Significance of E-Learning as a Tool in Teaching and Learning

Hafiz Tauqeer Ali

Abstract: The time and age we are living now is much more different than it was few decades ago. The world is changing with great pace so are the teachings and learning methodologies. Before teaching and learning methods mainly focused within classroom confines and do not include all the factors that could impact teaching and learning outcomes. But now the world is increasingly connected and mobile, therefore, the nature of information resources is changing drastically. The new information is not only unlimited and overwhelming in quantity but also it is networked, multimodal and easily accessible anytime anywhere in the world. Advent in digital technologies, such as computers, laptops, tabs, smart phones, wireless handheld devices, and the Internet have made it possible for learners to access to a wide range of learning and teaching resources and tools, in number of different languages (with the option of availability of translation in native languages) anytime and anywhere in the world. Through the emergence of digital technology tools, have made this possible to increase teaching and learning opportunities inside and outside institutionalized school systems. Through the proper use of modern technologies students and learners have full opportunities to take learning beyond traditional classrooms and the school day. By using digital technology tools, learners have opportunities to attend online courses not only anywhere, anytime but also can record and save the information for future use, if needed. Thus, the aim of this study is to focus on the effectiveness of digital technology as a tool in Teaching and Learning (T&L) approach.

Keywords: Digital technologies, Higher education, Teaching and learning.

I. INTRODUCTION

E-Learning is getting more attention recently. It is becoming more attractive for learning and communication through the use of technology. Use of advance technology has transformed the whole teaching and learning environment and E-learning has become one of the emerging tools of information technology. The use of E-learning has transformed the traditional learning and teaching mode into a modern day learning medium. For this purpose, E-learning has been integrated with many learning institutions.

Learning and teaching using an electronic mode or form comes under the umbrella of E-learning. The information system used for learning and teaching purposes could be a networked or standalone, but the main objective is it serves as the medium that facilitates learning and teaching process. The most attractive feature of the E-learning process is that it can be applied anywhere by proper application of communication systems and information which advance continuously. Therefore traditional classroom is not a must for E-learning which facilitates learning and teaching for people of all ages and backgrounds. E-learning uses networked computers connected through internet to facilitate learning and teaching for learners by providing education, knowledge and skills. E-learning information can be supplied using number of different media such as Internet, audio, video, social, local and satellite TV broadcast. The appealing feature of E-learning process is that it is not restricted with time and no restriction whether the learner is learning individually or through the instructor using text, video, audio and animations [1].

E-learning mainly refers to the use of communication technologies and information enabling access to online learning/teaching resources. In its general form, E-learning is referred to any learning using electronic medium. This was the definition suggested in [2]. The problem with this definition is however, they narrowed the definition to digital technologies based learning. This definition was further narrowed by restricting learning and teaching to web or internet based mediums only [3-4].

Alqahtani [5] highlighted the essential characteristics of e-learning. Not only e-learning definitions have undergone changes over the time as the developments start emerging in e-Learning but also the names have change as well [5]. It has been noted the names overlaps sometimes and some researchers use compound forms of the nouns such as network based learning or computer based learning. Some use virtual learning, digital learning and while other refer this type of learning as smart learning. This overlapping in terminology has also been highlighted [5].

E-learning can be defined as a revolutionary approach to turn change into benefit through a knowledgeable and skilled workforce [6-7]. E-learning can be taken as an approach which is based on a system which is customizable, interactive, self-paced and repetitious and centered on the learner [7]. Welsh et al. [8] defined E-learning as a tool to facilitate learning by providing information to learners by using computer network technology.

Alqahtani [5] has done some notable work on the effectiveness of E-learning evaluation and proposed a model for learning. He has done extensive studies on E-learning in perspective to Kingdom of Saudi Arabia educational environment. He was of the opinion that for the effectiveness, E-learning can be broadly categorized into three major perspectives, namely the technological, distance learning and pedagogy perspectives. [9-15].

Revised Manuscript Received on December 05, 2019.

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International Journal of Innovative Technology and Exploring Engineering (IJITEE)
ISSN: 2278-3075, Volume-9 Issue-2, December 2019

5007

Published By:
Blue Eyes Intelligence Engineering & Sciences Publication

Retrieval Number: B7851192919/20190BEIESP
DOI: 10.35940/ijitee.B7851.192919
E-learning is not merely the medium of offering on-line courses but in actual sense, it encompasses much more than that. For example, it has reported in their studies that e-Learning has transformed from a fully-online course to part or all of a course delivery medium independent of time and place restrictions [16]. According to the European Commission [17] definition of e-Learning, it is a mode of using new multimedia technologies and the Internet to enhance quality of learning by making access to learning facilities and services easy along with collaboration and distant exchange. Maltz et al [18] are of the opinion that ‘e-learning’ term is applied in different perspectives. These perspectives may include but not limited to online-distance learning, distributed and hybrid learning.

E-learning is also defined as the diverse processes of education through the usage of communication technologies and information to facilitate and enhance teaching and learning in higher education institutions. E-learning also complements to traditional and online learning or their mix through the use of information and communication technologies 19-20. Wentling et al [13] also defined the e-learning terminology. According to them, E-Learning is acquiring and accessing the knowledge that are mainly distributed and facilitated through the electronic means. They were of the opinion that e-learning depends mainly on computers and networks. They predicted that e-Learning will likely progress into systems such as wireless, satellite, and mobile phones. Liu and Wang [21] found that e-Learning is mainly centered on global sharing and learning resources and also overcoming the issues of time and distance learning by utilizing the flexibility of computer-generated environment for learning. They also claimed that the advancement in communications tools transformed distance learning into e-learning. According to Gotschall [22], the term e-learning is defined based on distance learning. He argues that it a medium of learning through transmission of instructions and information to far locations through video presentations.

Tao et al [23], defined e-Learning as an electronic network centered environment for learning. This medium makes it possible to access individualized learning support depending on the learning schedules that are separate from other learners and are more appropriate to them at their convenience. Through this medium, there is more collaboration, support and interaction between peers and teachers than traditional teaching and learning environment. By the use of multimedia, learning has become more fun, interesting active and enjoyable through progresses in e-learning [24]. Through service, quality, speed and cost, e-learning has become the most promising educational technology [24-25]. E-learning has equipped students at universities with the freedom to access learning information while at the same time maintaining their own careers and pursuing their personal objectives without the need to synchronize with the rigid schedule to subjugate to attended traditional learning facilities [26]. The study that Kartha [27] conducted supported this thought by showing the data results that number of available online courses has drastically increased due to advantages E-learning is providing to both learners and institutions. ICT skills are expanding and provide a great platform of interactivity. Learners from all backgrounds with their individual needs can enhance their teaching and learning experiences through the interactivity ICT skills provide. Roslizawati Che Aziz [28] proposed conceptual e-Learning framework to show the effectiveness of e-Learning tools.

II. REQUIREMENTS FOR E-LEARNING

E-learning has transformed the teaching and learning environment altogether and has become now a reality. E-learning is not just a methodology or process of paper contents transfer into electronic files but it has changed and affected almost all aspect of life [5]. As it has taken place of traditional learning attitude and environment, therefore it remains utmost concern that e-learning remain interactive to maintain its importance for teaching and learning. For this very purpose, E-learning must include and encompass appropriate and related and related activities to keep the learning environment effective and productive [5]. These activities may include but not limited to: How to plan for e-learning and provide human and financial support and resources to develop digital contents for interactive learning portals which contain the LCMSs and LMS standards. How systems for testing and measurement can be improved or developed in an interactive and interesting mode to keep learners interests alive [5]. It should also include training to develop instructors and course providers, learners and executives. It is also very important to keep the stakeholders involved in building the foundations of e-learning. This is crucial to reduce the cost of e-learning through change at managerial levels [29-31].

III. DIMENSIONS AND TYPES OF E-LEARNING

Khan [12] developed a basic framework for e-Learning or web-based learning. He based his framework through reflection on effective environments establishment necessary parameters for e-learning. He suggested eight dimensions namely, resources support, ethical, technological, evaluation, pedagogical, interface, management and institutional, for e-learning. He further sub-divided these dimensions into sub-dimensions to cover specific feature of e-Learning environment [12]. The term “technological” dimension referred to issues about the infrastructure of e-learning environments. It was argued that resources were required to enhance the active and interactive meaningfulness of the learning environment. Management and institutional dimensions were stranded into administration dimension [5]. The management referred to the maintenance of the learning environment and the distribution of information relevant to its use while the institutional dimension included administrative issues as well as academic affairs and students support networks. Pedagogical dimension were used for teaching and learning needs and supports such as goals and objectives, content analysis, practice methods and programs strategies. In the ethical dimension social, cultural diversity of learners and instructors are referred. This also refers to organizational policies and copyrights [5, 12]. There are some suggestions that that E-learning dimensions are essential to have access to effective, flexible and widespread learning environments.
implementing these dimensions learners can benefit regardless of their cultural background or circumstances [5, 12]. Many researchers have used different parameters and ways to classify e-learning types. Broadly speaking, e-learning has been classified based on the extent of their implementation in education, and the timing of interaction. Therefore, e-learning has been divided into internet-based-learning and computer-based learning [5, 12].

In computer-based-learning, hardware and software are utilized for Information and Communication Technologies (ICT) use. Both of the hardware and software Components for hardware and software can be used for computer-assisted-learning and/or computer-managed-instruction. As the names indicate that in this method of learning, computers with installed interactive software’s as a self-support tool for learning within or outside traditional classrooms are used for teaching and learning purposes instead of traditional methods without using computers [5]. Although in computer-managed-instruction method of e-learning computers are also used but the purpose of them is to support and aid teaching in learning in terms of educational activities management by storing and retrieving learning information [5, 12].

Although in computer-assisted-learning, computers are used. But their implementation is made to complement traditional learning methods. This is done through offering interactive software’s such as simulations, games, problem solver, as support or self-learning tools within or outside the class environment. In this method of learning, computers are used for storing and retrieving information for data processing [5, 12]. The advent and emergence of Internet has brought miracles in almost in every field especially in communication. After the internet advent, further progress in computer-based-learning is witnessed, hence the term Internet-based-learning. Through Internet-based-learning the teaching and learning contents are made readily available on the internet, intranet and extranet. Not only the contents are made available but precise links to the related knowledge are made readily accessible [5]. These sources may include but not limited to references, e-mail services, video conferences, audios and chat rooms. Learners can benefit from these learning sources anytime anywhere in any geographical location in the world with or without the presence of traditional instructors [32-34]. Some researchers classify e-learning in education into four different modes, namely adjunct mode, mixed/ blended mode and fully online mode. As the names indicate, all the learning modes have different learning complements 5, 12]. For example, in adjunct mode, traditional learning methods are primarily used to complement this learning mode. In mixed or blended mode, learners are trained with some learning tools such as video conferences and with partially traditional learning methods, learners are awarded with interim certificates or degrees. Fully or Totally online mode as is clear from the name itself that internet is used as a full or sole tool for teaching and learning. This is indeed a wonderful innovation which has changed the traditional learning altogether. Some researchers have further divided the fully or totally online mode into Synchronous or Asynchronous on the bases of timing of interaction. Synchronous timing of learning interaction mean the time spent online between learners and course providers or the learners with learners. In this type of internet learning, learners can use internet to chat with course providers or instructors or among/ between other learners through means such as chat rooms and video conferences. The advantage of this type of learning is that the learners can get feedback immediately. In Asynchronous internet time interaction learning, learners post their problem to any other participant/s over the internet [5, 12]. The asynchronous mode enables learners to send emails, thread discussions, blogs and recording audio messages and other similar techniques to discuss with the instructors and between/among themselves at different times. As the discussion or interaction time is not at the very same moment hence the term Asynchronous used. One of the drawbacks of this type of learning is that the learner does not get immediate feedback but this type of learning provides this freedom to the learner that they can manage their learning at the time that best suits their individual learning habits [35]. It is worth noting here that there is no distinct line between synchronous and asynchronous modes of e-learning and it is quite possible that they may have their applications taking place very closely may it be traditional class rooms under the direct supervision of the course provider or instructor or outside the classes without formal direct supervision 5, 12, 33, 35].

IV. BENEFITS OF E-LEARNING

Recently, E-learning has become the most adopted educational method known to humanity to till date. This is due to the fact because of many advantages and benefits e-learning offers over traditional learning methods. Therefore many institutions especially higher educational institutions are adopting E-learning more than ever before. Many studies have summarized the positives and advantages of adopting E-learning over traditional learning methods [5, 13, 14, 25, 36 and 37].

Raba [38] is of the opinion that E-learning is very helpful in achieving and accomplishing learning objectives in shortest time with least effort. E-learning enables both learners and instructors to develop their learning and teaching experiences gained by number of specialists in their field of expertise.

Positives aspects and impact of E-learning from students and learners perspectives have also been highlighted [39, 40]. E-learning has advantages that it can save students and learners travel time and cost. Students can browse and explore many learning and teaching resources at their ease with flexibility without the need to go to traditional classes. On top of that E-learning also facilitates learners and students by providing the services and sources of interactive educational videos. Through these videos learners and students can watch and observe all activities conducted in learning environments and can watch the videos and hence can listen the instructions as many times they like [5, 12 and 36]. E-learning also provides several ways of learner-instructor interaction and feedback process can be instantaneous [40- 42]. However, learners and instructors must be having variety of Information and Communication Technology (ICT) skills to fully benefit from the learning.
and teaching advantages E-learning offers [40]. It is worth noting that, adopting and implementing E-learning has also the advantage of facilitating the learning for learners with physical disabilities and offers the facility of accessing the learning resources from any location to improve or further their education [41-43]. E-learning focuses on the needs and requirements of individual learners and students as a crucial factor in education rather than on the needs and requirements of instructors or institutions [36]. Perhaps one of the main feature or advantage of E-learning is its flexibility that it offers to learners and instructors. No restriction or time or place are connected with issues. Learners manage their own learning at their own schedules [44]. Not only the students but also the organizations and institutions can also benefit greatly from the flexibility E-learning offers through delivery or receipt of learning information or data.

Another notable positive of E-learning is that extra prospects of teacher learner interactivity can be achieved during content delivery [45]. E-learning provides opportunities for learning through discussion forums and hence students can overcome their hesitations or fear of asking questions face to face to other learners or instructors. Therefore E-learning is becoming more popular in facilitating the communication and improving the learner’s relationships that sustain learning. This feature of E-learning enhances the learning and qualification efficacy through providing access to wider sources of information [5]. E-learning is not only cost effective in saving time and money to travel to learning institute buildings but it also save money for institutions and organization through offering learning opportunities for learners with no need for many buildings.

E-learning always keeps individual learners learning habits, needs and demands in consideration. Not only these needs and requirements cover and focus on the course contents but also E-learning takes self-pacing of individual learners into due consideration. The asynchronous modes of E-learning allow each learner at his own pace nad speed as some learners are quick to grasp information while some learners take more time to understand the very information. Through this, more learning satisfaction can be achieved among the learners and also release the stress of learning quickly from slow pace learners [5, 31, 36, 37, 46 and 47].

The above-mentioned advantages of e-learning have been summed up in [5, 11]. Most of the E-learning advantages conclude that E-learning plays greater advantages in assessment of learners and students and also increase their experiences in education by greater opportunities of interaction. The most important benefit of E-learning in education is that it focuses and targets learners and their learning and teaching requirements [11]. Not only the importance of learning needs and assessments are achieved in E-learning but also its impacts on educational ethics are given top priority and are ensured [12] Equal access to learning information regardless of ethnic background, place and time is ensured for every learner [5, 12]. The learning and teaching environment created through E-learning also helps learners to build their learning confidence and take their own initiatives and encourage less or no dependency on instructors or course provides. The instructors and course provide remain no longer the source of absolute information rather they become advisors and learning facilitators [50]. Through learning confidence that E-learning facilitates, learners become able to communicate and dialogue globally with learners from all walks of life [51]. Therefore it can be concluded safely that if E-learning is applied properly then advantages that it offers are much more than those achieved in traditional learning environments [5, 43, 48 and 49].

V. RESEARCH METHODOLOGY

A. Findings and Discussions

In this section the methodology of research is highlighted which was used to show the effectiveness of E-Learning in modern teaching and learning. Mostly the students were contacted through a self-prepared questionnaire through number of means such as social media and e-mails. The data collection procedure for this study is presented in table 1.

Table 1 Data collection procedure

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Questions</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>In e-learning I can learn based on my pace</td>
<td>YES/NO</td>
</tr>
<tr>
<td></td>
<td>In e-learning I can learn anytime, anywhere</td>
<td>YES/NO</td>
</tr>
<tr>
<td></td>
<td>In e-learning my learning is personalized</td>
<td>YES/NO</td>
</tr>
<tr>
<td></td>
<td>E-learning provides suitable technical support</td>
<td>YES/NO</td>
</tr>
<tr>
<td></td>
<td>Through E-learning I receive immediate feedback</td>
<td>YES/NO</td>
</tr>
<tr>
<td>D2</td>
<td>E-learning presents more learning freedom</td>
<td>YES/NO</td>
</tr>
<tr>
<td></td>
<td>E-learning eases the process of learning</td>
<td>YES/NO</td>
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<tr>
<td></td>
<td>E-learning increases the learning motivation</td>
<td>YES/NO</td>
</tr>
<tr>
<td></td>
<td>I prefer to do tests through e-learning tools</td>
<td>YES/NO</td>
</tr>
<tr>
<td></td>
<td>E-learning meets my learning needs</td>
<td>YES/NO</td>
</tr>
</tbody>
</table>

The questionnaire as presented in table 2 was prepared in such a way that it included the four major dimensions of E-learning methods. These four main dimensions of the survey are described as follows:

Table 2: E-learning survey Questionnaire

<table>
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<td>YES/NO</td>
</tr>
</tbody>
</table>
D3

- My confidence has increased through E-learning
- I feel comfortable to communicate with the instructor by E-learning than face to face
- E-learning increases communication with the instructor.
- I built a productive relationship with the instructor via e-learning
- I receive more attention from my instructor through E-learning

D4

- I prefer to communicate with my classmates by e-learning compared to face to face
- E-learning has increased my communication with other learners.
- E-learning eases discussion with other learners.
- Through E-learning, I can participate in discussion with other learners
- E-learning increases cooperation among learners
- I enjoy contacting other learners via e-learning

VI. CONCLUSION

In this study, the role of E-learning in teaching and learning perspective has been reviewed. As this is no secret now that, technology is playing a vital role for learning and teaching for learners specially those at higher educational institutions. In today’s modern world learning habits have been transformed totally and now learners need access to relevant, quick, self-paced, and personalized content information. E-learning promises to fulfill this need by offering variety of online modes of learning with providing full freedom of learning at one’s own individual schedule and comfort. Through use of digital tools in E-learning, students can enhance their learning experiences and can be used to improve communication and relationships that sustain learning.

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