

E-Learning, Learning and M-learning

An E-learning Approach - A Survey

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Abstract— This paper intends to identify and discuss an e-learning approach that are important in describing the state of art in e-learning supporting the learner and helping him/her to succeed and reach learning goals and also shows comparison among learning, e-learning and m-learning. It describes how traditionally learning process grows that generates a new and fast learning process with e-learning that further makes useful in telecommunication companies also and generates m-learning. It shows how e-learning take place and useful for our current scenario and shows it's various feature.

Index Terms— communication, e-learning, learning, m-learning.

I. INTRODUCTION

E-learning is a comprehensive terminology for all forms of educational technology that electronically, technologically or scientifically support learning and teaching with the help of internet, software and various tools etc. Traditional learning is a face to face, classroom based teaching. E-learning may be termed as advanced learning, computer-based training (CBT), internet-based training (IBT), Web based training (WBT) online education, virtual education, or digital educational collaboration [1], [7].

Learning is an acquiring new or modifying knowledge, Behavior, skills, values, or preferences and may involve synthesizing or amalgamating different types of information or assimilate the information in order to advancing his/her characteristics or neurons. Learning may occur as part of education, personal development, training or schooling. It may be goal- oriented and may be aided by motivation. The study of how learning occurs is part of neuropsychology, learning theory and pedagogy [6].

The term M-learning, "mobile learning", has different meanings for different communities with mobility. Although related to e-learning, educational technology and distance education, it is distinct in its focus on learning across contexts and learning with mobile devices [7]. For mobile learning we generally take the WAP technology in mobile devices and we do script and code similarly as web application that spread publicly with the internet.

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II. LITERATURE REVIEW

E-learning, one of the tools emerged from information technology or distance learning, has been integrated in many universities or technical education programs, shifting from traditional way of education to electronic environment. Rome was not built in a day; similarly it has not emerged in one night but can be considered as a revolutionary process that is start with generation of computers. Various authors define e-learning in various ways. These definitions materialize some t conflicting views of other definitions, and some just by simply comparing or defining characteristics with other existing terms. As Nichols describe as it is strictly accessible with help of various technological tools and mostly based on web. Ellis denies this view of Nichols.

Looking at the history of computer technologies, it shows that the first generations of computers were very huge and take large space to operate and also too expensive to be used by public. In 1977 Apple computer popularized the phenomenon of personal computing that made computers more affordable for people to buy and easy to use for businesses and personal use. In 1981 IBM, the world's largest computer vendor introduced IBM personal computer and thus the computer becomes more affordable day by day and commonly used in industries and government organizations and thus learning take place as electronic way.

According to Stallings (2002), the internet can be traced back to the Arpanet that linked computer networks at several universities and research laboratories in the United States. The project was funded by advanced research project agency (ARPA later renamed as DARPA) in U.S department of defense in 1982-1983. Arpanet was converted to TCP/IP protocol, using this technology networks were connected all around the world. The World Wide Web was developed in 1989 by an English computer scientist Tim Berners-Lee at CERN (the European laboratory for practical physics) and the world largest network of network that is internet came to exist result electronic learning across the world [9].

Handheld devices have revolutionized changes in learning pattern. However these devices often have limitations which can affect the whole learning process. A mobile learning model developed by Shih that main aim is to match and relate the two design namely instructional design and mobile learning design, so that we get more outcomes from mobile learning. This model best suits for university new learning. Later it enhances as for voice user interfaces (VUIS) so that blind students get benefited [5].

III. LEARNING, E-LEARNING AND M-LEARNING

Learning may occur consciously or without conscious awareness. Learning that an aversive event can't be avoided nor escaped is called learned helplessness. There is evidence for human behavioral learning prenatally, in which habituation has been observed as early as 32 weeks into gestation, indicating that the central nervous system is sufficiently developed and primed for learning and memory to occur very early on in development.

Play has a very important role in learning. Play has been approached by several theorists as the first form of learning. Children experiment with the world, learn the rules, and learn to interact through play and enhanced their character, ability and knowledge. Theorists agree that play is pivotal for children's development and for acquisition of knowledge, since they make meaning of their environment through play. Active learning develops 85% of a child's brain during the first five years of their life. The context of conversation based on moral reasoning offers some proper observations on the responsibilities of parents [6], [7].

E-learning as a domain of intellectual quest and technical development can be categorized into discrete areas. The focus may be on:

- E-learning is considered as educational strategy or tool that supports traditional subjects.
- E-learning as a communication medium for knowledge development and exchange.
- E-learning is considered as an educational subject (i.e. computer studies) where courses are offered teaches and learning takes place that enhances their qualities.
- E-learning administrative tools such as education management information systems (EMIS). E-learning also takes place with the help of various tools and software over the internet [7].

A Learning curve is a graphical representation of the increase of learning (vertical axis) with experience as horizontal axis. A Learning Curve is a plot of the increase of Learning (or Proficiency) with Experience.

The horizontal Axis represents experience either directly as time (clock time, or the time spent on the activity), or can be related to time (a number of trials, or the total number of units produced). The vertical axis represents learning or proficiency. For the performance of one person in a series of trials the curve can be erratic, with proficiency increasing, decreasing or leveling out in a plateau. When the results of a large number of individual trials are averaged, smooth curve results, which can often be described with a mathematical function [8].

A. Exponential Growth

The proficiency can increase without limit, as in Exponential growth (Fig 4). One of the best-known examples of a learning curve with Exponential Growth is Moore's law. Exponential rise or fall to a Limit Proficiency can exponentially approach a limit in a manner similar to

that in which a capacitor charges or discharges (Exponential decay) through a resistor (Fig 5).

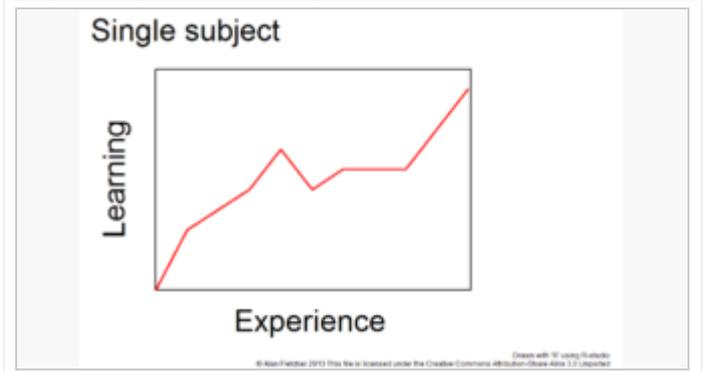


Fig 1: A learning curve for a single subject, showing how learning improves with experience

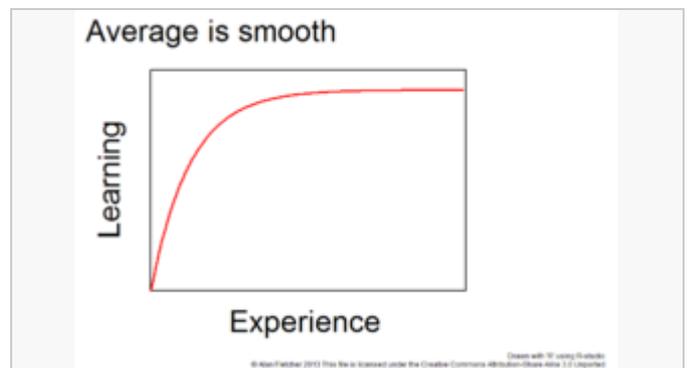


Fig 2 : A learning curve expressed as a mathematical function

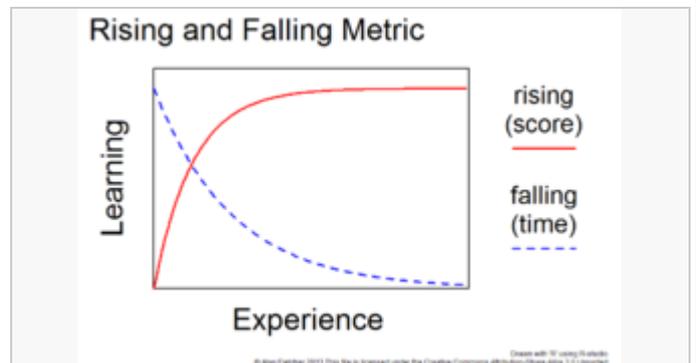


Fig 3 : The metric for learning can be increasing or decreasing

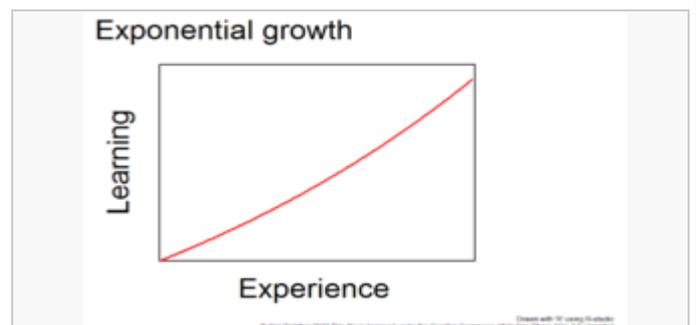


Fig 4 : Exponential Growth

B. Power law

This is similar in appearance to an Exponential decay function, and is almost always used for a decreasing performance metric, such as cost (Fig 6).



Fig 5 : Exponential rise or fall to a limit

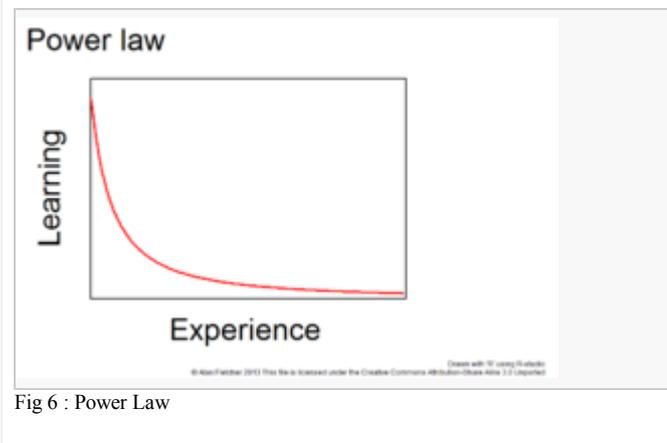


Fig 6 : Power Law

IV. TRADITIONAL STRUCTURED DEFINITION OF E-LEARNING

It describe as follows [14]:

TABLE I. COMPARISON BETWEEN STUDIES

Comparison	Individual self-study (computer based instruction)	Group collaborative Study (Computer Mediated Communication)
Online study Synchronous Communication	Learning takes place via Surfing the Internet, accessing websites to obtain information or for improving the skills.	Here Audio or Video conferencing is used, And Chat rooms can also be used. Group learning also take place over the internet.
Offline study Asynchronous communication	One can download necessary material from the Internet for later local study for saving time and resources. It is stand - alone courseware	It is Asynchronous in nature itself and Communication done by email, discussion lists or Learning Management System. Good in nature and enhancing skills.

V. COMPARISON BETWEEN TRADITIONAL LEARNING AND E-LEARNING

The laconic comparison between traditional learning and e-learning is given as follows [1], [10].

TABLE II TRADITIONAL LEARNING VS E-LEARNING

Headings	Traditional Learning	E-Learning
Classroom Discussions	The teacher usually talks more than the student and It is a face to face, classroom based teaching. Guide: Teacher Directly interacts.	The student talks at least as much as or more than the teacher and it is more available and easy to access. Guide : Teacher with advance tech.
Group or Individual study	There is a whole class participating, there is almost no group or individual study.	Most of the learning process takes place in groups or by the individual student.
Base of Subject Matter	The teacher conducts the unit and all the lesson according to the study program and then make a strategy and then provide the notes as suitable	The studying is based on electronic medium as on various sources of Information as net-experts located by the student.
Emphases in the Learning Process	The students learn “what” and not “how”. The students are not involved in inquiry-based education and In solving problems, but Rather in tasks set by the Teacher.	The learning is better connected to the real world; the subject matter is richer and includes material in different formats and use web.
Motivation And Encourage	The students’ motivation is Low, and the subject matter is “Distant” from them. The motivation can take place when teacher interacts with students directly.	The students’ motivation is high due to the involvement. In matters that are closer to them and to the use of technology.
Teacher’s important Role	The teacher is the authority and the teacher handles all the students.	The teacher directs the Student to the information electronically.
Learning Location	The learning takes place within the classroom and the School within a place.	The learning takes place over the internet or with no fixed location.

VI. E-LEARNING DESCRIPTION

A. Tools:

There are mainly two popular tools for E-learning listed as Blackboard Inc. And MOODLE described as: Blackboard has over 20 million users daily. Offering six different platforms as: Blackboard Learn, Blackboard Collaborate, Blackboard Mobile, Blackboard Connect, Blackboard Transact, and Blackboard Analytics; these tools decide whether their program will be coalesced or fully online, asynchronous or synchronous. Here we can use Blackboard in many ways for example it can be used for

K-12 education, Higher Education, Business, and Government collaboration. MOODLE is an Open Source Course Management System. It provides us blended learning opportunities as well as platforms for distance learning courses so that one can easily access it and learn easily. The MOODLE website has many tutorials for creating a program or becoming a MOODLE student [7].

B. Linear learning

Learning may occur either consciously or without conscious awareness. Computer-based learning or training (CBT) refers to self-paced learning activities delivered on a computer or laptop or handheld device as mobile etc. CBT often delivers content via CD-ROM, and typically presents content in a linear fashion, much like reading an online book or manual. For this reason, CBT is often used to teach static processes, such as using software or completing mathematical equations. Computer-based training is conceptually similar to web-based training (WBT), the primary difference being that WBTs are delivered via Internet using a web browser as Google chrome or Firefox etc. [6,7].

C. Collaborative learning

Computer-supported collaborative learning (CSCL) uses instructional methods based on instructions. It designed to encourage or require students to work or group together on learning tasks and enhance their qualities. It is similar in concept to the terminology, "e-learning 2.0". With technological Web 2.0 advances, sharing information between multiple people in a network has become much easier [7], [11].

D. Classroom 2.0

Classroom 2.0 refers to using an online multi-user virtual environment (MUVE) to connect schools across geographical frontiers. Known as "e-twinning", computer-supported collaborative learning (CSCL) and the Internet allow learners in one school to communicate with learners in another that they would not get to know otherwise, enhancing educational outcomes and cultural integration Classroom 2.0 has been used in Wales, England, Spain and Italy.

E. E-learning 2.0

E-learning 2.0 is a type of computer-supported collaborative learning (CSCL) system that developed with the emergence of web 2.0. From an e-learning 2.0 perspective, conventional e-learning systems were based on instructional packets, which were delivered to students using assignments. Assignments were evaluated by the teacher. In contrast, the new e-learning places increased emphasis on social learning and use of social software such as blogs, wikis, podcasts and virtual worlds such as Second Life. This phenomenon has also been referred to as Long Tail Learning.

F. Technology

There are many types of technologies used in the education system. Most e-learning situations now use combinations of these techniques, including blogs, software, portfolios, and virtual classrooms. These techniques make the use of all application in an easy way and facilitate more

user's controls and functionalities to use it and enhance our quality.

Use of software particularly based on java make it easier.

G. Audio

The radio has been around for a long time and has been used in educational classrooms. Recent technologies have allowed classroom teachers to stream audio over the internet. There are also webcasts and podcasts available over the internet for students and teachers to download. For example, iTunes has various podcasts available on a variety of subjects that can be downloaded for free. Traditionally learning is a face to face, classroom based studying but now we can access and heard it from distance learning [1], [7].

H. Video

Videos may allow teachers to reach students who are visual learners and tend to learn best by seeing the material rather than hearing or reading about it. Teachers can access video clips through the internet instead of relying on DVDs or VHS tapes. Websites like YouTube are used by many teachers.

I. Blogging

Blogs allow students and teachers to post their thoughts, ideas, and comments on a website. Blogging allows students and instructors to share their thoughts and comments on the thoughts of others which could create an interactive learning environment [12].

J. Mobile devices

Mobile devices such as Smartphone operate similarly to personal computers use for m-learning.

K. Learning management systems

Learning management systems, for example, blackboard or MOODLE, are internet based applications that institutions used to reach their students. It allows educators to create and deliver course material using the internet. Educators can post announcements, grade assignments, check on course activity, and participate in class discussions. Students can submit their work, read and respond to discussion questions, and take quizzes.

L. Whiteboards

Interactive whiteboards ("smart boards") allow teachers and students to write on the touch screen, so learning becomes interactive and engaging [7].

M. Educational technology

The term Educational Technology is generally used to refer to the use of technology in learning in a much broader sense than the computer-based training or Computer Aided Instruction of the 1980s. It is also broader than the terms Online Learning or Online Education which generally refer to purely web-based learning.

N. Communication technologies

Communication technologies are generally categorized as asynchronous or synchronous. 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 participant’s involvement at the same time. They have the opportunity to complete their work in a low stress environment and within a more flexible timeframe [13].

VII. M-LEARNING

Around 62% of all adults person across the European countries now use a mobile, according to the research. So mobile learning also one of the fastest growing technology. Currently, 41 % of European adults use SMS, compared to 30% that use the internet / email. In France, 30% use SMS compared to 25% who go online and use the latest technology.

The following listed the areas of growth of m-learning.

Current areas of growth I for m-learning include:

- Testing, surveys, job aids and just-in-time (J.I.T.) learning.
- Location-based and contextual learning.
- Social-networked mobile learning.
- Mobile educational gaming.

The US market for Mobile Learning products and services is growing at a five-year compound annual growth rate (CAGR) of 21.7% and revenues reached \$538 million in 2007. The data indicates that the demand is relatively immune from the recession." The findings of the report indicate that the largest demand throughout the forecast period is for custom development services, content conversion, and media services and that the healthcare sector accounts for 20% of the total US market for mobile learning [7].

TABLE III .COMPARISON BETWEEN LEARNING, E-LEARNING AND M-LEARNING

	Learning	E-learning	M-learning
A D V A N T A G E S	Being familiar to both instructors and students.	Learner-centered and self-paced in E-learning.	Educational, Support. Across Anywhere.
	Immediate feedback. Motivating students Cultivation of a social community.	Time and location flexibility. Cost-effective for learner. Potentially available to global audience	Interaction ,wider access, management Easy to access Timely present in handout. More personal.
D I S A D V A N T A G E S	Instructor-centered. Time and location constraints.	Lack of immediate feedback in asynchronous e-learning.	Size of Device. Cost.
	More expensive to deliver. Not more Flexible as e-learning or m-learning.	Increased preparation time for the instructor.	Small button. Battery Life. Usability.

VIII. CONCLUSION

Successful preparation for e-learning is not significantly more

Fluctuate from classroom preparation. As with any new concept, however, it is important for an instructor to communicate how existing practices integrate with a new concept. This not only impacts the evaluation of such learning processes but also the future of successfully delivered e-learning events.

E-learning is a subset of distance learning and m-learning is a subset of e-learning .For m-learning WAP is suitable for the creation of mobile learning training course material. The optimization of WAP and the handling of the design challenges make it feasible to use mobile handheld devices for distance learning in real-time. The application developer must always be aware of the user and take into account the usability issues if the application is to be a success. E-learning is an inclusive terminology for all forms of educational technology that electronically or technologically support Learning, education and teaching.

IX. REFERENCES

- [1] Heal alharbi School of Information Systems and Technology (2012), Traditional verses E-learning Language Lessons Courses, <http://ro.uow.edu.au/cgi/viewContent.cgi?Article=4739&context=theses>.
- [2] Hassan M.S, Critical success for e-learning acceptance www.qou.edu/arabic/researchProgram/eLearningResearch/criticalSuccess.pdf by Hassan / Computer & Education, 49 (2007), 396-413.
- [3] Joe L. Moore, Camille Dickson-Deane, K. G E-Learning, Online learning and distance learning Environments: Are They the same J.L. Moore Et Al. /Internet and Higher Education 14 (2011) 129-135.
- [4] Ellis, R. (2004). Down with boring e-learning, interview Dr. Michael W.Allen. Learning circuits Retrieved From http://www.astd.org/LC/2004/0704_allen.htm
- [5] Liz MacDougall, Mobile Learning. <http://mobilelearning.uregina.wikispaces.net>
- [6] Wikipedia Learning [Http://en.wikipedia.org/wiki/Learning](http://en.wikipedia.org/wiki/Learning)
- [7] Wikipedia e-learning, m-learning <http://en.wikipedia.org/wiki/E-learning> <http://en.wikipedia.org/wiki/m-learning>
- [8] Wikipedia Learning Curve [Http://en.wikipedia.org/wiki/Learning_curve](http://en.wikipedia.org/wiki/Learning_curve)
- [9] Mark Chang. (2010) dspace.fsktm.um.edu.my/bit-stream/1812/1050//Second_Chapter.pdf
- [10] David Rasht Traditional Learning verses E-Learning. http://www.researchtrail.com/articles/Traditional_Learning_vs_eLearning.pdf
- [11] Crane, Beverly E. “Using Web 2.0 Tools in the K- 12 CLASSROOM” Neal-Schuman Publishers, Inc., 2009.
- [12] Courts, B., & Tucker, J. (2012). Using Technology To Create A Dynamic Classroom Experience. Journal of College Teaching & Learning (TLC), 9(2), 121-128.
- [13] Communication Technologies in E-learning. http://www.bced.gov.bc.ca/dist_learning/commtech.htm
- [14] ROMISZOWSKI 2004 page6.
- [15] Guerra and Heffernan available at <http://www.learningcircuits.org/2004/mar2004/guerra.htm>
- [16] Differences between learning, e-learning and m-learning <http://www.edudemic.com/mobile-learning/>.

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