

Information Communication Technology in Distance Education in India: A Challenge

S. L. MAHAJAN

Yashwantrao Chavan Maharashtra Open University, Nashik, India.

Abstract: *Information Communication Technology has become an integral part of every sphere of life. Growth of ICT has become very fast in the last 2-3 decades. In developing countries like India, there are many challenges and barriers in the application of ICTs. In India ICTs are being used in many institutions at higher education level, but without any networking among themselves. Distance Education is benefiting a lot with the extensive application of ICTs. This paper deals extensively with all those aspects related to ICTs, the concept of Virtual University and the technologies required for that.*

Introduction

Information Communication Technology (ICT) has become most widely used buzzword of the computer industry. It has affected all walks of life in one-way or another. ICT is the modern science of gathering, storing, manipulating, processing and communicating desired types of information in a specific environment. 'Computer technology' and 'Communication technology' are the two main supporting pillars of this technology and the impact of these two in the information storage and dissemination is vital. It is impossible to deny its importance in the educational, cultural, agricultural, scientific and technical disciplines of the world. Information needs are increasing day by day and in the present day society, every person is intending to be information oriented.

Information technology has geared up by the advent of major technological innovations. Introduction of ICT has influenced very significantly the work culture in our offices. The current developments and advancements in the ICT have also brought the offices to home as their work-places. Most of the organizations are changing beyond their own expectations, in using ICT taking decisions in a more scientific way. Thus fast technological changes definitely accelerate development in all directions.

There are several modern communication services which have relevance to distance education, such as Electronic Mail, Telex, Facsimile Transmission, Bulletin-Board service, Teletext, Videotext, Voice Systems, Voice Message System, Teleconferencing, Audio conferencing, Audiographics Teleconferencing, Videoconferencing, etc. All the above services make use of the special equipments; computer based message systems and computer networks. The special equipments include: Fax Machine, EPBX, Automatic Telephone Dialler, Voice Recognition systems, Voice Synthesizers, Data Networks, Commercial Databases, Optical Disk Storage and Retrieval Systems, Telex Terminals, Communicating Word-Processors, Slow-Scan TV, High-Definition TVs,

CDTVs, and so on. What is important is not just using these media but properly organizing them into a well-defined instructional strategy is the essence of ICT application in the context of DE.

The classical distance education programme did not use computer and internet infrastructure for its operations. Many universities tried to improve the classical distance education by associating few institutions/companies in many cities as its DE Centers for delivery of their programmes. All the support services were provided to DE learners through these centers. DE is going through a continuous qualitative improvement. This evolution is being pushed both due to the technological changes and social needs. The qualitative push given by the technology to evolution of the DE are: the falling prices of personal and multimedia computers, and the proliferation of Internet with high bandwidth. These technological advancements cannot increase the output capacity of the present conventional university system. On the other hand, these advancements in DE programmes are not only making it far efficient, but also showing a sharp improvement in the quality of the output. Similarly the qualitative push given by the society to evolution of the DE are: the incorporation of IT for the restructuring of existing socio-economic processes throughout the world, [Turoff (1997) and Hiltz et al. (1993)], and as a consequence to this, the explosive increase in the demand of IT professionals of all categories, at all levels. It is realized that DE, with qualitative improvement, can perhaps be the only way, which may deliver sufficient quality and number of the required professionals.

Satellite Communication in India: Emerging Possibilities

India has been using satellite communication for educational purposes since 1975, when the first experiment called the Satellite Instructional Television Experiment (SITE) to broadcast educational programmes to rural schools was conducted.

The University Grants Commission (UGC), National Council of Educational Research and Training (NCERT), and Central Institute of Educational Technology (CIET) have been using satellite broadcasting on the national network for various educational programmes. Indira Gandhi National Open University (IGNOU) has been transmitting educational programmes over the national network to reach out to its learners. Now there is a talkback terminal available in satellite communication; the phone call or the audio channel from the classroom can come back to the teachers at studios who can interact with the students from anywhere in the country. Now the students can send a question through fax and e-mail though e-mail is not really on line. IGNOU uses this studio to uplink. IGNOU uses earth station, which sends signals to the satellite, and then it is received back by something like 150 receiving terminals at the various regional and study centers.

This kind of network could be used by all the 9 State Open Universities also. All India Management Association uses this network for conducting diploma programmes. The National Council of Educational Research and Training (NCERT) uses this technology for training 1400,000 to 1500,000 primary school teachers and that also in various regional languages. There is a programme called Integrated Child Development Scheme

important determinant. Communication technology demands a change in the role of teachers. They should realize that they are no more the only source of information to transmit knowledge. New communication technologies make the teachers play new roles as managers, facilitators, individualizes of teaching, advisers and so on.

There is still a lot of scepticism among educators in India that the adoption of a technology may lead to further elitism in education; widening the gap between the haves and the have nots. Moreover, the government cannot make technology available to every student to work with.

Besides, there are, some additional factors that influence decision-makers to ignore or adopt technologies for educational purpose. Some of these are as follows:

- The teachers are usually not involved in planning and preparing the courseware (there is a difference between software and courseware— ‘software’ refers to computer programming while ‘courseware’ refers to all teaching materials that store information, e.g., print, radio and television programs).
- It is very difficult to cover the entire syllabus through one technology (medium). Therefore, other media are required to achieve the educational objectives in totality, but it is very difficult for many countries to adopt the multimedia approach to teaching-learning.
- There is a dearth of variety in the courseware. The material borrowed from the developed countries may not be suitable for the students of developing countries.
- The students’ dependency on books and the teachers’ lecture, discourage them to make use of the modern communication technology for learning.
- Educators prefer technology, which has the potential of solving educational problems, and consequently can improve the quality of instruction.

How to make ICT user oriented, contextual? How to use potential of ICT in areas like curriculum development and designing teacher training strategies etc. at all levels of education? Should ICT go hand-in-hand with other traditional means? What are the means to identify the role of ICT in Open and Distance Learning, which could be a channel to reduce space, time and economic barriers in the context of training education personnel? How to build effective strategies with the help of ICT to meet the challenge of “each one teach one”? Should there be a provision for developing e-literacy before introducing ICT in education? Whether the usage of ICT can be adopted in situations where proper infrastructure is not available? Is it cost effective to use ICT? How could ICT be used to develop networking and partnership with other Government and Non-Government institutions/organizations? These questions need to be answered before technology is brought in.

Socio-political factors

In India, it is said that telephone networking did not expand in the past because some people at the top deliberately did not want it to expand. Scholars say that development

(ICDS) and almost every village has an ICDS worker who is a woman from the same village. This technology is used for training 500,000 ICDS workers and functionaries of Panchayati Raj institutions (local bodies). The UGC uses it for special training programme on new communication technologies orienting its staff at various EMRCs. This particular network, namely the INSAT system, covers not only India, but also most of the adjoining countries, namely Nepal, Bangladesh, Sri Lanka, Pakistan and Maldives to some extent.

Technological barriers

There are various factors, which influence the growth and adoption of communication technology in a country. New communication technologies are not free from technical problems. There are a number of studies which revealed that technology itself as a barrier in its growth. For instance, lack of regular flow of electricity can make technologies defunct. One of the major reasons of under-utilization of the television programmes in the villages during the Satellite Instructional Television Experiments (SITE) and the Indian National Satellite (INSAT) project was the irregular supply of electricity.

Appropriateness: The technology should suit the geographical conditions of the country. For instance, India's policy of having her own communication satellite to cover the entire country is justifiable.

Accessibility: Certain constraints such as lack of money, lack of sufficient software/courseware, lack of political will, etc., will invariably affect the accessibility of technology to educational sector.

Handling: Computers need specialized operators and programmers to use them. More so, because technologies are changing so fast that one finds it difficult to keep oneself up to date in handling and maintaining them.

Maintenance: The poor maintenance of various technologies imported or adopted from the developed countries, may be due to lack of expertise, lack of resources/infrastructure, non-availability of spare parts, or indifferent attitude of users.

Storage and use of information: The hot and humid climate (for a major part of the year) of many South Asian countries is not suitable for computer technology. It is difficult for educational institutions in these countries to arrange venues free from dust, heat and moisture for the storage of data, software and hardware.

Software/Courseware: There is a dearth of relevant software/courseware (a lesson stored electro-mechanically for teaching/learning a particular skill) for educational sector all over the world, including the developed countries.

Educational factors

There are certain educational factors that influence the growth and adoption of the communication technology. Teachers play a crucial role in the adoption of a communication technology, or an innovation. Their attitude toward technology is an

of communications failed in 60's and 70's because there was not enough political support. Whether these are facts or mere opinions, or an undisputed fact, communication technologies will not go far unless there is a strong political will to support them.

Various social problems may also crop up as a result of the application of the new communication technologies.

Decentralization and isolation

The communication technologies like satellite, television, radio, telephone, computer, videotext, etc., if adapted by the Indian society on a large scale, could make the country a well-informed one, which in turn may bring about a change in the political structure of the society. However, the desire to establish a truly democratic and egalitarian society must accept such a transition. Availability of a large number of communication channels (the large scale use of computers, Internet, telephone, fax, etc., in an office) may empower the citizens to work independently. Technologies, at the same time, may isolate the members in the same office working in small cubicles. The absence of physical communication may create psychological isolation, which will give rise to social problems.

Unemployment

Application of new communication technologies may disturb the rhythm and pace of the society. And in the process employees may be thrown out of their jobs. For example, the introduction of computer worked as a death knell for many typists, secretaries and clerks. Direct dialing system may throw out many telephone operators from offices and agencies. Introduction of tractors made many traditional farm workers jobless. Retraining of the work force may, to some extent, prevent such risks.

Human and administrative factors

If the students do not have access to the technology being implemented, the situation may cause serious problems. Two classes of students, the 'haves' and the 'have-nots', will emerge, which, in turn, will cause various other problems.

Economic factors

The application of any communication technology is a costly affair. The investment runs into millions of dollars. Such a huge investment requirement forces many of us not to use technology.

Equipment-related factors

The problems pertaining to the equipment arise mostly with the application of imported technologies. The equipment, i.e., the hardware is usually imported from various developed countries. For maintenance the adopting countries will have to rely on the foreign agencies. This dependency causes havoc, as the officials of the adopting countries cannot have total control on all the aspects of such technologies.

Present Status of ICT and Educational Institutions

Out of about 11562 colleges in India 10% have Internet. Out of 250 universities in India 5% have Internet and rarely the universities and colleges are interconnected. Why are there no ICT facilities in schools and colleges of education when there is a move to shift from print media to modern electronic and multi-media? Why are our schools and colleges still compromising with chalk and talk? Why do we use computers, computer labs, multi-media more in seminars, workshops, conferences, and exhibitions, than in classrooms of schools and colleges? Many of the public schools have ICT facilities but many colleges of education do not. Computer education is optional, and the syllabus is only theoretical in many universities and no practical weightage is given. Many of the ASCs does not have inputs of ICT for orienting and refreshing higher education teachers? Though UGC has approved actual position of lecturers in computer education in the ninth five-year plan but there is no concurrence from State governments. ICT is not used by people with disabilities. Government schools do not use them. There is no networking of NCTE, teacher education institutes, departments of education, colleges of education, IASEs, CTEs, NTTs, PTCs, AICTE. There is no networking of NCERT with the schools at all levels. There is no networking of Central and State governments, MHRD, UGC, ICSSR, ICMR, NCTE, AICTE, NCERT and NIEPA. There is no networking of DEC and NAAC with all the open universities of India and abroad. However, some institutions with modest budgets have made good progress.

The university of Goa has established an internet with 25 of its affiliated colleges on experimental basis to realize one way video and two way audio communication through TV Satellite network, computer network, e-mail, fax and STD phone for administration, management, instruction and evaluation (2001). Similarly Laxmibai National Institute of Physical Education, Gwalior (a deemed university) has full networking of campus administrative block, academic departments, fields, libraries, laboratories, and residence. The Institute of Education, DAVV, Indore has initiated a project on computer literacy for rural communities and it has also been offering Bachelor of Computer Education (B.C.Ed.) and Master of Computer Education (M.C.Ed.) programmes which are unique with respect to educational inputs in the syllabus. The Institute of Advanced Studies in Education, Rohilkhand University, Bareilly, has a well developed video studio, multi media lab and a computer laboratory. The National Open School, New Delhi has initiated a project at the experimental level for on-demand examination. Yashwantrao Chavan Maharashtra Open University has established networking within School of Science and Information Technology. The same will be done very soon in other six schools. YCMOU has also started a certificate course in Information Technology (CIT) from 5 th to 10 th standard since year 2000. There are approximately 10,000 students enrolled in the academic year 2001 - 2002 for CIT course from 5th to 10th standard. IGNOU has been providing support to its various certificate diploma and degree programmes with two way communication through extended C Band.

The Net-University: An Indian Perspective

The university education system is expected to go through a revolutionary structural change in the coming decade or two. More than two decades ago, distance education

appeared as an evolutionary extension of the university to cover students who either could not commit full time to studies or/and could not co-locate themselves with the university town. In the recent past, with the integration of computer and communication technology, continuous fall in the price of personal computers, along with the explosion of the world-wide-web, the nature of the distance education system is going through continuous qualitative improvement. Now, this process of improvement has gathered enough momentum to bring qualitative transformation not only to the distance education system but also to restructure the present university education system entirely (see Turoff, 1997).

It is expected that in the coming decade or two, most of the universities will get restructured into Virtual Universities. The distinctions between on-campus and off-campus, full-time and part-time, and local and distance students may almost vanish. It is also expected that this restructuring will be neither easy, nor simple, nor uniform. In addition, it would have some distinct local customization.

In India, education is primarily the responsibility of the state, and at present, it is not in a position to fulfill the societal demand of education, either in quality or in quantity. In the last couple of decades, the private sector has been encouraged to setup educational institutions, and a large number of such institutions for higher education have been setup.

These institutions could not produce professionals up to the expected quality level. In addition, India has to face continuous shortage of high quality of staff in the fields of information technology, medical sciences etc., as emigration of good faculty to the other countries in large number would remain unabated, or may even increase, in the near foreseeable future.

The concept of the Net University, a two-tier virtual university, can only satisfy the present societal demand of higher education. Each university of repute must cooperate and coordinate with few other universities and institutions to build a Net-University so that with the limited number of quality staff large number of quality professionals can be produce, and trained without any geographical constraint or relocation.

Conclusion

Networking is highly useful for optimization of resources but very difficult to operate in the Indian context. If networking is taken to its logical conclusion, it would mean that we may start similar courses at all levels, prepare reading material at one place and then run the courses independently. It would create the problems of control, supervision, and responsibility, which are very difficult to sort out. Networking can be extended between two-three open universities and DE institutes, which are located geographically nearby. Networking needs well thought out planning collaboration and sharing of resources and facilities.

The new technology is constantly dominating the minds of policy-makers of DE system and not the interest of the students. At present, the university and DE institutes emphasizing on providing costly technology equipment at a huge cost without examining

its utility to distance learners. We should adopt that technology which is feasible, practical, cost effective, and meets the needs of the students. A decision on new technology should be taken very carefully.

Tutors/Part-time teachers/Pensioners appointed in DE system already under full employment creates unemployment for new comers and also working half heartedly under stress, which ultimately affects the communication technology and whole DE system.

It has been observed that we are fascinated by experiments being conducted in the area of DE in different countries of the world. However, we have to examine such experiments and see their applicability in our country keeping in view the environment and availability of resources. We should be cautious and slow in such actions. We should promote better relationship between teachers and students through Personal Contact Programme (PCP), personal visits and response sheets/assignments. For the researcher, the ICT is a great boon. We should look forward to using its customer-friendly and clientele-friendly manner which is available on demand and that too according to our convenience.

Much of the future will undoubtedly be decided by our own response to the new communication technology. If we pretend it does not exist, or run away in fear, it will unquestionably destroy the value and growth of the profession. If we embrace the technology and exploit its capability to the full, it can only broaden and fulfill our professional aspirations. But, technology has to be used as a tool to render assistance to achieve our goal of the profession to serve the end-user as providers of information, pinpointedly, expeditiously and exhaustively. It is time to embrace these challenges, to grasp the future and pull us forward. I look forward to a period when, because of the great universal availability of this technology, we would be able to improve the quality of lives even for slum people by both thinking positively and living a meaningful and informed life.

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[S.L. Mahajan is a Reader in School of Continuing Education, Yashwantrao Chavan Maharashtra Open University, Nashik - 422222 (M.S.). E-mail: openuniv@bom6.vsnl.net.in].