

Impact of E-Learning Technologies in Higher Education

Dr. Sanjay Kumar

ABSTRACT

The present paper explores e-learning content preparation, presentation tools, application of e-learning in various types of methodologies used in higher education, benefits and limitations of e-learning and implications of e-learning integration in Indian higher education institutions. Advances in computers and Multimedia technology have changed traditional methods of learning and skills training. On-line learning continues to play a major role in the success of any academic program. Such learning can personalize learning needs both for students and teachers. It can provide environment where virtual reality techniques are used to create interactive interfaces and real time software can monitor every response made by the user. E-learning is a combination of learning services and technology that is delivered or enabled by electronic means. In recent years the techniques and tools of dissemination of knowledge have changed from, “technology-supported learning, distance learning and distance education” to “online learning and web-based training” to “e-learning”. Today e-learning allows us to share and manage knowledge and skills of the twenty first century with our other fellow professionals who work in foreign universities and colleges, and to get the right information to the right people, when and wherever they need it. The delivery of learning or content can now be through the intranets, extranets or over the Internet, via Interactive Television or satellite broadcast. Teachers and learners must realize that new opportunities are being offered by modern on-line communication system. Now with e-learning taking over the place of traditional classrooms, the entire higher education is being delivered -line and the person with the basic knowledge and skills of Web technology is open to whole new world of knowledge, from free Web surfing and self-organized education—through on-line resources and familiarization with Internet culture, its places, sites, search engines etc—up to a more structured approach.

Key words: *e-learning, Internet, Web-based training, Computer-based training, distance education*

Introduction:

Recent advances in Internet and computer technology has revolutionized the landscape of higher education. His in turn has greatly influenced the methods and approaches in education. With the advent of modern and latest Information and Communication Technologies (ICTs), students in distance and online learning programs can receive learning materials online, join televised lectures,

and attend video conference classes that link students and instructors from numerous geographic locations and participate in chat room discussions. A web 2.0 technology has provided students with an opportunity to learn and get desired information wherein education becomes socially and collaboratively constructed activity. Students get all the information regarding the academic

Principal, Vikramaditya College of Education, Khedubigha, Nalanda

programs and courses through online system. The web can be used both as a digital library and as a virtual classroom. Web-based learning makes judicious use of media such as computer conferencing, e-mail, CD-ROMs, DVDs and the Internet. These interactive technologies support many different types of capabilities such as: Internet access to digital versions of learning materials, Internet access to search and transaction services, interactive diagnostic or adaptive tutorials, interactive educational games, access to local physical devices, personalized information and guidance for learning, support simulations or models of scientific systems, communication tools for collaboration with other students and teachers, tools for creativity and design virtual reality environments for development, data manipulation and its analysis, modelling or tools organization and applications, electronic devices to assist disabled learners etc.

E-learning is a term that encompasses all forms of Technology-Enhanced learning (TEL). It is essentially the computer and network-enabled transfer of skills and knowledge. E-learning applications and processes include Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. The objective of this paper is to explore, what we have achieved so far, and what else we need to do to make e-learning a major success so as to transform India into completely digitalized economy.

E-learning is learning using electronic means that is the acquisition of knowledge and skill using electronic technologies such as computer and Internet based courseware and local and wide area network. In general, e-learning is the expression broadly used to describe '*instructional content or learning experience delivered or enabled by electronic technologies*'. Broadly we can define it as, '*the use of Internet, intranets/extranets, audio and videotape, satellite broadcast,*

interactive TV and CD-ROM, not only for content delivery, but also for interaction among participants". Identified in this way, e-learning may be taken as an electronically carried out learning, facilitated and supported by the use of advanced learning technology particularly calling of the services of computers, networking and multimedia. Laurillard (2006) has defined e-learning as "the use of any of the new technologies or applications in the service of learning or learner support". Rosenberg has defined e-learning in the following words: "e-learning refers to the use of the Internet technologies to deliver a broad array of solutions that enhance knowledge and performance".

E-learning includes independent, facilitated or collaborative approaches to learning. Independent learning refers to each individual learner completing learning activities or modules on their own, in their own environment, according to their own schedule. There are several ways this can work. For example, a learner might complete a section of learning on-line then discuss key concepts via e-mail with the instructor or with the classmates. Though e-learning cannot exactly replace actual class on-line learning, it places certain effective tools in the hands of classroom teacher. In this way if we can say that e-learning is an innovative technique or a form of Information and Communication Technology (ICT) used in providing learning experiences to the students on-line through the use of Internet services and Web technology of the computers.

Types of E-learning

There are fundamentally two types of e-learning:

· Synchronous learning

It means, "*at the same time*", and involves interaction of participants with an instructor via the Web in real time. Synchronous technologies are telephone, video-conferencing, web-conferencing etc.

Asynchronous learning

It means “*not at the same time*”, allows the participant to complete the Web-based training at his own pace, without live interaction with the instructor. Asynchronous technologies are audio cassette, e-mail, message board forums, print materials, voice mail/fax, video-cassette, CD-ROMs.

Asynchronous Methods

1. Embedded Learning:

Embedded Learning is information that is accessible on a self-help basis, 24/7. It can be delivered to the place of work, or to mobile learners. Electronic Performance Support System is a type of embedded learning. The advantage is that embedded learning offers learners the information they need and whenever they need it.

2. Self-paced courses:

The advantage of self-paced course is the convenience. Participants can get the training they need at any time.

Synchronous Methods

1. Virtual classrooms:

Virtual classrooms duplicate the features of a real classroom online. Participants interact with each other and instructors online. Instant messaging, chat, audio and video conferencing etc, are included under such methods.

2. Blended Method: Most of the educational institutions prefer to use a mix of both synchronous and asynchronous learning methods according to their requirement.

Modes of E-learning

There are several modes of e-learning. Some of them are as following:

1. Computer Assisted Instruction (CAI)

Computer Assisted Instruction is the historically first approach which appeared in the sixties and follows the metaphor of an electronic

book. The majority of CAI programmes present teaching materials as a linear sequence of screens consisting of text and graphics, allowing interaction with the student by means of predefined questions (drill and practice) and checking the correctness of the answer by comparing with a predefined sample by the author of the course. When the answer is not correct, a small deviation of the line of the course follows, where the correct answer is shown. The modern CAI involves multimedia presentations, which makes them extremely valuable as supplementary materials for school instruction.

2. Hypermedia

Hyper ext and hypermedia present an alternative approach to the individualization of instruction. Knowledge is represented there as a set of independent documents which can be traversed by following associative references (Kuhlen, 1991). This technique can be compared to browsing through an encyclopedia without really searching a specific item. Words that are explained by independent articles are highlighted in some way, which serves as an explicit reference. Students are free to decide how to move from one to another document. In contrast with the linear control of the learning process performed by CAI, hypermedia systems offer non-linear spaces in large network environments which support free browsing, communication and cooperation between individuals.

3. Intelligent Teaching Systems (ITS)

An ideal Intelligent Teaching System performs three styles of teaching:

- Tutoring: this style is more directive and presentation oriented, like CAI. However, the selection and sequencing of the teaching materials is not prescribed, but done by explicitly represented generic strategies taking into account the individual path through the learning material for every student.

● **Socratic Dialogue:** This system involves the student on a dialogue, and causes the student to discover his misconceptions by asking questions which lead to controversies with his existing beliefs

● **Coaching:** This style is characterized with the passive role of the system, which stays in the background, observes and evaluates the student's performance and is always available.

4. Distance Learning

Distanced learning has developed quite early and independently of CAL (Computer Aided Learning). In many countries Distance: Open and TV universities have been developed in the 70s, which distributed leaning materials by correspondent or broadcasting.

5. Virtual University

In the Virtual University, the students interact with the teacher through email, charting etc. This can be updated as voice mail in the virtual classroom. IN the virtual classroom all communications can take place via computers. The faculty, at all the times can monitor and control access to the class, evaluate the assignments.

Virtual University will be a virtually functioning organization and will be a coalition of International and National resource institutes, Government departments, State Universities, open Universities, research and development institutions, NGOs, private sector companies, scientists and traders etc.

6. Education to Home (ETH)

In the age of IT, students without going to school or any learning institutions can get more advanced and accurate information by utilizing satellite services which are not given by teacher. Here students can get information directly by taking satellite services on TV, Computers or even cable operators.

7. Multimedia System via Satellite Communication

Multimedia can be used as direct-to-home (DTH) services, which are one-way and two-way multimedia services. DTH is now operational in many regions of the country. The system is focussed on Multi-channel entertainment.

Further progress In E-learning

E-learning is a novel activity and that it has already improved the overall student experience, albeit primarily outside the classroom, there is a case for continued government funding. However, governments and institutions need to have a clear understanding of the costs and to improve the quality of education on offer. E-learning can be used to improve distance learning and increase access to and participation in tertiary education, as part of lifelong learning policy. It can also be used to enhance student experience on campus.

In brief, better management has become crucial foe e-learning. Governments could help by:

- Encouraging the dissemination of good practices to stimulate innovation, avoid wasteful duplication of efforts, and scale up successful experiments.
- Encouraging appropriate staff development, in order to ensure progress at institutional level.
- Supporting research and development on learning objects and other promising innovations such as open educational resources, use of virtual simulation tools and ensuring their relevance for students and faculty.
- Exploring the issues surrounding intellectual property in e-learning.
- Promoting a dialogue between IT providers and institutions.

Suggestions:

The following are some of the suggestions for the effective use of e-learning in Indian Higher education:

1. Teachers must be ready to incorporate e-learning along with the traditional learning into their teaching.
2. There is a need to revise Teacher Education Curriculum as well as curriculum in different disciplines of higher education in the light of technological advancement.
3. Teachers must be trained for e-content development and delivery.
4. Setting up a National standard of e-content and e-learning resources is essential.
5. Learner Centric Pedagogy should be employed in developing e-content.
6. Accreditate on-line learning courses and provide them social recognition.
7. There is wide disparity in the use of e-learning in rural and urban areas in India. Further, where the facilities are available, the same are not being fully utilized.
8. Establishing of e-learning consortium, with member educational institutions offering e-learning programmes and sharing e-resources.
9. Availability of e-learning materials in various regional languages.
10. Urgent need is felt to promote researches on the various aspects of e-learning.

Advantages of E-learning

E-learning has the few advantages which are as following:

1. Most of the learners have no time and resources for getting access to the traditional class-bound learning experiences may get it now easily at their convenience in the form of e-learning.
2. E-learning has enough potential to make the education, instruction and learning opportunities provided to the learners adaptable to their needs—mental and skill level—local needs and resources at their hands.

3. Unlike traditional classroom education, e-learning can cater to different learning styles and promote collaboration among students from different localities, cultures, regions, states and countries.

4. E-learning is a potent tool to deal with the problem of lack of the trained and competent teachers, paucity of schools, lack of infrastructure and material facilities for providing quality education to the number of students across the length and breadth of the country.

5. The flexibility of e-learning in terms of delivery media (CD, DVD, Laptops and mobile phones), types of courses (modules or smaller learning objects) and access (real time or self-paced) may prove a big advantage and attractive option.

6. E-learning may make the students more interested and motivated towards learning as they may get a wide variety of learning experiences by having access to multimedia, Internet, Web Technology and mobile-learning along with the verbal and non-verbal presentation of the learning contents.

7. The opportunities of having an on-line, off-line and live interaction between the students and teachers and among the students themselves make e-learning as a suitable alternative to the lively face-to-face interaction and real time sharing of the experiences in a traditional classroom setting.

8. It may also provide opportunities for testing and evaluating the learning outcomes of the learners through teachers, peers and auto-instructional devices and software available with the reading material on-line, or through the Internet and mobile phone facilities.

Disadvantages or Limitations of E-learning

E-learning has some disadvantages or limitations which are as following:

1. E-learning requires a sufficient level of knowledge and skills for the use of multimedia, Internet and Web technology on the part of its users. Lack of knowledge and skills on this account may prove futile in taking advantages from the valuable services of e-learning.

2. E-learning requires that students must have a proper, easy and timely access to the much needed resources, tools and equipment like computers, laptops, multimedia facilities, Internet and Web services, mobile learning tools, etc. These facilities should also be available to them at an affordable cost, but in most cases, it does not happen so.

3. Our schools are not at all ready, willing and equipped, for making use of e-learning in the interest of teachers and students. A few of them are equipped with the computer lab and a very few have any facilities of Internet and Web Technology for the benefit of their students and teachers. In such a situation, how can we expect from the students and teachers of our school to reap the desired benefits from e-learning?

4. There is no proper provision of training of pre-service and in-service teachers, so that they are not able to acquaint themselves with the modern knowledge and skills required on their part for the use of e-learning techniques at their workplaces.

5. Feeling of isolation is quite visible among the users of e-learning. Therefore, the type of individual attention, diagnostic testing and remedial instruction, warmth of feelings towards each other, timely guidance, supervision and feedback are completely absent in the e-learning programmes.

Conclusion:

In spite of some shortcoming of e-learning, it has still found its place among the innovative

technologies being integrated in higher education system of India. E-learning has streamlined the communication process across the world. E-learning in future, would have potentially beneficial effects on the way higher education is being delivered, designed and implemented. Until now, Indian Universities have been static in their structure and mode of delivery of higher education courses. However, with increase in demand for learning, in conjunction with the need to geographically broaden learning may prompt Universities to introduce e-learning initiatives.

students, e-learning can provide an educationally-superior alternative to traditional lectures. E-learning can also provide a model for students on how to become self-directed independent learners, which may assist them to become '*life long learners*'. For Professors, networked learning may cause changes in their work patterns and even change their professional role, but in addition, e-learning provides them with the opportunity to test students in real business situations and provide them with new methods to evaluate each student's learning.

When considering the implementation of e-learning, educational institutions must be structurally flexible and be able to embrace the capabilities of distance learning as a tool to support overall learning. To utilize these capabilities successfully, higher education institutions must determine the most suitable environments and courses for e-learning delivery, indeed a successful e-learning course may be one that is blended with other more traditional face-to-face delivery methods.

Most of the institutions must organize their support resources and infrastructure in a way that can be scaled up as e-learning faculty and also increase in students and courses. To fully understand this, we must recognize that growth and development

in e-learning has both quantitative and qualitative dimensions. That is, while the number of faculty and student adopters will clearly grow, the attributes that affect the amount of support they will need will also change and grow. While students' collective technical sophistication by all accounts grows each year, skills barriers will continue to present a challenge to institutions offering e-learning to them. All institutions will face this challenge to some extent, but some classes of institutions may find this of greater significance than others. E-learning's successful growth and development depend on its adequate funding. In any case, securing stable, long-term funding will be critical to e-learning's success as an established, integrated learning modality.

Finally, there should be a benchmark in quality and standards at the institutional level and at an industry level which would play a key role in the future of e-learning. Higher education, e-learning support services would be challenged to support standards creation and ultimately to reinvent themselves so as to meet the new requirements of standards. A judicious blend of both traditional and e-learning environment with special attention to students' needs and satisfaction can create constructive and creative learners, teaching community and learned society in India (Mohanty & Samanta)⁶. Thus, to conclude we can say that, with a changed scenario reflected in the rapid evolution in technology, competitive global economy, need for the universalization of school education and knowledge society, and lack of trained teachers, to name a few, the citizens of the developing countries urgently require the support, or alternative services for our existing system of education and instruction through a properly organized and guided system of e-learning and courses.

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