



“E – Learning system (Bucolic)”

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Abstract - Education through internet is becoming one of the most domineering forms among all other forms of education. A lot of effort is being put in to improve the quality of learning and to improve the relationship among learners and their teachers. Advanced development in the field of virtual education relies on the technologies being used on the internet. E-learning has become very popular in western countries in the past few years but developing countries like India have not yet been able to keep pace with their western counterparts as far as adaptation to such a concept is concerned. Keeping this scenario in mind the authors in this work have tried to find how do the students of technical courses in the higher education in North India use this new learning methodology and how do they react to it. It is in this context that this paper analyzes the usage of e-learning tools by these students of technical courses. It brings out the response analysis of the same set of students (those who use traditional learning methods only as well as those who, in addition, use e-learning methods) on the issues about the role of e-Learning in their studies.

Keywords: *e-learning, issues in role of e-learning, e-learning tools, e-learning methods*

Introduction

ICT revolution has given a boom to ‘learning economy’ whereas the real strength of an individual or institution, region or a country is determined by the way it reacts to new knowledge and make the best use of it [1]. This has increased the demand for e-learning at the formal as well as informal sector of education. E-learning supports use of Information and Communication Technologies (ICT) [2]. Therefore, e-learning is based upon anywhere- anytime learning content generated using videos, audio, text, animations and/or simulation to enrich the learning process.

At present we can feel that the knowledge is available all around us and it has been possible through the techniques of e-learning. In the informal education sector especially the industrial sector is progressively switching over to e-learning methodologies for training their staff and preferring e-learning techniques over a workforce of large number of hired trainers. This ensures the optimal use of two of the most crucial resources i.e. money and time in any organization. Even in the formal education sector of higher education nowadays, many universities/ institutes are offering a number of online courses to its students in two modes – 1) as a support to their traditional courses and 2) as pure online courses. The students enrolled in these online courses can even appear for their examinations online saving lot of

hassles for them as well as the educational institutions.

E-learning is made possible through Internet, intranets, even CDs and DVDs or their combinations. It provides learning platforms to people who have the quest to learn anytime and anywhere. It also includes learning online from the experts as an alternative to face-to-face training. E-learning provides training or educational courses with the help of some electronics equipment such as a) a computer or a mobile computing device like a notebook, a tab or a smart mobile phone, b) some multimedia support equipment in the form of mike, speakers, video camera, LCD projectors, CDRoms/DVDs, touch screens, light pens, smart boards, video-conferencing etc, c) some communication and telecommunication support equipments used in addition to Local Area or Wide Area Networks. In addition to these electronic which include teachers such as Nanayakkara in [3], Yuen & Ma in [4] as well as some students such as Keller, et al. in [5] and Masrom in [6] through their studies conducted have thrown some light on the concepts and usage of technology for the purpose of e-learning. But incidentally, these studies are restricted to the developed nations only where the availability and affordability of technology support for e-learning is not much of an issue. But availability and affordability of technology in the developing and under-developed countries are two very critical issues and India too, is no exception in this case. The authors find from the available literature that no extensive research has been conducted in this direction as far as Indian students (especially North Indian) are concerned. These equipments, e-learning also needs a solid support from some very accurate quality softwares.

Many software programs are being developed for supporting the concepts of e-learning and efforts are on to replace the blackboard-chalk system prevalent in the more traditional education systems in the developing countries, to say the least. The e-learning has also introduced the concept of virtual teachers.

Although some or all of these virtual facilities are available in India, especially the North Indian part for past so many years but the status of usage of these e-

learning facilities has not been in the public domain till date.

The authors could not find any authentic literature either on the usage of e-learning tools by the students of technical courses in higher education or on the issues involved in the role of e-learning as far as the formal education of these students is concerned. In order to popularize e-learning, the concept of the technology involved in it must be first popularized among its various stakeholders. Various researchers research paper is an attempt to achieve the following objectives. Both qualitative and quantitative approaches have been associated with this work so as to achieve these research objectives.

1. Understand the meaning of e-Learning
2. Highlighting the usage of tools of e- Learning among students of technical courses.
3. Response Analysis of the students on issues about the role of e-Learning in their studies. (The survey data includes the responses of the students of technical courses who use only traditional methods for learning and of the students who use e-learning in addition to traditional methods of learning.)

The research tool used for the purpose was the questionnaires and the target audience was the students of the following courses: a) Bachelor of Computer Applications (BCA), b) Master of Science (Information Technology) i.e. M.Sc. (IT), and c) Post Graduate Diploma in Computer Applications (PGDCA). These students belonged to a) Department of Computer Science & Application, Punjab University (PU), Chandigarh, b) GGDSD College, (affiliated to PU), Chandigarh, c) SGGS College (affiliated to PU), Chandigarh and Dev Samaj College (affiliated to PU), Chandigarh. The students belonged to two categories:

- 1) ones who use the traditional methods of learning and 2) the ones who use e-learning as a support to their traditional methods of learning. The data obtained from the students through the questionnaires was stored in SPSS V16 software for further data analysis and inference of results.

E-Learning

E-learning is also known with a lot of other names depending upon the purpose for which it is being used, such as: Learning Support System (LSS), Learning

Management System (LMS), Managed Learning Environment (MLE), Virtual Learning Environment (VLE), Learning Platform (LP) and Course Management System (CMS) [7]. On one hand, the countries like United States of America use the term CMS to represent e-learning system, on the otherhand, in the European countries it is referred to as VLE. The purpose of e-learning is served by a computing system that integrates a lot of software, hardware and networking components in order to provide a simpler but effective user interface to fulfill the requirements of different levels of stakeholders in the easiest possible manner. A number of learning tools such as multimedia, still graphics, video, music, text, moving graphics and many more can also be the integral part of an effective e-learning system.

Along with the provision of a user interface, virtual learning environment also takes care of database handling, files management, feedback management, content management, content delivery, financial transactions management etc. It is not just helpful to the students but for also to the teacher/instructors/trainers as well as to the administrator. Two basic forms available for virtual learning environment are: a) commercial mode and b) non-commercial mode which also supports the concepts of open source. Some of the e-learning environments which are extremely popular among e-learners are WebCT, smart class and Modular Object-Oriented Dynamic Learning Environment (MOODLE).

As such, there is huge difference between the traditional method of classroom learning and e-learning in a virtual environment. Virtual learning at times, takes a toll on the learner because the onus of learning is squarely on learner himself/herself.

Although the learners have anytime anywhere accessibility to the learning material, it is absolutely learner's own choice to decide on up to what extent the learner wishes to make use of it. Virtual learning environment focuses predominantly more on the solutions to the problems that may occur to a learner

at various levels of subjective learning and its focus is lesser on the subject itself. The learning content remains the same for all types of learners unlike the traditional class room teaching where the teacher has the options to accommodate various types of learners. In the traditional learning the learning is a long process which requires dedication and hard-work from both ends i.e. learner as well as the teacher. A teacher does not only have to play the role of an guide but also of a motivator in case the student needs periodic push and encouragement, not just of an instructor but also a mentor who shows the right direction to the learners at the right time and also warn the learner in case the teacher senses something odd. It is largely the teacher's responsibility to judge the behavior of the learner and act accordingly.

E-learning originated around 1980 as a support to the traditional learning only. It was believed at that time that e-learning only includes mechanical ways of teaching such as instruction and rules [8],[9]. But Ellis in 2004 stated that it also included training through visuals and audio [10]. Ellis suggested that online learning was possible only through tools which were web-based as technological traits were inherent in the literal meaning of this term and discarded the argument given by authors like Nichols in [11] who did not consider the web at all as a part of online learning. In 2004, Tavangarian et al. [12] as well as Triacca et al. [13] firmly argued that the technology could never replace the classroom guidance and unawareness. Although e-learning was not found to be successful to a great extent in the said rural areas, the authors nevertheless suggested that the future could help in decreasing the gap between rich class and lower class in these areas.

The following are some of the most important advantages and disadvantages of e-learning:

Advantage of e-learning

1. Full time availability (supports anywhere-anytime concept)
2. Better clarity of concepts due of the presence of additional resources in the form of videos, audios, animations, simulations, blogs, experts' help etc.
3. It saves money as well as time and helps in the development at individual levels through

teaching. They used the constructivist theoretical model to show that there was a complete transformation in every aspect of an individual through e-learning. The authors in [10],[13] proposed that there should be some interactive sessions associated with e-learning so that the learners can truly benefit from it. Although the authors in [13] also believed that the concept of e-learning is just online learning.

Anand et al. conducted a study in 2012 to find out the effect of e-learning on the growth of an individual especially in rural areas of India [14]. The main findings of this study were that the proper bandwidth in the networks was not available there, and e-trainers were not willing to deliver knowledge to the learners due to various reasons. It was found that only 48% of the people have benefitted by using e-learning in any form in the areas of getting better jobs, getting employed and other aspects of life. Some of the stumbling blocks in the path of successful usage of e-learning as pointed out by the authors were improper personal interactions with teachers/experts.

4. Students always have a number of alternative resources to satisfy their learning needs.
5. Each individual learner can learn at his/her convenient pace. There is no need for this pace to static or constant which can also vary dynamically for each individual.
6. It provides a faster mechanism to the learners get their progress evaluated at different levels and by different set of teachers/experts.
7. The learners can get faster feedbacks and solutions to their queries.

Disadvantages of E-learning

1. The human touch is missing.
2. There is always a danger for de-motivated learners to be left behind.
3. The developing countries lack in proper infrastructural support like networks, cheaper bandwidth, availability of working infrastructures, power etc.
4. As there is no scope of face-to-face interactions most of the times, the learners are bound to feel the

absence of direct social interactions.

5. Interaction with teacher/instructor/expert may not always be possible.
6. The role of the teacher is being usurped by the trainers who may not be an expert in the area concerned.
7. The learning content is mostly the same for all the types of learners.
8. Unreliable Internet connections are the biggest stumbling blocks.
9. Managing learning software can involve a learning curve.
10. It is really difficult to offer traditional courses through e-learning mechanisms.
11. Not so much tech-savvy learners may feel initial hitches while starting the e-learning process. The developing and underdeveloped countries have a large segment of population that is not tech-savvy.
12. The availability of the courses of your choice in a specific language or context is also an issue. The courses largely cannot be tailor-made.

collected through the questionnaires so as to find out the type of uses of different techniques of e-learning - video-conferencing, emails, search engines, audio/video tapes, virtual class rooms or CDROMs/DVDs. It has been found that 54% of students never used video-conferencing and 15% had somehow used it at their coaching centers. It was only 11% students who were using the video-conferencing facilities regularly for their studies. Electronic mail was being used by all students and around 97% students

13. There are no national or international quality standards in place for the e-learning course material and/or their content.
14. The learners, at times, cannot afford the cost of quality e-learning courses.
15. Some other social issues such as lack of acceptability of e-learning courses in reference to employability, especially in Indian context may produce resistance to this type of learning.

Usage of E-Learning Tools

The knowledge and skill of the set of students as mentioned above were analyzed from the data

admitted that they definitely used search engines to find out answers to their queries related to the courses of their respective studies.

Table 1: Data on Usage of E-Learning Tools

	Always	Occasionally	Once Only	Never
<i>Video Conferencing</i>	11.0	15.0	20.0	54.0
<i>Emails</i>	100.0	0.0	0.0	0.0
<i>Search Engines</i>	97.0	3.0	0.0	0.0
<i>Audio/Video Tapes</i>	10.0	31.0	0.0	59.0
<i>Virtual Classrooms</i>	0.0	0.0	2.0	98.0
<i>CDROMs/DVDs</i>	0.0	0.0	5.0	95.0

The audio/video tapes were also not found to be much popular since 59% of the students had never used these. Only 31% were using it occasionally and it is only 10% students who used these tools on regular basis. As one can see in table 1, the virtual class rooms are not at all popular among the students since 98% of the students conveyed that they had never used the one. Almost the same is the case with CDROMs/DVDs. Therefore, it can be inferred from the table 1, that barring the emails and search engine, all other tools were not popular among the population of our data source. All other e-learning tools seemed to be something out of the world to these set of students since these were unknown to the majority of the students.

Response Analysis of Students on Issues about Role of e-Learning in Their Studies

Table 2 has been created from the data gathered from students through the said questionnaires on eleven issues (as given in the table) about the role of e-learning in their respective studies. The average responses of the students using e-learning along with traditional learning and the students using only traditional learning on issues about the role of e-learning in their studies have been shown in the table.

Table 2: Analysis of Students' Responses

Students Related Issues about Role of E-Learning	E-Learning		Traditional		p-value
	Mean	SD	Mean	SD	
Important Element of my Course	4.02	0.56	3.56	0.52	< 0.05
Unable to study without e-learning	4.12	0.47	3.43	0.51	< 0.05
Important Component of my Course	4.98	0.42	3.02	0.47	< 0.05
Makes Course more Enjoyable	4.46	0.25	3.04	0.42	< 0.05
College/University not smart enough in using the concept	2.98	0.52	4.01	0.51	< 0.05
e-learning helps in Interacting with more and other Students	3.98	0.56	2.12	0.42	< 0.05
Computers are difficult	2.02	0.47	4.13	0.42	< 0.05
Using technological devices are difficult	2.42	0.32	3.96	0.56	< 0.05
Getting access to interconnected computers are problem	2.47	0.36	4.02	0.52	< 0.05
Studying Becomes easier	4.14	0.56	2.97	0.56	< 0.05
Good to have more e-learning courses	3.96	0.56	4.14	0.52	< 0.05

As shown in the table 2, the score of the former on the concept of *Important Element of my Course* is 4.02 ± 0.56 which is significantly different ($p < 0.05$) than the score of the latter i.e. 3.56 ± 0.52 . The score

of the former on the concept of *Unable to study without e-learning* is 4.12 ± 0.47 which is significantly different ($p < 0.05$) than the score of the latter i.e. 3.43 ± 0.51 . The score of the former on the

concept of *Important Component of my Course* is 4.98 ± 0.42 which was significantly different ($p < 0.05$) than the score of the latter i.e. 3.02 ± 0.47 .

The score of the former on the concept of *Makes Course more Enjoyable* is 4.46 ± 0.25 which is significantly different ($p < 0.05$) than the score of the latter i.e. 3.04 ± 0.42 . The score of the former on the concept of *College/ University not smart enough in using the concept* is 2.98 ± 0.52 which was significantly different ($p < 0.05$) than the score of the latter i.e. 4.01 ± 0.51 . The score of the former on the concept of *e-learning helps in Interacting with more and other Students* is 3.98 ± 0.56 which is significantly different ($p < 0.05$) than the score of the latter i.e. 2.12 ± 0.42 .

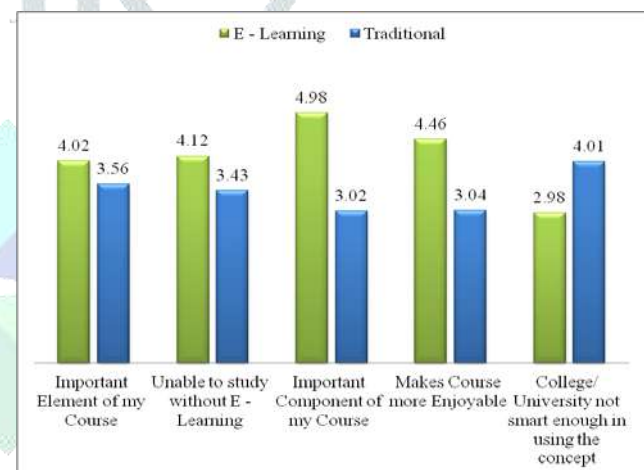


Figure 1a: Average Scores of Students (First Five Issues)

The score of the former on the concept of *Computers are difficult* is 2.02 ± 0.47 which is significantly different ($p < 0.05$) than the score of the latter i.e. 4.13 ± 0.42 . The score of the former on the concept

of *Using technological devices are difficult* is 2.42 ± 0.32 which is significantly different ($p < 0.05$) than the score of the latter i.e. 3.96 ± 0.56 . The score of

the former on the concept of *Getting access to interconnected computers are problem* is 2.47 ± 0.36 which is significantly different ($p < 0.05$) than the score of the latter i.e. 4.02 ± 0.52 . The score of the former on the concept of *Studying Becomes easier* is

4.14 ± 0.56 which is significantly different ($p < 0.05$) than the score of the latter i.e. 2.97 ± 0.56 .

The score of the former on the concept of *Good to have more e-learning courses* is 3.96 ± 0.56 which is significantly different ($p < 0.05$) than the score of the latter i.e. 4.14 ± 0.52 . Figure 1a and figure 1b present graphically, the average scores of students on the issues of role of e-learning in their studies (first five issues out of 11 issues in figure 1a and remaining six issues in figure 1b respectively).

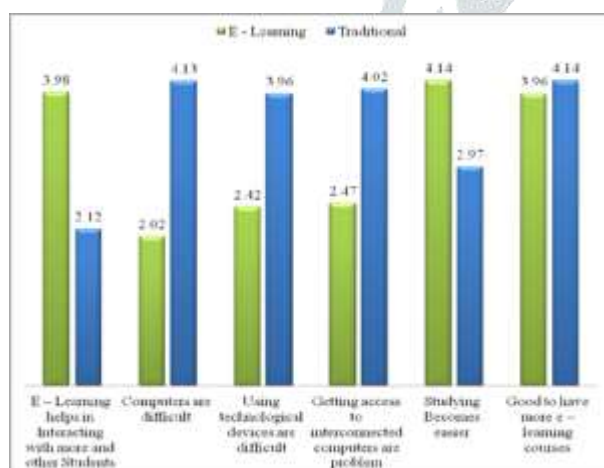


Figure 1b: Average Scores of the Students (Last Six Issues)

Therefore, it is clear that there is significant difference between the average responses of the students using e-learning along with traditional learning and the students using only traditional learning techniques as far as their perception on issues about the role of the e-learning in the studies is concerned.

Conclusion

The advancements in internet and organizational structures have made a great impact on the ways the knowledge is transferred and it is perceived. The high band width Internet of today supports everything ranging from information in textual form to streaming audios and videos and the simulations as well. E-learning as a virtual learning environment depends heavily on this Internet. The developed countries have long been supporting online learning through e-learning has a bright future ahead. The developed countries like India have also of-late started to reap the benefits of e-learning. The authors

of this paper have collected data through various questionnaires from the students of higher education in technical courses in north India and have shown that out of the six tools considered for the response from the students using e-learning, only emails and search engines are the one that are popular among these students. Rest of the tools under consideration has not been popular among these students that use e-learning. Also the responses of these students on eleven numbers of issues about the role of e-learning in their studies were analyzed. As expected, it has been proved from this data that the perception of the students using e-learning in addition to traditional learning is the same for all the eleven issues under consideration. Also, the perception of these same set of students on all these eleven issues is significantly different from the perception of those students who are using the traditional learning methods only.

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