



# E-learning and E-Content Development: Present and Future Predicament

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## Abstract

The rapid development in technology and science opened incredible possibilities of new technologically embedded teaching learning. The debate on the effectiveness of E-content is still vibrant because of the importance of human presence in learning process is considered essential. The relevance, effectiveness and technological advances in E-learning and E-content development predict the future of E-learning. The revolution in computation has led to machine learning and artificial intelligence wherein computers can perform functions without human intervention. Academia and computer scientist should work together to develop smart interactive models of E-learning and E-content that will prepare the future techno savvy generation. Educational organizations need to focus on creating an environment of learning which involve substantial adaptation of technology with the true essence of human presence. The future of education lies in the adoption of technology that enhances not only machine learning but also the learning machine called human.

**Keywords:** E-learning, Effectiveness, E-content development, Four-Quadrants

## Introduction

The National Policy on Education in India (1986), specially laid emphasis on computerization of teaching learning process. The rapid development in the computer technology, together with the use of computers by the teachers, paved way for the introduction of computers in teaching and learning. India in recent times witnessed a growth in the demands of personal computers as *The Economic Times* states 'the Indian personal computer market has shown tremendous growth and as per International Data Corporation (IDC) Worldwide Quarterly Personal Computing Device Tracker, India shipped 3.1 million units in early 2020.' After the nineties, computers started making a mark in the education sector, however in recent times its impact has manifold with the rapid growth of technology and introduction of many educational tools and applications. The world is preparing for fourth industrial revolution called 'Industry 4.0.' The human intervention is getting minimize as 'Internet of the Things' and 'Data Analysis' with the application of artificial intelligence seems to be the future of human existence. In the current scenario of Covid-19 pandemic, E-

learning has emerged as one of the significant modes of communication of knowledge. The Covid-19 pandemic has enhanced pedagogical significance of E-learning through internet. Online E-learning has acquired the status of “new normal” of teaching learning. During lockdowns the traditional classroom teaching is replaced by e-learning and related online teaching methods. Internet, computer and virtual classroom suddenly became central and opened incredible possibilities of new technologically embedded teaching learning. Despite the fanfare and enthusiasm for various technological innovations, it had very little impact on mainstream higher education not until the emergence of covid-19. Present paper is an attempt to analyse and study the various dimensions of the role of E-learning and E-content in the background of modern technological setting and try to investigate its relevance in present and future educational panorama.

## Methodology

This study is based on Primary and Secondary sources. Published research papers in various journals, articles of newspapers, books and real life observations from the academics are used as secondary sources. A comprehensive analysis of the available literature was undertaken by using both printed and internet sources

## Literature Review

“Web-based learning has become commonplace in education and can take many forms, from massive open online courses (MOOCs) to virtual learning environment (VLE) and learning management system (LMS).”(Zhu Mushtaq Hussain, Wenhao, Wu Zhang, and Syed Muhammad Raza Abidi 21) . A research study conducted at British University Egypt finds that the higher educational sector has changed due to increased use of E-learning. According to findings, “...there has been a rise of about 12-14 percent annually in enrolment for online learning over a five year period: 2004-2009 after secondary education” ( M. Samir Abou El-Seoud, Islam A.T.F. Taj-Eddin, Naglaa Seddiek, Mahmoud M. El-Khouly, Ann Nossei 20) Shah B. highlights the inventions in science and technology is all encompassing and has increased the pedagogical potentials of modern technology which have “...forced us to consider fundamental changes in our education system.”(349-351). E-learning can be defined as the use of electronic content that include text, picture representation, graphics, animatronics, audio and video with the use of computer, mobile phones and internet. It enables transfer of knowledge and skills to a large number of learners. E-Learning is the use of Information and Communication Technology (ICT) to deliver information for education where instructors and learners are separated by distance, time, or both in order to enhance the learner’s learning experience and performance (Keller et al., 2007; Tarhini et al., 2016) The European Commission (2001) describes, E-Learning as the use of new multimedia technologies and the internet to increase learning quality by easing access to facilities and services as well as distant exchanges and collaboration. V. Nedeva and Em. Dimova defines E-learning as “...essentially the network-enabled transfer of skills and knowledge.”(22) E-content can comprise of all the above mentioned elements or any one of it, which is displayed offline or online and is transferable. While defining E-learning Diana Oblinger and Brian Hawkins sates that the“...definition has morphed from a fully-online course to the use of technology to deliver some or all of a

course.”(14-15). Dr. N Nachimuthu precisely defines the principal elements as content created with the use of electronic media with the “combination of sounds, images and e-content requires huge amounts of creativity both at 'information' level as well as the 'technology' level”( 78-80) V. Nedeva , Em. Dimova convey that the “...American Society for Training and Development defines e-learning as a broad set of applications and processes which include web-based learning, computer-based learning, virtual classrooms, and digital contents. E-learning design needs to be student centered. Noesgaard S. S. and Ørngrreen R. while explaining the effectiveness of e-learning concludes that “Motivation to learn and engage with the E-Learning solution is key to effectiveness, especially when effectiveness is defined as the time spent using the product...” (286) and further adds that “It was found that support and resources, the individuals’ motivation and prior experience and interaction between the artifact and the individuals that use it all influence effectiveness” (280) The effectiveness of E-learning can be measured from the fact that beyond formal training and through delivery of information it improve the performance. Paula Elizabeth Sanderson brings out the benefits of E-learning like, “...cost-effectiveness, enhanced responsiveness to change, consistency, timely content, flexible accessibility, and providing customer value.”(186)

E-learning can provide consistent guidance and knowledge acquisition proficiently. Course group assignments can be programmed and planned around individual and specialized requirements. A well designed E-content can cater to the needs of different learner groups and offers learning material based on level of knowledge. V. Nedeva and Em. Dimova points out those learners “...can accommodate to different learning styles using different activities.”(22) This can be achieved by adopting different teaching and learning styles. March J Rosenberge conceptualised the term “learning architect” and emphasized the necessity of amalgamation of “training and knowledge management” (117). He defines ‘learning architecture’ as “the design, sequencing, and integration of all electronic and non-electronic components of learning to derive optimum improvement in competence and performance (118) E-learning platforms are more efficiently used by instructors and professionals because e-content provides a choice of time. The basic requirements are computer and internet. From psychology point of view e-learning certainly enhances personal confidence and level of awareness as learners get an opportunity to learn and manage digital tools and gadgets. With the help of online laboratories, models and visuals, it provides experience and improves the understanding of intricate subjects. Studies show that, “...traditional administrative approaches can ensure no more than 5% of success, even by introducing quality management. 95% quality of education can be reached by using information technologies.” (V. Nedeva & Em. Dimova 28)

## Analysis

### Effectiveness of E-learning

E-learning has revolutionised modern pedagogy by digitalization which has brought remarkable transformation in the modus operandi of the way E-content is available, accessed, utilised, and distributed. It has destroyed the conventional time setup of learning and even adult learners and professionals can utilize it as per their availability of time. The debate on the effectiveness of E-content is still vibrant because of the importance of human presence in learning process is considered essential. However, with the growing influence of technology, the academia in recent times has realized the pedagogical relevance of E-learning and the need of E-content development. In the last decade, books are being replaced by tablets and smart phones and there is unprecedented surge in the market of E-learning tools, systems and gadgets. Even Government of India has introduced MOOCS through online portals like Swayam and E-Pathshala. Traditional classroom teaching generally adopt merged methods to cater to the needs of all types of learners. However in E-learning a learner can decide the relevant material or portion of syllabus he needs to focus on and helps to generate and communicate new exercise, strategy, conception, and thoughts in formal and informal education. The current covid-19 pandemic has revealed that online E-learning is also cost effective. It helps to reduce infrastructure, travelling and other institute level expenses. It confirms that higher numbers of learners are incorporated in the educational process who achieves success. Active participation of the learner helps to evolve their own learning techniques and personalized standards of E-learning.

E- Learning promotes self learning of the study material. This develops the ability to learn and understand a topic thoroughly and enhance the aptitude to instantaneously relate the comprehension in practice in real life situations. In totality, the application of the newest online tools and applications in the education process makes it more engaging and vibrant. Self motivation and self-assurance in using technology is vital for the successful implementation of E-learning. In order to “maximize the ICT potential in their learning process, students need to be supported with their digital enhanced learning.”(25 M. Samir Abou El-Seoud 1, Islam A.T.F. Taj-Eddin1, Naglaa Seddiek1, Mahmoud M. El-Khouly, Ann Nosseir ) Lack of technological knowledge and limited access to any Web-based equipment can create obstructions. Availability of proper internet connection is integral for active participation of learners. Apart from these technical issues E-learning may not create desired effect in certain areas due to lack of familiar set up of a conventional classroom. For successful implementation of learning process E-learning should be goal oriented. On the learner’s part, self motivation, discipline and commitment is required for focus learning. The biggest challenge is creating encouraging learning environment on the learner’s side and defining a pre-planned strategy for the desired completion of the course.

## Limitations to E-learning

E-learning on individual level can be demanding. Student themselves can be a constraint to E-learning. Lack of concentration and motivation may make E-learning a difficult task. A learner needs to imbibe proper study habits and a routine schedule. There are chances that a learner may fall behind and lack response initiative. In the conventional set up students are used to familiar routine of attending an institute and classes. In E-learning there is lack of face to face interaction hence it requires more enhanced participation of the learner. However, the recent web-based tools and applications are very user friendly and provide more facilities of interaction through chat box raise a question or even live interaction through video conferencing. The covid 19 pandemic has suddenly opened many avenues of technological advances that can be utilised to make academic instructions more effective and interesting. Sometimes communication with the teacher through email can also be helpful. Learning has to be self-driven and self-directed. E-content can be interactive and flexible to adapt to the demands of the learner. E-learning cannot substitute the role of a teacher but as Fox Alice (2020) analyses that, “Studies by American scientists show that the results of distance learning are not inferior or even superior to traditional forms of education.”

## E-content Development

E-learning has initiated the creation of relevant E-content which lives up to the specific requirements of teaching learning module. Today the E-learning platforms are developing at a brisk rate and e-content is becoming more affluent and more interactive. Developing E-content began as an appealing proposal but has now become precedence for the instructors as well as the institutes. Shell Waggener categorically remarks that, “Faculty can evaluate the various benefits, challenges, and pedagogical impacts of these new models and can provide a structured approach to document the evolution of the technologies over time and the use of new types of e-content as it is incorporated into courses in innovative ways”.

Web and mobile based interactive e-content can be created to upgrade the basic skill enhancement by using multimedia. The fundamental essentials of E-content development are the easy availability and access, peer group interaction along with the environment of conventional classroom teaching. E-content development design and approach depends on the previous knowledge level of the students and the expected course outcome. Planning of E-content requires analysing the technical and subject proficiency, stimulus, literacy, language aptitude, learning approach of the learners. E-content starts with the design of the content in detail and then comes the implementation. E-content Development requires Four-Quadrant approach. SWAYAM (Study Webs of Active–Learning for Young Aspiring Minds) by Government of India through MOOCS has defined E-content in Four-quadrant approach.



## Four Quadrant Approach

1. **E-Tutorial:** It shall content Video and audio in an organized form. In order to enhance comprehension; animation, simulation, video demonstration and virtual labs may be used along with the transcription of the video. Video and audio lecture or presentations, animation and films help to develop the listening comprehension and at the same time visual instruction will help to retain the acquired knowledge. There are some excellent e-tools and applications available online that can be used for the purpose of recording a video tutorial or an audio recording. *ScreenCast-O-Matic* aids video creation and provides facilities like zoom, add text and images. Your video lecture can be edited and can add automated captioning. This tool provides easy facility of sharing the edited video. The tools like *Free-cam* facilitate creating professional video lessons and e-learning presentations with excellent editing features. Video can be easily uploaded on YouTube. *Canva* is another platform that helps to create presentations, posters and other visual substance. It can be operated on web and mobile. *Clean PNG* helps to use transparent background images and illustrations to highlight the main theme of the presentation. Audacity is another interesting web easy to use tool for editing audio lectures. *Lexis* creates new audio recordings presentations and also edits audio files. This tool can be used to record lectures. The *AZ Screen recorder* is a mobile based tool and can be used to record explanation to power point presentations. Augmented reality is a technology which helps to create interactive experience, where objects residing in real world are enhanced by computer generated perceptual information, including audio and visuals.

2. **E-Content:** The second quadrant contains instructional material , e-books, illustrations, case study, presentations, web resources, Open source content on Internet, video, Research papers, journals, anecdotal information, Historical development of subject, articles etc. It contains Text in electronic form.

3. **Discussion Forum:** Discussion forum is most essential for raising doubts and clarifying them by course co-coordinator. Discussion encourages communication between the teacher and learners and provides a platform to contribute to new opinion and ideas. It instigates deeper understanding of a concept. Discussion leads to sharing of ideas and promotes joint learning. This quadrant can be helpful for enhancing communication skills too.

4. **Assessment:** This is essential to judge the course outcome. A great amount of practice is required in order to gain proficiency in language skills and this can be achieved by assigning Problems and solutions, MCQ, Fill in the blanks, matching questions, SAQ, LAQ, Quiz, Assignments, Clarification on general misconception etc.

## Conclusion

The relevance, effectiveness and technological advances in E-learning and E-content development predict the future of E-learning. Time is significant and humanity has designated a steady ascending graph of technological advances. What started merely as oral instruction, education today has crossed many milestones. Scientific way of existence with the help of modern gadgets has tremendous impact on education system as a whole. The whole world is web connected

and every individual as a social group is connected with every other individual as a social group. The internet connectivity has changed this universe in a global village. There are predictions that the days may not be far away when a single gadget like computer or a mobile phone will replicate the conventional academic institutes as a medium of pedagogical instruction.

The revolution in computation has led to machine learning and artificial intelligence wherein computers can perform functions without human intervention. In 2016, Hong Kong-based Company *Hanson Robotics* introduced first humanoid named *Sophia*. She is an example of latest working range of artificial intelligence and is evolving and improving every week. ‘*The National*’ in a news coverage states that the aim of developing Sophia is to serve in healthcare, customer service, therapy and education.” The Economic Times reports that, Sophia does all this using social intelligence, which is a domain between human intelligence and artificial intelligence (AI)...Children can engage with robots while learning to play or doing their homework, for example, in a more human-like manner as compared to other screen-based devices like laptops and smart phones. Perhaps robots like Sophia will evolve and implement E-learning and E-content development in the near future with the use of artificial intelligence. Academia and computer scientist should work together to develop smart interactive models of E-learning and E-content that will prepare the future techno savvy generation. It has become imperative for the teachers to adapt and equip themselves with the new responsibilities and skills introduced by internet 4.00. Perhaps blended learning, with an amalgamation of the teacher presence and the use of technology is a better option to provide education and instruction to the generation 4.00. Educational organizations need to focus on creating an environment of learning which involve substantial adaptation of technology with the true essence of human presence. The future of education lies in the adoption of technology that enhances not only machine learning but also the learning machine called human.

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