

Features and Effectiveness of E-learning Tools

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Abstract

The role of technology in the educational sector is increasing at a phenomenal rate and has revolutionised traditional forms of teaching-learning processes. Different types of technological tools have been developed to cater to the diverse backgrounds and demands of learners of higher education. One of the important technological innovations is e-learning which may be described as the application of broadband internet and computers to assist teaching and learning.

Many e-learning tools like blogs, wikis, specialised software, etc have become common today. This article discusses the broad features of e-learning and its benefits in the educational field. It also considers pedagogic principles and how to integrate them with e-learning in order to make teaching-learning more effective. Attention is also drawn to the fact that while using e-learning tools, the learners do not become overwhelmed by the technology of these tools at the expense of academic content and practices. E-learning should be used to supplement and not supplant traditional forms of teaching-learning.

Some practical applications of different e-learning tools by a higher educational institute are also referred to.

Introduction

The world today is a complex one with issues and concerns emerging that were absent even a generation ago. One of the significant changes that have taken place is the role of education and the realisation that it is indispensable for meeting the challenges and complexities of contemporary life and society.

Education has become indispensable not only for its own sake -- for making people literate and knowledgeable, but also as a means of empowering them and for the development of society. Without education, the technological revolution that continues unabated would not have been possible in our lives. In every field – agriculture, housing, health services, manufacturing, transportation and of course education, we find that technology has transformed these fields and our lives beyond imagination.

The objective of most countries world wide is to universalise education up to the age of 14 or 16 years and subsequently to allow people to choose the level and type of education that suits their needs, aspirations and resources available with different countries. Not every one

needs to go in for higher education (HE) or education at the tertiary level, since there are many jobs that do not require it. But there are a large number of people who do go for tertiary education. In western, advanced countries about 40 % of the relevant age group people study at this level.

For India, the corresponding figures are relatively lower – about 65 % people are literate and about 10 % of the relevant age group population study at the tertiary level. Efforts are on to increase the latter to about double the present figure in the next ten years.

The nature of education as well as the background of people seeking HE has also undergone vast changes. As a result, the nature of pedagogy and the resources available are also undergoing significant changes to meet the diverse abilities, needs and aspirations of different categories of learners. One of the most visible changes that is manifest today is the increasing role of technology in education, on parallel with its dominant role in today's life and society.

Just as technology has become an intrinsic part of our lives, it has penetrated all areas of teaching and learning at the HE level. From radio, films and television, we have entered the computer and the internet age. Computers and their varied and ever changing applications are becoming part of the educational scene today. Computers and internet have brought in an astonishing change in the lives of most people across the world. Communications, messages, visuals, photographs can be exchanged instantaneously from one part of the world to any other. According to Asha Gupta (2008), "We have moved from the industrial age to the networked age. We have moved from the agricultural and industrial revolutions to the information revolution".

A learner or student who is making use of information technology (IT) through internet is said to be learning electronically or in other words the computers and internet are contributing to student learning. This, in common parlance, is termed *e-learning*. Perhaps the first computer delivered lecture using email, was made by WD Graziadei in 1993. Dr. Bernard J. Luskin, a distinguished American psychotherapist, is often called an e-learning pioneer, since he has popularised on line learning both as an educator and an entrepreneur in online learning and new media.

E-learning has not only become widespread in USA, Canada and Europe, it is becoming popular in India at the higher education level. In Asia, also e-learning is evolving rapidly in several directions as the economies of Japan, China, South Korea and Singapore etc expand.

Computers are being used in diverse ways in education – computer aided learning (CAL), computer aided assessment (CAA), computer aided design (CAD), animation and in other applications that use simulation techniques. Simulation helps us to simulate or create an artificial situation on the computer which is a good replica of the actual situation and enables us to study various aspects of the problem on the computer under controlled conditions.

These are specific applications of a generalised concept of Virtual Learning Environment (VLE) that will be discussed later.

Features of e-learning

In view of the special needs, abilities and backgrounds of learners, e-learning is becoming more and more popular. Some of the main features of e-learning are outlined below:

(i) Connectivity or networking

The students are spread over large distances and not confined to a classroom with a teacher teaching them as earlier. This technology (computers and broadband internet) allows people spread over large distances to be connected and networked and will have access to both text

and visuals materials. Animation is also entering the educational scene apart from its omnipresence in the advertisement world.

Moreover, in some situations there are a very large number of students – sometimes of the order of 1,000, as happens in open schooling or distance education programmes and this large number would not fit into a classroom in any case. This technology allows all these students to have access to the material available.

(ii) Flexibility

Again, because of jobs which students maybe engaged in, students have varied hours of learning – late evenings or early mornings. E-learning can accommodate the needs of such students. Similarly handicapped or ill students who find it difficult to attend regular classes would also be able to benefit.

(iii) Interactivity and collaboration

Not only is their connectivity between the teacher and the learners, the latter can also be interconnected to themselves for sharing information or for posting comments, etc.

There can also be collaboration between different scholars or between teachers and students spread over large distances.

(iv) Virtual Learning Environment (VLE)

In view of the special needs of learners and the scope this technology offers institutions and scholars, a virtual learning environment (VLE) or virtual learning portal (VLP) is often created to enable interested persons or learners to have access to educational material like texts, visuals, quizzes, etc available on it. The VLEs created would of course differ from subject to subject. For example something created by psychologists or architects would differ from that created by engineers or business companies. The VLE or VLP allows access to different types of learners spread over distance and location.

For all these reasons, e-learning provides an alternative means of learning which is becoming increasingly popular today. However, one has to be careful in applying technology in the classroom. Several considerations arise:

- The type of technology to be used for promoting deep and durable learning as opposed to superficial learning (Bascelli, D, 2005).
- What pedagogic changes are required for effective teaching-learning (Van Dusen, G.C., 2001)

Some of benefits of e-learning have been outlined above. In section IV we discuss from the standpoint of pedagogy, what pedagogic changes are required to make teaching and learning through its means more effective and interesting for students.

Types of e-learning tools

E-learning is being implemented today in various forms and through various tools emails, blogs, wikis, e-portfolios, animation, video links, specialised software, etc. We can create through these tools a learning situation spread over distance and location that is picturesquely termed as a *virtual classroom*. Blogs or individual platforms are increasingly being used by innovative teachers to place educational materials, visuals, exercises, assignments, etc and access made available to select group of persons – students or other learners. This allows comments or questions or answers to quizzes to be put up by students which are then assessed by the teacher administering the blog.

Wikis have emerged from the concept of wikipedia which has gained currency in the last few years. It allows readers to have access to any desired topic which may consist of the history of a country, explanation of a scientific principle or latest developments in the field of psychology or education etc. One can also look up information of *e-learning* itself on the wikipedia. The tool of wiki has been derived from and constructed on this concept. It allows students to read, add or edit materials already put up by any person – e.g. a teacher or tutor. In this way there is interaction and collaboration of different persons interested in a particular field or topic. The material may consist of text, tabular data, visuals, photographs etc. A teacher constructs a wiki on any specific area – textile technology or retailing, etc and this material can be accessed by students. If a teacher wants to discuss mergers of companies, he can put up information of horizontal, vertical and conglomerate mergers.

Video links provide links to specialised topics of a particular course or module being taught by a teacher to supplement the regular form of teaching.

However, as indicated earlier, one has to be careful while selecting and using these technological tools in the classroom or in distance learning. Otherwise there is a risk that students may become so much overwhelmed by the technology that the educational or learning aspects becomes submerged by the novelty of these technological tools.

Some scholars of e-learning feel that although these technological tools are vastly effective in enhancing learning, they are just tools. Technology can be used for effective enhancement but cannot replace the academic content of a programme or module.

E-learning and pedagogic principles

Teaching in most Indian institutions of HE largely follows a traditional approach where the teacher is teaching or demonstrating some experiment and the student is following a passive role of listening, taking notes and occasionally asking questions. Very rarely does the student participate in an interactive manner. This may be termed as top-down approach where the teacher delivers and students receive – a not very effective approach to learning.

Several educationists and psychologists have opposed this approach and have suggested following a different means for promoting active learning by students. For example Lewis Elton (1999) analyses the hierarchical and cybernetic models of higher education. The former is a top-down (or traditional) approach with inherent difficulties that we are familiar with. The latter is based on a networking structure that permits greater interaction between the teacher and the taught

There are some well known theories of learning that are available in literature. Various scholars have suggested different techniques for promoting good and durable learning by students. Some of the prominent ones are given in brief, below:

Jerome Bruner (1960) showed through his studies that effective learning takes place through a spiral path rather than just linearly. This implies that a teacher should regularly repeat and revise what he has taught before, for reinforcing and retention of learning by students. The Russian developmental psychologist Lev Vygotsky (1896-1934) is also considered to be the founder of cultural historical psychology. The major theme of his theoretical framework is that social interaction plays a fundamental role in the development of cognition. Vygotsky (1978) states: "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals." (p57).

Vygotsky's social constructivism suggests that better learning takes place through a meaningful association and collaboration between a student and other students or between a student and a teacher.

Jean Piaget the well known Swiss psychologist emphasised learning by doing, which is not only true for young persons but also for adults. John Dewey (1859-1952) was an American philosopher and educator whose writings and teachings have profoundly influenced educational practice. Dewey's philosophy of education or instrumentalism focused on learning-by-doing and enquiry based approach for active and durable learning.

There are certain other theories of learning like phenomenography (Marton and Booth, 1997) and constructivism (Ginsberg and Opper, 1987), which also are beneficial for durable learning in certain situations. Ference Marton is a Swedish educational psychologist who is best known for introducing the distinction between deep and surface approaches to learning, and developing phenomenography as a methodology for educational research. His conceptual framework focuses on the experience of learning from the student's perspective.

For a simple account of these theories of learning, see John Biggs (2003, pp 12-13). While referring to the various theories, he also explains in simple language the process of learning and summarises it in the following words.

According to Biggs (*op.cit*):

“Learning is based on the idea that the learner's perspective defines what is learned, not what the teacher intends what should be learned. Teaching is a matter of changing the learner's perspective – the way the learner sees the world. Knowledge is created by the student's learning activities.”

Diana Laurillard (2004) focuses on some generic benefits of e-learning – cultural, intellectual and practical. She summarises them as follows:

Cultural: students are comfortable with e-learning methods since they are similar to search and communication methods they use in their lives,

Intellectual: interactive technology offers a new mode of engagement with ideas via online interactivity both social and material,

Practical: e-learning offers greater flexibility of provision in time and place.

However, despite the various benefits of e-learning, one should be vigilant. It should not just reduce to providing information to students about various sites or web pages, or even some educational material loaded on wikis or blogs. Any learning, including e-learning must take into account how students learn, what their background and individual needs are so that appropriate teaching methodologies can be devised and used. What poses difficulties in the absence of face to face learning in traditional teaching, becomes a major challenge in e-learning. This is because the obvious drawback of e-learning is the absence of face to face contact. It is almost a truism that this contact encourages learning through social interaction. Thus e-learning must also include face to face student-teacher contact and should supplement and not supplant traditional forms of teaching.

Another aspect to be considered is the management of information. A beginner on approaching various e-learning sites is overwhelmed by the information available. To manage this information, to sift the relevant parts, and then to comprehend and digest the information requires the support of an experienced teacher.

In this regard Biggs (*op. cit*) has written:

“As we learn our conception of phenomena change and we see the world differently. The acquisition of information in itself does not bring about such a change, but the way we structure that information and think what it does.”

Thus, information has to be properly structured and made relevant as indicated by Biggs.

Not much research has gone into finding out students' response to e-learning in India. In UK a considerable effort has gone into this area – just how effective e-learning is and what are students' responses. In this regard Rhona Sharpe and Greg Benfield (2005) and Rhona Sharpe (2008) have reviewed the student experience of e-learning in HE in UK. Their articles report often inconsistent and contradictory statements made by students about their experiences. While some students have found their experience very beneficial, others find it frustrating. In general the authors report that where e-learning is coupled with established pedagogy, students have a positive response but where a different pedagogy to the traditional one is adopted, students feel ill at ease and report *an intensely emotional experience* and have difficulty with time management.

Some applications of e-learning

In India, some faculty of an institute of Fashion and Design have made many interesting and novel applications of e-learning tools for enhancing learning, for determining individual learning styles and for assessment purposes etc.

Some of the tools used and their applications are given below:

Dailymotion platform has the facility of uploading visual materials and photographs. It allows new ways to see, share and engage the world through the power of online video. It was used by the teacher to upload materials in the form of videos for teaching students about supply chain management. Subsequently simple questions and quizzes were also uploaded to test the effectiveness of the e-learning content.

An online tool was developed for motivating students to properly use technical information for fabric development. Another tool called *QuiaWeb* was also used for assessment purposes. One can create educational games, quizzes, web pages, surveys, and so on with its help. The quizzes were in the form of actual visuals, and not texts describing them. Students found this method of assessment novel and enjoyed it a lot.

A wiki was developed by another faculty member to make a short survey of students' learning styles and to test how they learn individually and in groups.

A blog was designed and material relevant to the theme of retail was posted on it. *SurveyMonkey.com* is a powerful tool to create and publish one's own surveys in minutes, and then view results graphically and in real time. This software was used to assess students' responses to questions that were set up on it. It was found from the experience of students that they enjoyed this mode of e-learning since it was flexible and interesting. The teacher also reported that although it was beneficial to students, technology would not be able drive the learning experience and replace the face to face experience of education and the traditional ways of teaching.

A wiki called *pbwiki* was used for assisting students in learning the techniques of photo-editing. *pbwiki* lets one to set up one's own free, password-protected wiki to edit and share information. The software *survey.monkey* was also used for getting feedback from students and assessing them on their learning.

Picasa is a software application for organising and editing digital photos. A teacher used this *Picasa* online sharing site for the textile students for students to upload their photos and other visuals which can then be assessed for providing feedback. It was found that the tool helped them to edit and organise their material on the tool.

Thus we see that various e-learning tools are being used in new and interesting ways to teach and assess students and do certain things which ordinarily are not possible in the classroom.

Conclusions

This article has considered the emergence of e-learning in the contemporary educational scene and discussed various types of e-learning tools that have been developed to cater to the needs and backgrounds of diverse nature of learners. Various benefits of these tools like connectivity, flexibility, interactivity have been outlined. However, it is also pointed out that one should be careful in the use of these technological tools so that learners do not feel overwhelmed by the technology of these tools.

A brief reference is made to the different educationists and their theories of learning. It is stressed that the e-learning tools should integrate the pedagogic principles with the learning theories. It is pointed out that face to face contact that is part of the traditional approach, is also an important aspect of learning.

Some applications of e-learning tools utilised by the faculty of a private higher education institute for enhancing learning and for assessment purposes in a novel manner are also described. In conclusion it is stressed that while e-learning has come to stay in today's educational environment, one should be careful in its use in order that teaching-learning becomes effective, interesting and encompasses the diverse range of students' backgrounds and abilities.

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