

# E-Learning and its Prospects in Education

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*Abstract:* - The term “E-learning” refers to the use of Internet technologies. He was coined in the late 1990s to describe the use of technology to deliver learning and training programs. The term “E-learning” is now used in the Framework to capture the general intent to support a broad range of electronic media (Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV and CD-ROM) to make vocational learning more flexible for clients.

Flexible learning expands choice on what, when, where and how people learn. It supports different styles of learning, including E-learning. Flexibility means anticipating, and responding to, the ever-changing needs and expectations of VET clients - enterprises learners and communities. E-learning is the unifying term to describe the fields of online learning, web-based training and technology-delivered instruction. Nothing is changing as fast as all the terms related to E-learning. In E-learning environments learners interact with learning materials, their instructors and other learners from various locations and often at various times using network technologies. E-learning is flexible learning using ITC resources, tools and applications, and focusing on interactions among teachers, learners and online environment. E-learning usually refers to structured and managed learning experiences, and may involve the use of Internet, CD-ROMs, software, other media and telecommunications.

*Key-Words:* - E-learning, Flexible learning, Distance Education, Asynchronous E-learning, Synchronous E-learning

## 1 Introduction

During 1994-1999, as the Web evolved, training providers began exploring how this new technology could improve training. The advent of email, Web browsers, HTML, media players, low fidelity streamed audio/video and simple Java began to change the face of multimedia training. Basic mentoring via email, intranet CBT with text and simple graphics, and Web-based training with low quality intermittent deliver Web costs emerged.

Starting with 2000, technological advance including Java/IP network applications, rich streaming media, high-bandwidth access, and advance Web site design – are revolutionizing the training industry. Today, live instructor led training (ILT) via the Web can be combined with real-time mentoring, improved learner services, and up-to-date, engaging "born on the web" content to create a highly-effective, multi-dimensional learning environment. These sophisticated training solutions provide even greater cost savings, higher quality learning experiences and are setting the standards for the educational standards of the future.

## 2 The educational system and E-learning

Computer Science, together with Psychology and Education, has been trying to refine teaching computational tools towards personalized self-learning. Every day, new approaches of the use of Computer and Education are bringing new perspectives to this area. The evolution of Computer and Education became computational teaching environments an excellent choice for Distance Learning, by bringing new vigor to this field of science. Computer Networks and Multimedia fields have provided tools for the development of Tutoring Systems based on clientserver architectures. The popularity of Internet along with the extensive development and use of standard protocol and services make Internet very attractive for distance learning. There has been a big boom of tools and mechanism available for implementation and support of Distance Learning.

The educational system has focused more and more on learning instead of teaching. The development of learning theories has changed the nature of student's learning and perception. Knowledge is today considered something socially built throughout students' actions, communication and reflections. The classic approach of

education on knowledge transmission has been changing into a model of practical experimentation and interaction that promotes changes in concepts and students' strategy, until he reaches proficiency. In this context, teachers perform the role of supporter instead of information provider.

The development of the E-learning revolution arose from a number of other educational revolutions. Four such revolutions are:

- the invention of reading and writing
- the emergence of the profession of teacher/scholar
- the development of moveable type (print technology)
- the development of electronic technology

The idea of distance Education, however not new, has showed a great capacity of integrating new technologies successfully. Lately there has been appearing a great deal of mechanisms and tools available for Distance Education support and implementation.

Classical definitions of distance teaching imply that the ideal situation for learning is the traditional one, with the teacher and student face-to-face. From this view point, Distance Education would be an "inferior" way of education, always trying to fill the lacks of the traditional model. This concept may be true in many cases, but a growing body of research, exploring other options, has been taking their place, in the light of new educational paradigms, changes in social dynamics, and technological advance of means of communication and computational systems.

It is important to highlight that Distance Education cannot be seen as a replacement for traditional and presential education. There are two modalities of the same process. Distance Education does not compete with the conventional means, once this is not its objective. If Distance Education presents, as a basic characteristic, the physical and temporal separation between teaching and learning processes, this does not mean only a specific quality of this modality, but essentially a challenge to overcome, promoting the advance in the use of cooperative processes of teaching in a combined way.

The summarized central elements that characterize the concepts of Distance Education are: physical separation between student and teacher, different from presential teaching; influence of educational institution: planning, systematization, and project, different from private learning; use of technical means of communication to put teacher and student in contact and to send educational contents; availability of two-ways communications, where the students benefits from the possibilities of two-way dialogue initiatives; possibility of occasional meetings.

Five basic points are essential in a successful Distance Education program: contact between teacher and student, active learning through student's answer, fast feedback to the teacher about the student understands level, fast feedback to the student about his performance; the student has the opportunity to review and learn through his own mistakes.

E-learning is the effective learning process created by combining digitally delivered content with (learning) support services. E-learning consists of the transfer of skills and knowledge using electronic applications and processes. This may include Web-based learning, computer-based learning, virtual classrooms, and digital collaboration, use of audio or video recording, satellite or land-based broadcasts, CD-ROM, and even the phone system.

E-learning can be broadly defined as any use electronic technology to create learning experiences.

It can be defined as:

- The convergence of the Internet and learning, or Internet-enabled learning;
- The use of network technologies to create fosters, deliver, and facilitate learning, anytime and anywhere;
- The delivery of individualized, comprehensive, dynamic learning content in real time, aiding the development of communities of knowledge, linking learning learners and practitioners with experts;
- A phenomenon delivering accountability, accessibility, and opportunity to allow people and organizations to keep up with the rapid changes that define the Internet world;
- A force that gives people and organizations the competitive edge to allow them to keep ahead of the rapidly changing global economy.

Research indicates that students generally appear to be at least as satisfied with their on-line classes as they are with traditional ones. Developments in internet and **multimedia** technologies are the basic enabler of E-learning, with content, technologies and services being identified as the three key sectors of the E-learning industry. Many higher education's, for profit institutions, now offer on-line classes. By contrast, only about half of private, non-profit schools offer them. Online education is rapidly increasing, and online doctoral programs have even developed at leading research universities.

The effectiveness of an E-learners experience is greatly enhanced through student-centered design. For example, students remember more information from a text book that is well organized, with extensive visuals, reflection/interaction points, clear headings, etc. The same concepts exist for online courses—learners learn better through use of clear headings, limited distracters,

visuals, screen-friendly fonts, appropriate white space, web safe colors, etc. Basically, usability is the process of testing (through observation) how students behave with a course—what works, what doesn't, what confuses.

The conventional distance education program that has no direct link between the teacher and the student, online education provides ample space for interaction. The learner takes centre stage to pace the learning process, while the instructor assumes the role of a coach, encouraging the learner to achieve the learning objectives. Online learning, which incorporates tools like video conferencing, audio streaming and chatting, is gaining opinion among the student community for its flexible structure which allows them to access lessons and take tests from anywhere in the world.

E-learning can include 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, on their own schedule. Facilitated learning is designed to be completed through interaction with instructors or coaches. 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 classmates. Collaborative learning relates to working with other learners in an on-line environment. For example: an e-mail discussion with other learner's on a particular topic or everyone posting to a bulletin board or course room. E-learning can be asynchronous (meaning learners are experiencing the learning at different times) or synchronous (meaning learners are experiencing the learning at the same time) or it can incorporate both drawing on the strengths of each. Independent learning is, by definition, asynchronous. Facilitated and collaborative can be either asynchronous or synchronous.

## 2.1 Types of E-learning

Since 1999, the advance of E-learning has taken a number of different forms. Much of current experience is based on the use of web-based modules which are accessed at an individual's personal computer. In fact, as a learning tool, E-learning is much broader. There are three examples of current E-learning practice:

- **Web-based training:** In corporate training, technology is used primarily to deliver content to the end user without significant interaction with (or support from) training professionals, peers or managers. A significant industry has grown up around this form of E-learning, spanning content authoring, content asset management, instructional design and learning management.
- **Supported online learning:** In higher education, the majority of the content of the course may be

delivered through lectures or through distance-education textual material, but the course is categorized as E-learning because the interaction with the instructor, the dialogue with other students, the searching for resource materials, the conduct of collaborative activities, the access to course outlines and supporting material are all conducted online. This approach is being extended to professional communities.

- **Informal E-learning:** Beyond these 'course-based' approaches to E-learning are the growing opportunities for technology to support informal learning in the workplace. In many knowledge intensive organizations it is linked with knowledge management.

Another classification has been articulated in a somewhat different form in by the leading US commentator, Allison Rossett of San Diego University. She used the terms 'stuff' and 'stir'.

- The 'stuff' is the reusable web objects which are deployed on a corporate Internet.
- The 'stir' refers to the collaborative tools of E-learning: the online discussions and virtual classroom.

Most recently there has been a considerable interest in the 'stir'. The second half of 2007 witnessed a huge increase in the use of the term social networking. However the term is used imprecisely and often interchangeably with Web 2.0 and we need an accepted vocabulary if we are to progress in our understanding. At present there seems to be a clearer definition of Web 2.0 than of social networking. Web 2.0 is a term given to the second-generation of internet-based communities that encourage collaboration between users. A 2005 conference developed the idea that there were emerging changes in the way software developers and end-users were using the web as a platform, so: 'Web 2.0 is the business revolution in the computer industry caused by the move to the internet as platform, and an attempt to understand the rules for success on that new platform.'

At the heart of the change are new opportunities for collaboration, co-creating and sharing of content and enhanced communication. What is new is that such sharing can take place through the Internet. This gives rise to exciting possibilities. It is beyond dispute that certain activities, which can be included in social networking, have shown exponential growth. However, the impact on business and learning and training in organizations is uncertain.

## 2.2 Technology

Many technologies can be, and are, used in E-learning, including:

- blogs

- classroom response system
- collaborative software
- computer aided assessment
- discussion boards
- e-mail
- Educational Management System
- Educational animation
- Electronic performance support system
- ePortfolios
- games
- hypermedia in general
- learning management systems
- PDA's
- podcasts
- MP3 Players with multimedia capabilities
- multimedia CD-ROMs
- screencasts
- simulations
- text chat
- virtual classrooms
- web-based teaching materials
- web sites and web 2.0 communities
- wiki

E-learning can make use of a wide range of technologies and media. These technologies can be categorized by delivery media or interaction tools. It is also important to realize that each learner will often learn best with certain technologies. It is worth mentioning that many companies make similar products from the following technologies. Some E-learning providers select technologies from a variety of vendors and many others select an all inclusive course delivery or management system that may include many of these technologies. Some providers blend online with traditional offline technologies.

### 2.3 Delivery Media and Technologies:

**Print:** Textbooks, Study Guides, Workbooks - Are still very common in online learning courses.

**Audio:**

- Streaming audio - used to deliver the instructors comments over any network.
- Audio tapes - could be mailed to students.

**Video:**

- Streaming video - can deliver video over any network.
- Videotape - could be produced and mailed to students.
- Cable TV - course segments can be produced and aired in various locations nationwide.

**Data:**

- Web Pages - a very common form of delivering content.

- CBT Content - Often delivered via CD-ROM, but also deliverable via a network.
- Computer files - Can be emailed or downloaded from a server (word processor, spreadsheet, presentation, database, etc.).
- Online Tests - Computer scripts can be written to deliver a variety of test formats.
- Interactive Tools - The following tools can also be used to deliver content to learners.

### 2.4 Interactive Tools

E-learning fits into two categories as: synchronous or asynchronous learning over the Internet, intranet, extranet or other Internet-based technologies.

*Asynchronous* activities use technologies such as blogs, wikis, and discussion boards. The idea here is that participants may engage in the exchange of ideas or information without the dependency of other participants' involvement at the same time. Electronic mail (Email) is also asynchronous in that mail can be sent or received without having both the participants' involvement at the same time. In the asynchronous class, the instructor will typically pose weekly questions or discussion topics for the class. The discussion threads that follow may involve 30 or more learners over a course of weeks. There are also typically places and times for learners to start topics of their own. To sample one of these asynchronous discussions you may want to join one of our virtual learning communities. Asynchronous E-learning lets a student access pre-packaged training on his own time, working at his own pace and communicating with the instructor or other students through e-mail. E-learning includes a number of different delivery methodologies within it including self-paced content, virtual classrooms, simulations, on-line chats, threaded discussions, and the like.

*Synchronous* activities involve the exchange of ideas and information with one or more participants during the same period of time. A face to face discussion is an example of synchronous communications. *Synchronous* activities occur with all participants joining in at once, as with an online chat session or a virtual classroom or meeting. In the synchronous class, discussions occur at a set time when the instructor will meet the class. Study groups may also set their own meeting times, based on their schedules. Some more traditional distance learning classes may meet exclusively through dedicated videoconferencing systems - which remove many of the differences between normal class environments (however, the technology does add new roles and etiquette just like the other tools). As the bandwidth of the Internet increases over the coming years synchronous conferencing options will become more effective, less costly and complex, and may gain more

popularity. Synchronous E-learning imitates a classroom, which means classes take place in real-time and connect instructors and students via streaming audio or video or through a chat room.

Virtual classrooms and meetings can often use a mix of communication technologies.

#### **Asynchronous :**

- Email - used for questions and discussion.
- Listservs - basically email to everyone in the class or section at once.
- Web Forums - also called discussion forums or bulletin boards. They are probably the most common form of interaction in online courses.
- Newsgroups - public forums that use the Usenet system.
- BBS - a computer bulletin board that you dial, and use like a web forum + email + file transfer.

#### **Synchronous :**

- Chat Rooms - can be either moderated by an instructor or un-moderated for class use.
- Shared Whiteboards - allow class members to write on the same digital whiteboard.
- Application Sharing - the same program and file can be shared for demonstration or collaboration.
- Teleconferencing - could be used to deliver instructor audio, or for collaboration.
- Videoconferencing - either from expensive, high quality, dedicated systems, or from less reliable desktop versions.
- MOOs & MUDs - virtual worlds where users take on avatars and interact in various ways.

## **2.5 Why E-learning?**

E-learning lessons are generally designed to guide students through information or to help students perform in specific tasks. Information based E-learning content communicates information to the student. In information-based content, there is no specific skill to be learned. In performance-based content, the lessons build off of a procedural skill in which the student is expected to increase proficiency.

There are lots of good reasons to consider an online training program:

- Online training is more affordable than traditional classroom training, with savings of 60% or more.
- Online courses can be taken in multiple sittings and are available 24 hours a day, 7 days a week — to better accommodate your busy schedule.
- Online training is as mobile as you are! Your training can take place on the road, in the café, or any other place you have an internet-accessible computer.

## **2.6 Benefits of E-learning**

The benefits of E-learning include:

- Available 'just in time' ad can be used continuously for learning and reference.
- Flexibility of access from anywhere at any time.
- Ability to simultaneously reach an unlimited number of employees.
- Uniformity of delivery of training.
- Can achieve cost reductions.
- Reduction in the time it takes to deliver training.
- Ability to log or track learning activities.
- Possibilities of global connectivity and collaboration opportunities.
- Ability to personalize the training for each learner.

However, it has become clear that making E-learning available to unprepared and unsupported learners will not work. E-learning must be appropriately presented and adequately resourced.

Perceived barriers to the effectiveness of E-learning in organizations include:

- Limits of current technology infrastructure.
- Ensuring learners have time and space to participate.
- Providing appropriate support for learners.
- Finding attractive, relevant and high-quality content.
- Gaining line manager support and commitment.
- Employee hostility towards E-learning.
- Motivating learners to complete courses.
- Lack of basic IT skills in the workforce.

## **3 Prospects of E-learning**

Prospects of E-learning can be summarized as follows:

- **Dynamism** - Learners progress at the pace that suits them best, at the time that suits them best while getting the information that they need.
- **Real time** - Learners have access to information that is correct and up to date through the web, information databases or university or company intranets.
- **Collaboration** - Learners are able to meet in a virtual space with other members and practitioner experts to discuss issues, answer questions and even participate in simulations and management games without having to leave their office or home.
- **Speed of delivery** - Learners benefit from learning when required, learners are able to access the right sort of training at the right time with the right people.
- **Convenience** - Learners have access when they want it.
- **Consistency** - Learners have access to the same

materials.

- **Global reach** - Learners regardless of where they are receive the same message and are able to engage other learners and practitioners globally.

### 3.1 Future of E-learning

The companies and careers of the future will utilize technologies that have not even been conceived of today. These technologies will require a whole new set of skills from the workforce. Learning to use the new technology will be important, and so will using those technologies to learn.

The world is shrinking rapidly. The Internet has brought the world together in ways that nobody would have expected. You can now attend a college half way around the world, with students from any country with Internet access. People will telecommute to their jobs more in the future, while their companies compete globally.

In order to meet the needs of the changing world noted above, future learning must take on more of the following qualities:

- Time flexible
- Geography independent
- Competitive cost / value
- Learner-centered
- Technology embracing
- Ethnically diverse

Organizations that deliver learning will need to consider these issues and more:

- Realize what market they serve
- Be responsive to learner needs
- Prove their value to learners
- Listen closely to the needs of business
- Remove some of the massive burdens on instructors
- Look for partnerships with other complementary organizations
- Find creative ways to certify learning credentials
- Be prepared to compete globally with a variety of learning providers

As a result of all of those factors we may see some of the following predictions come true in the next decade:

- Corporations will compete directly with colleges and K-12 schools.
- Partnerships and mergers between learning institutions, publishers, technology companies, learning providers will consolidate the marketplace.
- Many schools and colleges will be taken over or will go out of business
- A much greater % of learning (formal and informal) will take place online.
- The massive role of instructor will be broken down into multiple positions: curriculum design, content

delivery, classroom facilitator, learner support, etc.

- Top instructors will be hired by the private sector for all the positions stated above.
- Fewer students will get the traditional on-campus degree, and most will get at least a portion of it online and off-campus.
- Learning providers will compete over learners especially those that are highly motivated and able to pay the most.
- Learners will complete degrees and certificates made up of courses and experiences from a wide range of learning providers.

## 4 Conclusion

E-learning has gives education a new dimension, taking classroom learning to the next level through the creation of virtual communities of learners and teachers who interact online.

E-learning is more than distance education where resources are simply put online. E-learning is a virtual campus that involves rich, instructional and social interaction; it could improve the flexibility, quality and focus of education.

We are really on the threshold of new opportunities and this is just the beginning of a new horizon of education. The power of E-learning lies in its potential to provide the right information to the right people at the right time and place, and not only due to it's "anyone, anyplace, anytime model". Technology advancements will continue to reshape learning over the Internet with increasing use of streaming, TV-quality video and simulation-based E-learning. The same technology is bound to make major inroads in schools in the coming years.

Though still in its infancy, E-learning offers a potential new growth industry.

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