

E-Learning Methodologies, Strategies and Tools to implement lifetime education anywhere anytime

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Abstract -- E-learning is now one important issue to spread higher education in our society. This new education strategy gathers knowledge and education both by synchronous and asynchronous methodologies to effectively face the need to rapidly acquire up to date know-how within productive environments. In the present review paper the authors discuss on e-learning methodologies, strategies and tools. E-learning includes informal and blending learning, network and work-based learning. The e-learning methodologies based on both asynchronous and synchronous methodology. The authors have made a thorough study on different issues and aspects of e-learning. The paper resolves that e-learning is a revolutionary way to empower workforce with the skill and knowledge it needs to turn change to an advantage. It is already established that e-learning can be used as a tool for knowledge management. The authors suggest that synchronous tools should be integrated into asynchronous mode to allow for "any-time", "any-where" learning model. This environment would be primarily asynchronous with background discussion, assignments and assessment taking place and managed through synchronous tools.

[Keywords: E-learning; Synchronous; Asynchronous; any-time; any-where; Knowledge management.]

1. INTRODUCTION

E-learning is the short form Electronic Learning. This is when the instruction itself is computer technology. It refers to the strategies that use the company network to deliver training courses to employees. It is a learning experience that uses a wide spectrum of technologies, which are mainly Internet or computer based learning. E-Learning constitutes an "electronically - based" tutorial. More simply, learning online or through CD/DVD type coursework rather than in a traditional classroom teaching and learning. E-learning is of two types asynchronous and synchronous. E-learning includes various types of media that deliver text, audio, images, animation, and streaming video, and includes technology applications and processes such as audio or video tape, satellite TV, CD-ROM, and computer-based learning, as well as local intranet/extranet and web-based learning. Information and communication systems, whether free-standing or based on either local networks or the Internet in networked learning, underlay many e-learning processes. E-learning can occur in or out of the classroom. It can be self-paced, asynchronous learning or may be instructor-led, synchronous learning. E-learning is suited to distance learning and flexible learning, but it can also be used in conjunction with face-to-face teaching, in which case the term blended learning is commonly used. It is commonly thought that new technologies make a big difference in education. Many proponents of e-learning believe that everyone must be equipped with basic knowledge of technology, as well as use it as a vehicle for reaching educational goals. There are certain issues available in connection to e-learning such as

1. e-learning as an educational approach or tool that supports traditional subjects;
2. e-learning as a technological medium that assists in the communication of knowledge, and its development and exchange;
3. e-learning itself as an educational subject; such courses may be called "Computer Studies" or "Information and Communication Technology (ICT)";
4. e-learning administrative tools such as education management information systems (EMIS).

Education via the Internet, network, or standalone computer. E-learning is essentially the network-enabled transfer of skills and knowledge. E-learning refers to using electronic applications and processes to learn. E-learning applications and processes include Web-based learning, computer-based learning, virtual classrooms and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM.

E-learning was first called "Internet-Based training" then "Web-Based Training". Sometimes there are certain variation in word e-learning like elearning, Elearning, and eLearning.

E-learning has the potential to transform how and when employees learn. Learning will become more integrated with work and will use shorter, more modular, just-in-time delivery systems. E-learning delivers content through electronic information and communications technologies (ICTs). The use of these facilities, involves various method which includes systematized feedback system, computer-based operation network, video conferencing and audio conferencing, internet worldwide websites and computer assisted instruction. This delivery method increases the possibilities for how, where and when employees can engage in lifelong learning. Employers are especially excited about the potential of e-learning for just-in-time learning delivery. e-learning is bridging the gap between learning and work. Workers can integrate learning into work more effectively because they use the same tools and technology for learning as they use for work. Both employers and employees recognize that e-learning will diminish the narrowing gap between work and home, and between work and learning. E-learning is an option to any organization looking to improve the skills and capacity of its employees. With the rapid

change in all types of working environments, especially medical and healthcare environments, there is a constant need to rapidly train and retrain people in new technologies, products, and services found within the environment. There is also a constant need for appropriate management and leveraging of the knowledge base so that it is readily available and accessible to all stakeholders within the workplace environment.

2. WHAT IS E-LEARNING ?

E-learning is not only a training method but it is a learning method that is tailored to individuals. It is found that different terminologies have been used to define learning that takes place online which actually makes difficult to develop a generic definition. Terms that are commonly used to define online learning include e-learning, Internet learning, distributed learning, networked learning, tele-learning, virtual learning, computer-assisted learning, Web-based learning, and distance learning. E-learning includes the delivery of content via Internet, Intranet, and Extranet, satellite broadcast, audio-video tape, interactive TV and CD-ROM. Basically the terms imply that the learner is at a distance from the tutor or instructor, that the learner uses some form of technology (usually a computer) to access the learning material, and that the learner uses technology to interact with the tutor or instructor and other learners, and that some form of support is provided to learners. E-learning refers to the use of information and communication technology (ICT) to enhance and/or support learning in tertiary education. However this encompasses an ample array of systems, from students using e-mail and accessing course materials online while following a course on campus to programmes delivered entirely online. E-learning can be different types, a campus-based institution may be offering courses, but using E-learning tied to the Internet or other online network. So E-learning is an education via the Internet, network, or standalone computer. E-learning is basically the network-enabled convey of skills and knowledge. E-learning refers to using electronic applications and processes to learn. E-learning applications and processes include Web-based learning, computer-based learning, virtual classrooms and digital collaboration. E-learning means the content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. E-learning was first called "Internet-Based training" then "Web-Based Training". E learning is not only about training and instruction but also about learning that is tailored to individual. Different terminologies have been used to define learning that takes place online. In October 1999, during a CBT Systems seminar in Los Angeles, a strange new word was used for the first time in a professional environment – 'e-Learning'. Associated with such expressions as 'online learning' or 'virtual learning', this word was meant to qualify "a way to learn based on the use of new technologies allowing access to online, interactive and sometimes personalized training through the Internet or other electronic media (intranet, extranet, interactive TV, CD-Rom, etc.), so as to develop competencies while the process of learning is independent from time and place 2".

So the word itself is not that old. But what about the elements of e-Learning?

The development of the e-Learning revolution arose from a number of other 'educational revolutions' such as :

1. the invention of reading & writing;
2. the emergence of the profession of teacher/scholar;
3. the development of moveable type (print technology);
4. the development of electronic technology.

A. First modern distance course

Modern distance education has been around at least since Isaac Pitman taught shorthand in Great Britain via correspondence in the 1840s (shorthand is an abbreviated, symbolic writing method that improves speed of writing or brevity as compared to a normal method of writing a language). Pitman was a qualified teacher and taught at a private school he founded in Wotton-under-Edge. He decided to start a distance course and was sending assignments to his students by mail and they completed the 'homework' and sent it back to him.

B. Fruitful computer aided learning

The introduction of the first personal computer (the Altair 880 in 1975) was quickly followed by the Apple II and the IBM PC. With the Apple and the IBM the computer was reliable enough and was used for didactical purposes. The usability was improving and the computer was not only meant for nerds anymore. Especially within mathematics and science many projects were started. Simulations and programmed instruction were used the most. Computers were used to make the current, existing tasks easier to perform. They were helpful to some teachers and a nice addition to their teaching tools. It could hardly be called Innovation. A lot of teachers with some technical skills start programming their own courseware (educational programs). Useful 'drill and practice' exercises were created. Not a lot of courseware were shared amongst teachers. Lot of schools and teacher were having the 'Not-invented-here syndrome'.

C. Teaching machine of the 90s

At the end of the 90s the learning management systems (LMS) were used. Some universities started to design and develop their own systems but most of the educational institutions started with systems off the market. One of the key players within the educational market was the American company Blackboard. Outside the educational world, other LMSs became popular like SABA and Docent. Blackboard was a complete solution for the management of the courses. Students and teachers could:

- exchange learning materials;
- do tests;
- communicate with each other in many ways;
- track and trace the progress;
- many more.

D. Categories of e-learning

These are considered as follows:-

1) Courses

Most discussion of e-learning focuses on educational courses. Educational course materials or courseware are usually modified and added with various different media and are uploaded to a networked environment for online accessing. Today, there are several popular learning management systems (LMS) such as WebCT and Blackboard which are commonly used by educational institutions.

In achieving a more motivating courseware, courseware designers have begun to add innovative presentation such as simulations, storytelling and various unique traits into the materials. E-learning has distinct similarities with classroom environment whereby both of the learners and the instructors are together related to the common course arrangement and flow.

2) Informal Learning

Information learning can be said to be one of the most dynamic and adaptable features of learning but nevertheless it is least recognized. Our need for information (and how we intend to use it) drives our search. Search engines (like Google) coupled with information storage tools (like Furl) and personal knowledge management tools like wikis and blogs present a powerful toolset in the knowledge workers portfolio. It is found that in workplace one can acquire more knowledge during break time than in a formal learning environment. The people progress more in our jobs through informal learning, sometimes using trial and error and other times through conversations.

3) Blended Learning

Integrated learning provides a good transition from classroom learning to e-learning. Integrated learning which is also referred to as blended learning is a combination of a face to face and online learning. The productiveness of this method cannot be over emphasized. It encourages educational and information review beyond the classroom settings. Blended learning combines several different delivery methods, such as collaboration software, web-base courses and computer communication practices with face to face instruction. Integrated learning utilizes the best of classrooms with the best of online learning.

4) Communities

Learning is always social. The frequent challenges in the business milieu are sophisticated and unstable. Since it is a global era, the methods of problem solving are changing daily. Therefore people dialogue with other members of the same organization or network globally to other organization. Communities strongly contribute to the flow of tacit knowledge.

5) Knowledge Management

Globalization is focused on e-learning because e-learning technology has the potential to bring improved learning opportunities to a larger audience than has ever previously been possible. Suggested that a nation's route to becoming a successful knowledge economy is its ability to also become a learning society. Early KM technologies included online corporate yellow pages as expertise locators and document management systems. Combined with the early development of collaborative technologies (in particular Lotus Notes), KM technologies expanded in the mid-1990s. Subsequent KM efforts leveraged semantic technologies for search and retrieval and the development of e-learning tools for communities of practice. Knowledge management is an essential process which is concern with how to create atmosphere for people to share knowledge on distribution, adoption and information exchange activities in an organization. The semblance of knowledge management and the theory of e-learning reveals powerful relationship which is causing disarray between the two fields.

6) Learning Networks

Learning network is a procedure of developing and preserving relationship with people and information and communicating to support each other's learning. Therefore (LN) is enhancing and it offers chances to its members to engage online with each other, sharing knowledge and expertise. States that, the use of pen and paper in our educational system today is producing inadequacy and challenges in the global era that we are in today where subject matter is changing speedily. The application of personal learning networks will create connections and develop knowledge for workers to remain current in their field.

3. Why is E-learning so important?

E-learning is the catalyst that is changing the whole model of learning in this century - for school pupils, university students, for employees, for the ongoing training and development of professionals like doctors, nurses and teachers - in fact for just about anyone who wants to find out something on either a formal or casual basis. Let us now discuss some important key issues in connection to E-learning:

A. E-Learning means that we no longer need to spend long periods travelling to a location to attend a course; you can now have access to learning when we want it, at the time we want it - day or night, wherever we want it - at home, at work, in local library. For many students this has opened up a new, much more flexible and accessible world of learning that was previously closed to them due to disability or family circumstances, or perhaps due to the fact that the course they wanted was on the other side of the world. In other words, there are now no longer any geographical constraints to learning; e-learning brings learning to people, not people to learning.

B. E-Learning makes learning exciting, engaging and compelling. Hard and boring subjects can be made easier, more interesting and appealing with e-learning.

C. E-Learning empowers learners to manage their own learning and in the most appropriate way for each learner. We all learn in different ways - reading, watching, exploring, researching, interacting, doing, communicating, collaborating, discussing, sharing knowledge and experiences. e-Learning means learners can have access to a wide range of learning resources: both materials and people, and in this way each learner can have an individualised, personalised experience, where they access the learning that is best for them.

D. E-Learning has helped organisations with their bottom line. Many organisations have reported improved time to proficiency and faster time to market, and a reduction in learning times has meant savings on salaries and opportunity costs, and increased customer and staff satisfaction has led to higher customer and staff retention rates. For organisations, e-learning is playing a major part in helping keeping them agile and competitive in their market.

E. E-learning Market survey in August 2013

Studies of business training expenditure consistently find that expenditure is concentrated in five areas namely:

- 1) Sales and customer service
- 2) Executive and management training
- 3) Industry-specific training
- 4) Mandatory and compliance training
- 5) On boarding and IT skills

Over the last few months there are some trends found in the business sector :

- 1) approaches for sustaining the impact of sales training
- 2) common challenges and best practices when coaching to sustain the impact of sales training
- 3) practices, technologies and tools used

The Harvard Business Review has previously identified the importance of product training due to increases in product breadth and complexity. Buyers have more information than ever before on competitor products, so sales staff really need to know their stuff. Buyers check out the company and their products using the web before they meet the sales person. Thus, sales people need to be very knowledgeable. The four most effective sales training practices identified by the survey included monitoring the effectiveness of coaching programmes creating a mentoring programme partnering new sales people with more experienced sales people facilitating peer to peer learning through team exercises, knowledge portals and sharing sessions providing experiential training through role plays, visits with senior sales people and on the job training.

The survey concluded that effective companies

- 1) provide more formal sales training
- 2) provide more formal and consistent sales coaching
- 3) measure the impact of sales training
- 4) use skills gap analysis
- 5) plan to use social, collaborative and mobile learning more often than ineffective companies

4. Important Statistical results about the e-Learning Market for 2013 - Info graphic

The Top 10 statistics about the e-Learning Market 2013 that should be highlighted are:

- E-Learning is a \$56.2 Billion business and is likely to double in size before 2015.
- The U.S. and Europe utilize 70% of the world's e-Learning, but Asia Pacific is gaining ground.
- The fastest growing e-Learning markets are Vietnam and Malaysia.
- 77% of American Corporations use online learning.
- 72% of companies surveyed report that e-Learning keeps them on top of their industry changes.
- In 2011, 51% of companies did at least one training session with e-Learning to more than 50% of their employees.
- Corporations save 50-70% when they replace instructor-based training with e-Learning.

- E-Learning classes are generally 25-60% shorter in duration than traditional classes.
- 23% of employees leave their jobs because the position lacks opportunity for development and training.
- Online education is proven to increase knowledge retention by 25-60%.

<http://www.docebo.com/2014/01/30/asia-elearning-lms-market-infographics/>

Asia E-Learning and LMS Markets Info graphics

According to recent regional research studies, the highest E-Learning growth rate is in Asia at **17.3%** on yearly basis. This info graphics show the hottest Asian market trends, players and forecasts.

Market Analysis by Amol Shinde, Docebo Solution Consultant – India

While the aggregated global growth rate of E-Learning is 7.6%, several regions have significantly higher growth rates. According to recent regional research studies, the highest growth rate is in Asia at 17.3%, followed by Eastern Europe at 16.9%, Africa at 15.2%, and Latin America at 14.6% respectively. What drives the market? Clear lines of development characterize every aspect and the view is absolutely diversified. Looking at Asia on a whole projects related to literacy development in rural areas funded by the government is one of the major drivers for the introduction of E-Learning.

Indian E-Learning Market

If we take a specific focus on Indian Market, the E-learning industry was valued at INR 18.41 trillion in 2010 – 2011. Increasing Internet penetration, low cost existing coverage and rising demand are expected to help this market develop strongly in the near future. According to the Ken Research Group report, “India’s E-Learning Market Outlook to FY’2018 – Increasing Technology Adoption to Drive Future Growth”, the market is estimated to grow at a Compound Annual Growth Rate (CAGR) of 17.4% over the period FY2013-FY’2018. The key driving factors for this market are increasing government initiatives to promote E-Learning, increasing adoption of technology, the shortage of quality education, convenience and affordability factors to list a few.

<http://www.irrodl.org/index.php/irrodl/article/view/380/763>

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5. The Current Status of e-Learning and Strategies to Enhance Educational Competitiveness in Korean Higher Education

Table-1 :The Current Status of e-Learning and Strategies to Enhance Educational Competitiveness in Korean Higher Education

Type	Size	No.	No of Universities responded	%
National Public	Large*	20	17	85.0
	Mid or small **	7	4	57.0
	Total	27	21	77.8
Private	Large*	68	38	55.9
	Mid or small **	95	28	29.5
	Total	163	66	40.5
National Universities of education	Mid or small **	11	5	45.5
Total		201	92	45.8

*Large =enrollment of more than 10,000 students

**Mid or Small = enrollment of less than 10,000 students

Table 2. State of implementing e-Learning

Type	Size	No of Universities responded	No. of Universities implementing e-learning	%
National Public	Large*	17	16	94.1
	Mid or small **	4	4	100.0
	Total	21	20	95.2
Private	Large*	38	37	97.4
	Mid or small **	28	19	67.9
	Total	66	56	84.8
National Universities of education	Mid or small **	5	2	40.0
Total		92	78	84.8

*Large =enrollment of more than 10,000 students

**Mid or Small = enrollment of less than 10,000 students

Table 3. State of Faculty Support for e-Learning

Items	(%)	Type (%)			Size(%)		Location(%)	
		National/ Public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
The cost of content development	68.5	90*	66.7*	20*	85.5*	43.2*	79.4	62.1
Support from specializes organization for content development and management	59.8	55	65.2	20	74.5*	37.8*	70.6	53.4
Assistants or tutors for content development of class management	47.8	50	51.5	0	54.5	37.8	64.7*	37.9*
Extra credit for the evaluation of faculty achievement	33.7	20	41	0	41.8*	21.6*	29.4	36.2
Incentives offered in case of excessive enrolment	26.1	15	31.8	0	29.1	21.6	26.5	25.9
Reduction of teaching hours	20.7	10	25.8	0	20	21.6	26.5	17.2
Award or monetary compensation for excellent	6.5	0	9.1	0	9.1	2.7	11.8	3.4

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* Statistically significant items

Table 4. State of Learner Support for e-Learning

Supporting Items	(%)	Type (%)			Size(%)		Location(%)	
		National/ Public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
Immediate problem solving for technical difficulties	72.8	90*	74.2*	0*	87.3*	51.4*	85.3*	65.5*
Partial or full acknowledgement of credits taken other cyber universities	52.2	55	56.1	0	65.5*	32.4*	55.9	50.0
Limit on enrollment per cyber class	47.3	50	50.8	0	57.4*	32.4*	47.1	47.4
Helping Learners using tutors or assistants	41.3	35	47	0	50.9*	27*	50.0	36.2
Provision of diverse service through digital library	38.0	40	37.9	40	49.1*	21.6*	35.3	39.7
Existence of separate evaluation system for cyber classes	28.3	30	30.3	0	30.9	24.3	44.1*	19.0*
Management of learning enhancement programs for autonomous learning	13.0	15	13.6	0	16.4	8.1	8.8	15.5

* Statistically significant items

Table 5. Staffs' Awareness on Problems in e-Learning

Items	Mean (SD)	Type (%)			Size(%)		Location(%)	
		National/ Public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
Lack of e-learning personnel	3.87 (1.00)	4.16*	3.71*	4.80*	3.80	4.00	3.76	3.94

Lack of expertise of e-learning personnel	3.16 (1.21)	3.25	3.05	4.20	3.02	3.39	3.06	3.22
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*There was a statistically significant difference, but the post hoc analysis did not show any statistically difference between the national and public and private universities. There was, however, a statistically significant difference between national universities of education and others.

Table 6. Problems Related to the Faculty Support

Items	Mean (SD)	Type (%)			Size(%)		Location(%)	
		National/ Public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
Lacks support for assistants who help with content development and management	3.30 (1.37)	3.65*	3.05*	5.0*	3.13	3.58	2.94	3.52
Lack of incentives for those who are involved in e-learning	3.41 (1.17)	3.8*	3.17*	4.8*	3.35	3.52	3.32	3.46
Lack of interest and participation of faculty	3.59 (1.00)	3.5	3.59	4.0	3.62	3.55	3.62	3.57

*There was a statistically significant difference, but the post hoc analysis did not show any statistically difference between the national and public and private universities. There was, however, a statistically significant difference between national universities of education and others.

Table 7. Awareness on Learners' Interests and Participation

Items	Mean (SD)	Type (%)			Size(%)		Location(%)	
		National/ Public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
Lack of learners' interests and participation in e-learning class	2.59 (1.17)	2.65*	2.46*	4.0*	2.49	2.76	2.68	2.54

*There was a statistically significant difference, but the post hoc analysis did not show any statistically difference between the national and public and private universities. There was, however, a statistically significant difference found between universities of elementary education and others.

6. Conclusion and Future Scope:

E-learning is among the most important explosion propelled by the internet transformation. This allows users to fruitfully gather knowledge and education both by synchronous and asynchronous methodology to effectively face the need to rapidly acquire up to date know-how within productive environments. E-learning delivers content through electronic information and communications technologies (ICTs). The use of e-facilities, involves various methods which includes systematized feedback system, computer-based operation network, video conferencing and audio conferencing, internet worldwide websites and computer assisted instruction. This delivery method increases the possibilities for how, where and when employees can engage in lifelong learning. Finally we conclude that synchronous tools should be integrated into asynchronous environments to allow for "Any-time" learning model. This environment would be primarily asynchronous with background discussion, assignments and assessment taking place and managed through synchronous tools that integrate into the asynchronous environment.

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