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# THE REVOLUTION OF INFORMATION TECHNOLOGY IN HIGHER EDUCATION

G R Chavan

R T D R Gandhi

M L Rathod

Raghavendra S

## Abstract

*Information technology is an amalgam of some wonderful inventions of the 21st century in electronics and communication. During a very short span of time it has acquired an important place in almost all aspects of human life and particularly in the field of education. India has taken some bold steps to adapt and absorb the advances in information technology by constitution of national task force. Having missed the benefits of the industrial revolution as a result of more than two centuries of colonization, the country is overtaken by the information revolution. At the same time globalization having opened the doors wide to alien influence, the government has decided to take all steps to make India an IT super power by adoption of IT as a national program so as to enable personal and national growth. At the one end, some premier institutions are having access to all facilities in terms of educational technology such as multimedia system, LAN, WAN, and World Wide Web on the other hand a large number of university are still depending only on stereotyped lecture method in imparting knowledge. Therefore the existence of technology gap provides an opportunity to use IT supported education technologies for better delivery of education, easier access to a number of knowledge sources, sharing through networks and quality distance learning in management education. In this paper will cover the scope of web based learning, Technology of delivery system, Electronic Library, IT in Distance Education.*

**Keywords :** E-Learning, Higher Education

## 1. Revolution of Information Technology in Higher Education

Information Technology in various walks of education is in fact the need of the hour. Continuing education or formal education requires careful introduction of IT related techniques to upgrade the standards of teaching and there by improving its effectiveness and efficiency. In order to equip the society with the right knowledge to face the rapid changes that is happening in the technological circles, the IT based teaching is the ultimate solution. New communication and information technologies have become major resources for teaching and learning in higher education. Some of the most cost effective and appropriate ways to use computers and modern

Technologies are to have close contact between the teachers and the taught.

### 1.1 Web Based Learning

As the Internet technology is introduced it makes a new revolution in information technology. The wide use of Internet also affected the methods of education. It is a global network and gives the concept of global classroom where any number of students can interact with each other at any time. A goodbye class, goodbye books and Goodbye teachers' is possible with the web based education. The WWW gives attractive features to Web Based Education, which are:

- The ability to have multimedia documents
- The hypertext/hypermedia capability

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- WWW network basis, allowing for distance learning.

In web based education we have two different types, asynchronous and synchronous learning:

- In asynchronous the educational module is to be installed from a particular web site and then you can unpack it offline on your machine. In this case there is no mutual interaction of student with teacher.
- In synchronous type there is synchronization among the students and teacher on-line. This synchronous Web based education provides the most emerging concept of E-learning. E-learning is not a web delivered (to be installed/unpacked later) a common misunderstanding.

E-Learning is an interactive experience with access to on line tutors and can be done from any computers once you have your password. Access is through web browsers such as Internet explorer and Netscape Navigator. With E-learning training is organized in the form of modules. The modules are approximately one hour session that focuses on specific subject of training. Using E-Learning the training can be brought right to your desktop. This makes technical training more convenient. During the live E-Learning module, participants will have the ability to ask the instructor questions, get answers and interact with other students — all on line.

## 1.2 Technology on Delivery system

In most of the business schools knowledge and information are delivered with teaching aids like slide projector, overhead projector and LCD projector. However, in distance mode of learning various other tools like audio-visual tapes, broadcast on radio and telecast through T.V., teleconferencing through satellite, floppy diskettes and CD-ROMS, networking via ERNET and INTERNET and direct to home DTH technology are being used or may be used in a big way to impart management education in remote areas also. With access to internet, the learners have a reach to an unrestricted pool of knowledge, through the Web T.V. while operating at their home. Hence the homes will come to harbor the .Virtual2 class room. With the help of broadcast T.V. the best available professionals, emeritus professors and functional specialists can interact directly to a large number of learners. In remote areas where networking is not available or may not prove cost effective CD-ROMS run on a multimedia PC are treated to be the best option of taking business education. Huge information, data, figures, pictorials, documents, graphics may be stored within them along with audio and video effect. Further internet communication is a very useful medium of imparting knowledge as classroom situations may be created at home with the access to E-mail and web browsing on the World Wide Web, which is now commonly available due to the launch of web television.

Computers play a useful role in creating learning material. Through multimedia symbiotic advantage may be gathered by integration of various types of information such as clip art, animation graphics, music, voice and live interaction that makes the delivery effective. Digital multimedia has made T.V. interactive. It has elevated its functionality to information delivery and education. The consumers of this information have a choice to call for information they need. A selected program can be viewed at the convenience of the viewer and not when relayed. Multimedia computer can be used for training on management education in a one-to-one situation with the student. Multimedia system is treated to be more learner friendly as compared to T.V. as it enables to control the response of instruction transfer process as per the pace of the learner's grasping capacity and preference so as to purposive and situation specific interface with the available information package. This creates an identical condition to the classroom on computer monitor without engaging a teacher and the given package can be browsed again and again by the learner to match with his or her own learning process.

In university students come with mature personality. Computer based learning provides them an opportunity for self-growth rather than being taught which stimulates the as they themselves make an

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appraisal of their achievements in the learning process. On the other hand teachers may also concentrate themselves on development and research related activities, as they are relieved from routine monotonous tasks such as tasking, drill, practice and sharing of information. Hence, the new system reduces dependence on conventional and less cost effective infrastructure on elements of learning and also avoids wastage of time to assemble in a classroom. It is now realized that IT tools have some relative advantages as compared to conventional mode of information sharing. This generates the need for computer that is not only useful in sharing knowledge but also imbibes skills required in a prospective manager such as conceptual, behavioral, analytical and administrative. In Management, university PG-students case studies, workshop, project work, business games supplements conceptual learning. To develop the ability to apply knowledge in real life and hypothetical situations different soft wares are developed. Now-a-days most of the education literature is also published with CD ROM to provide visual effect to printed material.

### **1.3 Electronic Library and Networking**

The impact of IT on University libraries and more so on the department libraries is bound to be drastic, if not detrimental. The print material is forced to beat a retreat. The libraries of future will be called electronic libraries. Instead of books, these will have optical disks which could be used at home or anywhere through a small portable electronic reader. Computer applications to library and information field increase the efficiency of the day to day library work. An electronic computer network connecting millions of computers all over the world is the Internet. It provides the path for the continuous flow of data among computers using protocol software. It is the information superhighway. Its basic applications like ftp, email and remote log-in allow flow of information. Its various tools like Gopher, WWW and Archie allow for fast access to reliable data. Its various services like Usenet service, Telnet services etc. further enhance its capabilities. Internet is the fastest medium of access to information of all types at theclick of a mouse. It is an essential element in libraries today, which is providing new dimensions to the way libraries acquire process, store and disseminate information.

Today most of the university department libraries have access to online information service and have acquired CD ROMs and have mounted them on networks with wider access. The goal of better education, however, can be served by taking a more focused approach of building internet that connects the all department of university similar to Indian Institutes of Management and can be utilized by member institutions only. The Intranets may be implemented to connect all the university in each state or those on common platforms. The tools necessary to share resources will include use of internet connectivity through DOT, VSNL, or other ISPs, web browsers and security firewall as the heart of Intranet. It will require software packages for discussion forums, network electronic bulletin boards and list servers for low volume discussion groups as well as for member institutions with the limited connectivity and bandwidth. Many applications can be administered on the business educational Intranet such as sharing of library resources, projects and research work, faculty interaction and collaboration, student placement information and video conferencing.

### **1.4 IT on Distance Education**

We are passing through the age of information technology. The new technology likewise other areas have helped in improving distance education for management program. With advanced communication technology, teaching learning process has become faster, non-conventional and interesting. Distance education is the fore-runner in exploiting the potential of information technology so as to reach the learners, teach them, while assuring also its future, especially in the third world countries like India.

Distance education acts as a social catalyst in developing countries and supports the objectivist model of knowledge transmission. In this three important features of distance education: first, the use of technical

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media; second, the mass education of students at a distance,; and third, the industrialization of teaching process. It is felt that distance education must adapt new technology tailored to individual learner within the Indian environment. However, the technology should be cost-effective, interactive and innovative. During last 20 years the Open University system has shown substantial growth and development, both quantitative and qualitative. At present there are ten open universities in the country including the Indira Gandhi National Open University (IGNOU). IGNOU is the fastest growing education system in the world, with over six hundred thousand students, more than fifty programs comprising over six hundred courses. It is the largest university in the country and the second largest in the world. The university is increasingly absorbing the cataclysmic changes taking place in the telecom and IT sector and now it plans to install VSAT based terminal across the country. In an attempt to implement an interactive ETV for distance learning program for education, the IGNOU has conducted teleconferences for

1. Distant students
2. Counselors handling counseling sessions at study centers
3. Regional Directors and supporting staff of the university.

The impact of information technology is appreciable to identify the effect on distance education for management discipline, which is as follows:

- The teacher and learner of management education are not required to assemble in class rooms. There are no regular classes and peer group interactions.
- It has no time and space limitation. Learners are not required to complete all the courses in a given time frame. The pace of learning may be decided by the student at his own. Likewise no campus infrastructure is needed.
- Digital or electronic library may reach to the learner without physical boundaries. Integrated library with online multimedia support can solve the problems of students.
- Various packages such as .INFORLINE. for general information ADVICELINE. for advice to students, .CHOICELINE. for choice of subjects, LIBLINE. for library holdings and .EXAMLIN. for date-sheet of term-end examinations and related information may be developed for achieving excellence in management education through distance mode. These packages can be made available to the management student at university home pages on the web-site, video cassettes and CD ROMs.
- There is a growing trend that education institutions are launching distance education program. They may use internet by opening their web-sites to reach to the students who are having access to internet.
- Telephone counseling may be organized by arranging a counseling counter with STD facility for answering student queries. Students may be given this facility free of charge by dialing a certain code during pre-decided counseling hours. If connected through computer they may ask immediate clarifications through the network.
- Initially for the assignments and later for the term end examinations, traditional examination system may be replaced through online computer assessment system.

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## 1.5 The e-learning

The scope for IT education is limitless, how effectively we use this revolutionary technology is the critical factor. IT can be used as a mass literary and education delivery system for millions of children living in far-flung villages through wired classrooms with a Net teacher. The Internet can provide access to an unlimited storehouse of knowledge on any subject and make remote teaching and distance education a reality. However one should not get carried away by IT hype. IT is just an enabling technology. One of the first entrants in to the revolutionary IT driven learning market was the Delhi based NIIT, which introduced its IT-enabled learning project LEDA (learning through exploration, discovery and adventure) for schools in 1996. Since introduction in 1996 over 350 schools and 100 other educational firms have experienced LEDA. In the same year they set up an online learning centre-netvarsity.com. Egurucool entered in the market in 1998. Starting out as a general education portal, the company has moved up the value chain to offer online tutorial courses for ICSE, CBSE and other state board examinations. Egurucool also offers its online services to schools to enable their faculties to plan homework, class work etc., Another entrant in to the IT driven and Net learning technology was school Net. School Net has trained over 2000 teachers across the country and in the process of expanding their network.

Karnataka was the first state in India to announce its IT policy. Under the Millennium IT policy they have launched several projects to utilize the power of IT to accelerate the overall development of the state. Their most ambitious InfoTech initiative is IT in 1000 schools. Five-year computer literacy project estimated to cost the government Rs.190 crore, will focus on 1000 government run secondary schools spread across the state. Another initiative in this direction is yuva.com, a scheme under which 225 computer training centers will be established for rural youth and an IT literacy project among all of the state's 77 engineering colleges, 100 polytechnics, 150 ITIs and 300 other colleges.

## 2. Scope of IT in Education

If Information Technology is used in school education it provides:

### a. Flexibility, Accessibility, And Convenience

With a very short period of training the student can access the learning material when their schedule allows. No separate distribution mechanism needed (WBL), can be accessed from any computer anywhere in the world, keeping delivery costs low, this leads to cost saving.

### b. Enhanced Learning

Cognitively, active and context-based ("real world") learning activities, the highly interactive nature of well designed online learning, flexibility to review course material at any time, all improve learners abilities to synthesize and retain information. Many learners also find it easier to ask questions via E-mail because they have the privacy of direct contact with the instructor and avoid the classroom fear of "exposing" ignorance.

### c. Ease and speed of Update

WBL allows for efficient and quick updates to course material for frequently changing information. The changes are made on the server program. Everyone worldwide can instantly access the update.

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**d. Consistency of learning material**

Each learner gets identical instructions to ensure the consistency and quality of the message by using WBL.

**e. Cross Platform**

WBL can be accessed by web browsing software on any platform Windows, Mac, UNIX etc. All these factors contribute to improve the quality of school education by overcoming factors like social background of students, parents, different standards of teaching and teachers training programs, all teachers cannot deliver the same message to all learners. Also by using WBL students can do their self –assessment & management has access to progress reports & assessment data of individual learner.

**3. Problems to be faced while implementing IT in education**

Looking at how to use Information Technology in school education, its different tools, the system structure as defined & described above it is obvious that we will face some problems while implementing WBE in school education in India.

The major problems we will be facing are:

**a. Intensive Training to Schoolteachers**

Schoolteachers are not introduced to the web based education. Therefore training should be given in order to create a learning environment that will itself train and spur students on the one hand to turn the learning experience into useful, practical and personal knowledge.

**b. WBL awareness & Workshops**

In rural area parents are not much knowing about WBL. So the demonstration, seminars & workshops needs be conducted for society in order to understand the importance of it.

**c. Bandwidth Limitations**

Limited bandwidth of Internet connection gives slower performance for sound, video and intensive graphics, causing long waits for downloads that can affect the ease of the learning process. Improved bandwidth will help the teacher to solve his problem.

**d. Effect on Teachers**

WBL will lead to reduction in manpower as per as teachers are concerned. This will lead to agitations by teacher's organization.

**e. Effect on Students**

Although the students will be benefited by WBL there will some section of students opposing this introduction of technology in education.

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**f. Infrastructure**

WBE will primarily require free access to Web to all the learners and hence government of India will have to setup nation wide Fiber Optic Cable network.

**g. Access**

Every school will not have equal opportunity to information because of access issues. The schools with fewer budgets will always face this problem. This is the major problem as per as India is concerned, as there is big gap between poor & rich communities in India.

**h. Download**

The learning material that appears on web needs to be downloaded will require more time. The speed depends on the transmission methods & bandwidth, which is problem as per as India is concerned.

**4. Conclusion**

With introduction of Web Based Education at school level our children and youngsters will grow as "Computer kids". Their exposure will get increased due to which the Knowledge level will get definitely improved. Use of Internet for education has a potential to change many aspects of our lives. In conclusion we can say that WBE is Platform independent, convenient in access, cost saving, easily updated contents and with emerging technologies it can be made more effective.

Web-Based Learning adds human support through on-line tutor, thereby extending the scope of what can be effectively taught into many new subject areas. In addition more supporting material can be made available through web site links to other documents and systems. With all these important features incorporated in Web6 Based Learning system it will enhance the quality of education in our country at all levels i.e. Primary, Secondary and Higher Education.

In developing societies like India the problem is not poverty, low production, low level of per capita income or GNP. The real problem is that we are not adequately and professionally managed. Most of our industrial and service sector units are either under managed or unmanaged. Therefore, what we need is managerialisation of all the institutions in our .eco-socio. system. This requires a large number of professionally qualified managers. Through open and distance mode of learning equipped with advent of modern information technology we may develop a cadre of qualified managers to solve most of grave problems of the country.

With the liberalization, privatization and globalization (LPG) of economy, we are in the transformation process from being a technically backward country towards being at par with rest of the world in the 21st century. This transition phase has thrown up many challenges and opportunities which need to be exploited and managed to restructure the education system in general and management education in specific for a bright future. The strengths of IT advancements can be harnessed for re-framing the management education during this process.

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## About Authors

**Mr. Gangadhar Ramu Chavan** is working as a Programmer in Computer Center, University of Mysore. He holds B.E, M.Tech  
**E-mail:** [chavan2002@yahoo.com](mailto:chavan2002@yahoo.com)

**Dr. R T D Ramesh Gandhi** is a Librarian, University of Mysore, Mysore

**Ms. Meenakshi L Rathod** is a Lecturer in Dept. of E & CE, Dr.Ambedkar Institute of Technology, Bangalore. She holds B.E (E&CE)

**Shri Raghavendra S** Library Assistant at University of Mysore, Mysore. He holds MLIS.