

## TOWARDS INCREDIBLE EVALUATION OF E-LEARNING SYSTEM FOR EDUCATIONAL SECTOR: A STATISTICAL REPORT

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**Abstract:** E-Learning was introduced in 19<sup>th</sup> century. It has grown tremendously and many new techniques are introduced to make E-Learning successful. In late 20<sup>th</sup> century, industries started to use E-Learning to train their employees. The material in E-Learning is updated according to the trends of the peoples. The E-Learning focus on not only on the theoretical data but also focus on the practical knowledge of the content. Thus this is impressive for many people so, they prefer E-Learning. Now-a-days, E-Learning plays an important role in the educational sector. The investigation is done to know why E-Learning is impressive to the students and whether the implementation gives the good result in the Student Education, we reviewed 102 experimental papers and survey papers published during the period of 2010-2014. We summarized our observations and identified the common pitfalls among surveyed works.

**Keyword:** Analysis; Educational Sector; E-Learning; incredible; Statistical Report; Survey

### INTRODUCTION

E-Learning, (Electronic learning) which has been boomed in the past decade. It is the process of learning using electronic devices from anywhere and anytime. E-Learning exploits interactive technologies and communication system to improve the learning experience. It began decades ago with the introduction of television and over-head projectors in classrooms. E-Learning has advanced to include interactive computer programs, 3D simulations, videos and real time online discussions from all over the world. People can set their own schedule and work at their own place[1].

E-Learning is also called as distance learning, distance education, virtual learning, online learning, online education and web based training. There are many types of E-Learning. The primary types are 1) Information E-Learning 2) Corporate E-Learning 3) Academic E-Learning. In formal E-Learning websites offers materials at no cost. It is provided to improve the knowledge and polish the skills of students/readers. The corporate E-Learning is provided to the employees for the success of industries. The academic E-Learning was offered to students for the accreditation of degree through internet [2].

Though face-to-face classes are very interactive, it is offered only on the time basis whereas E-Learning is not time based. For the better understanding of E-Learning, we focused on the research papers that are published in the interval of four years from 2010-2014. We analyzed seven major parameters in each study that, we believe, are critical for the evaluation and comparison of E-Learning system. These components include model, advantages, implementation, cloud computing, simulation, web based and case study/survey. The main contribution of this paper is to provide a statistical report of E-Learning in the field of education.

The paper is organized as follows: Section 2 contains the overview of the related work. Section 3 explains the evaluation methodology of this paper. Section 4 enumerates the E-Learning in Educational Sector. Section 5 indicates the observations. Section 6 discusses about the question arisen. Section 7 proposes some suggestion. Finally, Section 8 concludes the survey of E-Learning.

## RELATED WORK

In the past decade, online learning has been developed considerably. Here, we focused only on schools, colleges and industries. E-Learning has evolved the educational sector to next level and has changed the way we look at knowledge and skill acquisition altogether. Now-a-days, many students and employees are using E-Learning to get their degrees and build their knowledge base to develop new skills. An increasing number of online courses are now being offered in order to meet the ever-growing demand. According to a recent study conducted by The Research Institute of America, the power of E-Learning has increased information retention rates up to 60%. It means that, E-Learning is cost efficient and also it is more effective.

In schools, E-Learning is in the form of smart classes. Students are very much attracted towards to the E-Learning than traditional classroom. They can visually understand the concepts through E-Learning. E-Learning ensures 1) Transfer of knowledge 2) Memory retention 3) Visualization of the concept 4) Result in the examination. It is estimated that about 46% of college students are taking at least one online course. However, by 2019, roughly half-of all college classes will be E-Learning based. The research report takes an in-depth look at the important role that technology now plays in the educational sector.

In Industries and Company it was estimated that about \$35.6 billion was spent on self-taught eLearning across the globe in 2011[7]. Today, E-Learning is used in \$56.2 billion industry, and it will be double by 2015. Corporations have report that E-Learning is the second most valuable training/learning method that they use. This analysis gives no surprise, that E-Learning saves businesses at least 50% when they replace traditional based training with E-Learning Training. According to a report released by IBM, companies who utilize E-Learning tools and strategies have the potential to boost productivity of trainee's up to 50%. For every \$1 that company spends, it is estimated that they can receive \$30 worth of trained people. The world's most rapidly growing E-Learning markets are Malaysia and Vietnam. In fact, the estimated 5 year annual growth rate for the Asian E-Learning market is 17.3%. That is the highest compound annual growth rate of any global region.

The following questions are addressed in this paper:

1. Why do we go for E-Learning?
2. Does E-Learning is useful to people in rural area?
3. Why E-Learning is popular today?
4. How E-Learning differs from classroom learning?
5. How E-Learning is useful for disabled students?
6. How can you secure the data in E-Learning?
7. What is the ratio of Students involved in E-Learning when compared to Traditional Learning?

## EVALUATION METHODOLOGY

We conducted a survey of research work in the area of E-Learning system published during the period of 2010–2014. To avoid selection bias, we collected all research papers indexed by the Google Scholar and the Digital Bibliography and Library project (DBLP) databases and IEEE Transactions for the reviewed time period. From this set, we excluded short papers, extended abstracts, non peer-reviewed research, and papers not available in the English language and those containing no evidence of experimental study. During this process, we encountered seven cases of self-plagiarism (nearly identical papers, i.e., more than 90% content overlap, published in different venues by the same authors) and one case of plagiarism (an original work was later republished by different authors). For these cases, we chose to retain the earlier copy of each work.

To narrow our focus, we further selected research work relevant to E-Learning. After excluding the fault, fraud detection papers, the final set of 102 papers, containing 79 journals and 23 conference/workshop papers, was reviewed manually without any means of automatic search techniques. In that 102 papers reviewed, We got a result that 21 papers indicates about E-Learning in Industrial Sector, 24 papers are under Social Sector and 57 papers are about Educational Sector.

## EDUCATIONAL SECTOR

Students are the Backbone of our nation. So, to make the students stronger we need to educate them in a creative and in innovative way. E-Learning plays a vital role in students life [11]. It enables them to become thinkers, Independent learners and allows them to learn virtually by means of digital classroom. The main advantage is, through E-Learning any educational materials can be available online immediately [10]. Instead of carrying lots of book, students can carry laptop and smart phones which can contains entire book and they can hold them in their hands unlike books.

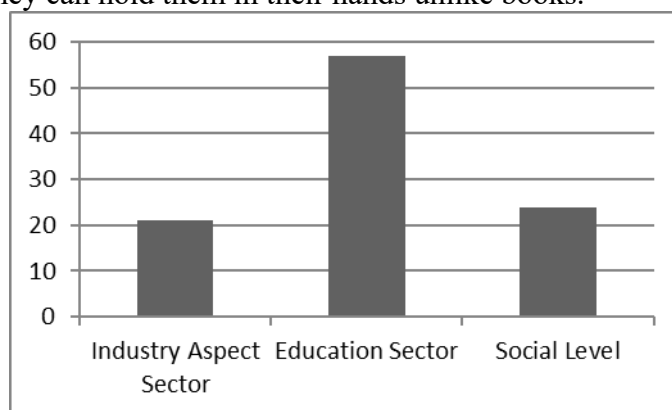


Figure 1 Bar Chart of the Surveyed Papers

## ROLES AND RESPONSIBILITIES IN E-LEARNING

The roles for developing E-Learning are 1) Content Analysis 2) Design 3) Development 4) Deployment. The Responsibilities of these roles are as follows [12]:

- 1) Content analysis: Initially the content for the course is gathered. The content must be correct and only the related content is extracted from the gathered.
- 2) Design: From the extracted content the design for the presentation of content is designed. This design will give the overview of the course.

- 3) Development: From the design the E-Learning web page must be developed. The developed web page must be easy to use even for the new users.
- 4) Deployment: The developed web page is deployed in the internet so that all user can use the page through internet.

### **E-LEARNING IN SCHOOL**

The mode of teaching has changed to E-Learning. In traditional method of teaching the teachers in schools feels difficult to make sure that all students in class have understood the lesson. Thus the students may have multiple doubts and some feel shy to raise their doubts. In these places E-Learning plays the vital role [13]. E-Learning provides the visual explanations so that the students can easily understand the concepts. Students feel very bored when they are always teach in board whereas when they have the visuals they will feel interesting and this is impressive to the present generations.

### **E-LEARNING IN COLLEGE**

Students feel bored when they have regular classes in college. Now-a-days college provides the E-Learning so that the students can learn the syllabus whenever they are free and feel interested. This provides flexibility to students as well as faculty[15]. There won't be any problem in completing the portion on the faculty side and students can revise number of times and the time taken to prepare notes is completely reduced. Thus students can know new things related to their courses.

Table I Details of the Surveyed Papers

Papers by E-Learning System	
Industry Aspect Sector	21 out of 102
Education Sector	57 out of 102
Social Level	24 out of 102

Table II Analyzed Papers and Its Result

<b>E-LEARNING IN EDUCATION SECTOR</b>					
S. NO	AUTHORS	COUNTRY	PAPER TITLE (YEAR)	EDUCATION SECTOR	ANALYSED
1	Bach Xuan Tran, Quyen Le Thi Nguyen, Vuong Minh Nong,	Hanoi and New York	Student-Centred Outcomes of an E-Learning Course on Public Health in Hanoi and New York(2014).	Medical University	Around 36 students participated in this course and 26 students paid a attention in E-Learning.
2	Sulaiman Abd Anter, Abdallah M Abualkishik, Yousif	Iraque	Proposed E-Learning system for Iraqi Universities(2014).	Al-Anbar University	It produces more outcome of Students and Teachers and minimizes the cost.
3	Edda Tandilwoga	Tanzania	Critical success factors for adoption of web-based learning management systems in Tanzania(2014).	Muhimbili University of Health and Allied Science	Around 408 undergraduate students are analyzed in this university and 66.7% produces a good result while studying using E-Learning.
4	Amal Rhema and Iwona Miliszewska	Australia	Analysis of Student Attitudes towards E-Learning: The Case of Engineering Students in Libya(2011).	Victoria universities	Here various country students attitude are compared with Victoria university student.
5	Dr Gunamala Suri, Sneha Sharma	India	The Impact of Gender on Attitude Towards Computer Technology and ELearning: An Exploratory Study of Punjab University, India(2010).	Punjab University	89 % of course materials are uploaded in internet. 68% of students had responded whereas 22% of students had not tried for the course in E-Learning.

## DISCUSSION

Based on the research about E-Learning from the published papers the questions arises are:

A: Why E-Learning is popular today?

The new trend in learning is through E-Learning system. This is due to the fact that there are so many benefits the online environments can offer that a traditional learning simply cannot [4]. Though there are several different reasons why e learning is popular worldwide, some of the keys are: 1) Real time access 2) Saving 3) Flexible 4) Convenience 5) Technology.

1) Real time access: E-learning would not require any schedule to the training it can be accessed the course any time anywhere.

2) Savings: Even through e-learning requires some initial investment it can reduce travel expense, instructor time saving and remove the need for face to face activities.

- 3) Flexible: Flexible is more in e-learning. People can be accessed the course and receiving on site training even/remote place at their convenient time.
- 4) Convenience: Instead of having to try to fit your life around fixed schedules, you can keep our own schedules. This means there's no rushing to get into the place on time; you can just sit down and switch on your computer when you have the time to study. It is even more convenient for those people with busy schedules.
- 5) Technology: The most important reason why E learning is so popular is that the technologies. In the past, technology wasn't up to par and the courses were lacking because of it. But in recent days the trend changes because of the improving technology. In most of the school students are having smart classes instead of having only blackboard based class and in industries people can work from home.

B: How E-Learning differs from classroom learning?

Some of the main difference between E-Learning and classroom learning are as follows:

- 1) Learning Content
- 2) Types of media
- 3) Social Dynamics
- 4) Time
- 5) Mediums
- 6) Writing Content
- 7) New language [5].

- 1) Learning Content: Learning content is a unique environment for teaching and learning.
  - 2) Types of Media: E-learning has more opportunity to view the visible message and use the variety of media than the instructional design and learning theory.
  - 3) Social Dynamics: The communication in e-learning is only through e-mails.
  - 4)Time: In traditional course the time consumption is more but in e-learning, takes very less time to complete the task.
  - 5) Mediums: Here the objective of E-Learning and classroom learning are same but delivery and interactions are different. E-Learning needs new agenda, flow, visuals and activities.
  - 6) Written Content: To create effective written content the important specifications are Tone, Clarity in data, Brevity i.e. The text which is lost should be eliminated.
  - 7) New Language: should have some knowledge about the online tools and infrastructure including learning management system and content management system.
- C: Why do we go for E learning?

E learning is

- 1) Self-Paced: E-learning program can be viewed whenever the students are in need. Usually we refer books for learning. It describes only about the module-based design and it is useful for the user to absorb, but in e-learning there is large amount of contents and there is no constraint for it[16].
- 2) Environment friendly: E-learning saves paper and deforestation will be avoided. Most of the e-learning courses are based on tools used for communication such as email, PDF manuals, synchronous classrooms and web based tools.
- 3) Faster: In classroom based learning, we can learn based on the timing of classes. But in e-learning it is faster cycle to learn.

D: How the data are prevented from unauthorized user?

In E-learning, the data stored in the database can have access to authorized users. Unauthorized users cannot access it. Captcha can be helpful to prevent viruses and spammers[17]. It also can be prevented from unauthorized use of data by changing its

original format. In some cases, the data can be downloaded from the internet in E-learning. PDF document provides higher protection than the other, because it is difficult to modify. The best way to prevent the data in E-learning is to prevent the access for the first time. Some pages are encrypted i.e., it contains some password this pages can be protected in E-learning system. This will also be helpful to prevent the tactful data in the E-learning. The users who are authorized can only access the data, so that the information stolen can be limited.

E: How can you secure the data in E-Learning?

Powerful data can be encrypted from low level to high level. The data which is sent and accessed by devices should be encrypted. This can be the precaution to assure the information is safe on all devices.

F: How E-Learning is useful for disabled students?

Some of the multimedia E-learning offers audio, video and animated presentations for increasing the experience and access of information for students[9]. E-Learning is one of the important and useful ways for promoting great access to all learners. To bring the disability students from the outer edge of education staffs need to know the better understanding and new skills of E-Learning.

G: What is the ratio of Students involved in E-Learning when compared to Traditional Learning?

A real time example is taken to explain this question. The Government of Gujarat [8] had undergone in the analysis of students in the school. They implemented E-Learning in 15,493 government schools. It is found that around 80.73 % of students are enjoying while learning using E-Learning. This analysis also provides extra information that E-Learning is run through 5 workstation for each PC so that the power consumption is reduced.

### **PROPOSED WORK AND SUGGESTION**

The necessary and importance of E-Learning is increasing in all the fields, here we focused only on the Educational Sector. Thus there are many papers about E-Learning in educational Sector, here only 102 papers are reviewed and the result is that no paper gives the clear focus in educational sector. It just gives only the overview, in 102 papers around 57 are survey papers and only 9 papers are implemented. It is just a review about E-Learning in education sector and does not say anything new. It is based on the analysis to give the idea of past papers in E-Learning. Thus the implemented papers are not that much effective that is needed in today's trend. E-Learning has to be developed more in schools and colleges as only some of the institution follows this trend. Technology is now becoming more advanced and trends go beyond the visuals. The usage of mobile phone is more when compared to laptop and personal computer because it is hand held. We are suggesting to create an application for E-Learning in mobiles where the learners can login to their accounts and access the resources easily. It is recommended to implement all over world to improve the knowledge of learners.

## CONCLUSION

As technology improves everyday new developments are constantly infiltrating our life's. The research in E-Learning is an ongoing process and the requirement of online learners change every day. E-Learning differs from other learning methods in terms of mobility. Summarizing our observation about E-Learning, we find that most of the survey determines only the method and model. Since our survey is based on the published papers in the period of 2010-2014, we have not attempted to analysis the quality of the suggested methodologies.

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