institutions. IT enabled education and IT enabled DE will become commonplace in the future. Most of the government and private sectors exams are being conducted in online system now a day's only because of growth of IT. Information sharing is critical to the process of raising educational standards. If institutions are interconnected through IT enabled networks, they will be able to share information more easily and thus raise standards rapidly. Policy guidelines to use IT for education are now in place in India. What remains to be done is to develop an appropriate mix of technologies and teaching methodologies for IT enabled education, and to find the funding for mass implementation. Fiber, broadband, satellites, complimentary media, are available in India. The backbone needed for developing DLs for the distance learners already exists in the country. The need is to have a clear understanding of the emerging opportunity to leverage the technology to play a global role in a cost-effective way.

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