

Original Paper

E-Learning Application and Covid-19 Issues

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Abstract

E-learning is progressively replacing face to face learning because of its quality of interaction and numerous benefits to mankind. E-learning is an electronic media used for various learning purposes ranging from conventional classroom, add-on functions to online substitution for face-to-face meetings with online engagement. E-learning encourages teaching outside the four walls of a classroom, particularly at a critical moment that requires human to keep off the street such as the pandemic era, natural disasters and any unexpected circumstances. This study explains different types of E-learning, advantages and disadvantages, evolution of E-learning and their applications. The paper emphasis the implication of E-learning on COVID-19 issues.

Keywords

E-learning, evolution, virtual learning, COVID-19

1. Introduction

The term “electronic learning (E-Learning)” has been thrown around quite a lot in recent years, many are still unaware of what it actually means and how it can help learners to achieve success in both their professional and personal lives. In today’s mathematically inclined and technologically evolving world, teachers’ responsibilities have become more elaborate as they are expected to be content experts, technology specialists, motivators, cooperative and collaborative learning advocates as well as monitoring students’ progress during Corona-Virus 2019 (COVID-19) pandemic era and beyond, through physical or virtual teaching and learning processes in order to achieve effective knowledge driven interaction. E-learning is progressively replacing face to face learning because of the quality of interaction and its numerous benefits such as unlimited class number, no constraints of resources, massive cost saving on infrastructure, availability of materials anywhere at any time.

Mathematics and technology have advanced so much that the geographical gap is bridged with the use of tools that make it users feel as if they are inside the classroom. Mathematics is all about digits and

digits are what makes technology flies. E-learning offers the ability to share material through digits in all kinds of formats such as videos, slideshows, G- meeting, word documents, PDFs, conducting webinars (live online classes) and communicating with teachers via chat and message forums is also an option available to users. There is a plethora of different e-learning systems (otherwise known as Learning Management Systems, or LMS) and methods, which allow for courses to be delivered. With the right tool various processes can be automated by digitalization such that, the marking of tests or the creation of engaging content, marking of students attendance, banking of lesson notes and questions among others become easy. E-learning provides the learners with the ability to fit learning around their lifestyles, effectively allowing even the busiest person to further a career and gain new qualifications. It can also be described by many other terms including online learning, virtual learning, distributed learning, network and web based learning. e-learning includes all educational activities carried out by individuals/groups working online/offline and synchronously/asynchronously through network/stand alone computers and electronic devices.

2. Concept of E-Learning

E-learning is gaining educational foothold globally. It is referred to as online learning, and the acquisition of knowledge which takes place through electronic technologies and media. Typically, e-learning is conducted on the internet, where students can access their learning materials online at any place and time. This could be from distance education to computerized electronic learning, online learning, virtual learning, internet learning and many others. E-learning is not the course delivered through DVD or CD-ROM, video tape or over a television channel. E-learning is interactive in nature, in that students can also communicate with their teachers by raising hands and interact in real terms.

What is e-learning?

The model of education has been pretty straight forward in Nigeria until the early 2000, when education in classroom setting which requires students and teacher (who led the process) began to experience a paradigm shift from face to face to virtual teaching via technology. Physical presence was a no-brainer, and any other type of learning was questionable at best. Then the computer evolution happened and it radically changed the learning landscape. Sudden arrival of COVID-19 really threw the world off balance virtually in all aspect of human endeavour, particularly in the education sector, thereby necessitated the needs for e-learning or other alternatives.

In essence, e-learning is a computer based educational tool or system that enable it users to learn anywhere and at any time. It utilizes electronic technologies for accessing educational curriculums outside traditional classroom. Scholars have different perceptions in describing the concept of e-learning. According to Agbo, Onaga and Omeje (2018), e-learning is an electronic media used for various learning purposes ranging from conventional classroom, add-on functions to online substitution for face-to-face meetings with online encounters. Darghan, Saeed and Mcheik (2013) defined e-learning as instructions delivered through digital devices with the intent of supporting learning. Allen

(2003) defined e-learning as using information and communication technologies to for enabling access to online teaching and learning resources. Micheal et al. (2008) defined e-learning as using Internet technologies for enhancing performance and knowledge. It can also be seen as an intentional use of electronic media and Information and Communication Technologies (ICT) in teaching and learning process (Owolabi & Oginni, 2014).

Types of e-learning

E-learning focuses on the use of computers whether in distance or in a classroom to deliver content to students. With the advancement in technology and the use of the World Wide Web (www), the learning process is not only limited between a teacher and student. Learning can be achieved through reading blogs, participating in online forums, threaded email discussions, social media or through online training platforms such as the code academy. It is very common for people to use a search engine such as Google to look for information ranging from what to eat to what to wear in a particular day. People consult different blogs or online tutorials to learn about products or particular ways of doing tasks. These all are e-learning processes. Depending on the use of the source or the delivery medium, e-learning can be of different kinds (Batchelor & Nocrish, 2005):

- *Purely online*: no face-to-face meetings
- *Blended learning*: distance learning or a combination of online and face-to-face
- *Synchronous*: instructor led online courses
- *Asynchronous*: self-placed learning methods placed on the internet, network or storage devices
- *Instructor-led group*: distance learning where students may be from different geographical locations and learn from a single teacher
- *Self-study*: learning by visiting blogs, tutorials or informative websites
- *Self-study with subject matter expert*: learning by regularly visiting some experts blogs or up-to-date sites
- *Web based*: learning purely by looking up on the Internet with the use of search engines or social media groups such as Facebook
- *Computer based*: learning by accessing study materials from different storage devices like CD ROM or USB in the computer
- *Video/audio tape*: learning by accessing multimedia files through YouTube or any other video/audio sharing websites

A perfect e-learning system is a mix of all the learning systems such as blended, traditional and distance learning. Depending on the use of technological advancement and interactive capabilities of the learning system, e-learning can be divided into three different types namely; type 1, type2 and type 3 respectively.

| Type 1 | Type 2 | Type 3 |
|--|---|--|
| E-learning systems with low interactive capabilities, which mainly consist of texts or multimedia materials | E-learning systems with moderate interactive capabilities. | E-learning systems with high interactive capabilities either with student to student or student to teacher or even both. |
| The examples of this type of systems mainly consist of power point presentations, learning from an ebook or learning from watching videos or audio podcasts. | The examples of this type of systems mainly consist of quizzes with feedback, interactive resources, reflective learning, and learning by using simulators or demonstrations. | The examples of this type of system mainly consists or modern blended elearning systems such as virtual classrooms, video conferencing, streaming medias, different online group games, online blogs, Wikipedia or social media groups |

(Okafor and Ejiofor, 2013)

Advantages of e-learning

E-learning has many advantages. With the combination of a well-organized e-learning system and a highly motivated student, one can achieve great success in a short period of time. Some of the major advantages of e-learning are listed below

- a) Convenient for students:- E-learning materials are self-placed and can be accessed any time the learner wants. They do not require the learner to be physically present in a classroom. Students can also download and save the learning materials for future purposes from the system.
- b) Lower cost:- E-learning is usually a cost-efficient way of learning for most students as they can choose from a large range of courses and make the selection depending on their needs.
- c) Up-to-date learning materials:- The study materials in e-learning systems can be updated more frequently than in the classroom-based education systems. Once the study materials are placed in the system, they can be updated without changing the whole materials and can reused for longer times.
- d) Flexible way of learning:- E-learning is a flexible way of learning for many students. Most of the study materials are stored for the students to access whenever they want. Students can also choose between an instructor-led and a self-learning system. In e-learning systems it is also possible for students to skip over the study materials they already know and choose the ones they want to learn.
- e) World-wide learning society:- E-learning systems help in creating a worldwide learning society as anyone can access the study materials regardless of the geographical location. In the systems available now learners can also contribute to the study materials, which helps to keep the materials updated.
- f) Scalable e-learning systems:- The number of students in virtual classes or e-learning systems can be very few or really high without causing any significant difference in the total cost.
- g) Higher degree of freedom for students:- One may find it difficult at times to learn new ideas. E-learning systems provide the possibility for students to learn the same material repeatedly until they are satisfied.

h) Better retention:- The video and audio materials used in e-learning make the whole learning process more fun. This will help students to remember the things they learn for a long period of time. E-learning materials can also be accessed whenever wanted, thus the repetition makes the retention easier

Disadvantages of e-learning

As any other systems, e-learning also have some drawbacks. Being flexible is not always good as it may cause laziness and thus reduce efficiency. Some of the major disadvantages of e-learning include:

a) Low motivation:- Students with low motivation may not achieve the set goals most of the time, as there is no one to look over. Students are themselves responsible for the routine and organization of the course, thus leading to laziness and low motivation at times. Lack of a fixed schedule and deadlines may lead to students dropping out of the course prematurely.

b) Technology-dependency:- The study materials in e-learning are delivered using computer applications. For some people just to learn how to use those applications might take a long period of time. There are also other factors such as a poor Internet connection and machine malfunction, which may make the learning process tedious and time consuming.

c) Compatibility issues:- As there are many learning systems available, sometimes the study materials prepared by using one system may not be compatible with another. For example mobile devices such as iPads block the flash videos from being played in their browsers. Access to websites may not be free in all places as some countries impose restrictions on the number of websites that can be accessed.

d) Reliability of the content:- The content available on the Internet might not always be reliable. There are people who mislead the readers and feed wrong information. So the readers must be careful while searching for the information and check the reliability of the content before learning it.

e) Social isolation:- Lack of a real classroom or classmates might not be good for all students. Students might feel socially isolated at times due to lack of real people around while learning.

f) Expenses management:- In the long run e-learning is usually a cheaper option but still for the first time it might prove too expensive for some institutions. Buying new equipment like computers, projectors or new software all at once might not always be easy for new or small institutions. Also the cost of developing training materials is high compared to the traditional methods.

g) Disadvantages for disabled students:- While developing new study materials or study environments companies usually target at large user groups. They might not always think about disabled students such as visually impaired students as they might not gain from it as the development costs may be high.

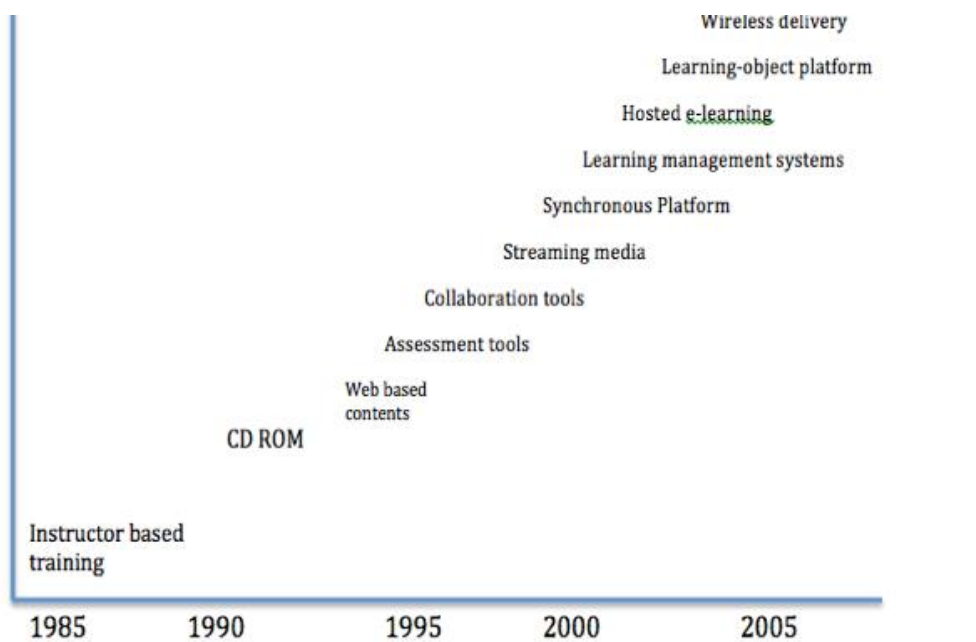
h) Not effective in all cases:- In some cases face-to-face study materials might be more effective than learning online as e-learning lacks two-way communication (Optimus Solutions, 2015, Kuhlmann, 2010).

3. Evolution of E-Learning

The growth of e-learning is more of a dynamic process as it is affected by many factors such as the subject matters, the knowledge level of the audience and the environment around the audience. The users also play an important role in how they want to learn as all users do not have same approach to learn. A major factor that affects the e-learning process is the amount of information that the user wants to receive. The users must decide for themselves which information is important for them at a moment of time and how much they can process.

During the early 1980's when computers were scarcely available instructors-led training (ILT) was the only way of learning things from or about computers. Then arrived the era of multimedia advancements from around 1985 to 1995 Windows3.1, Macintosh, CD ROMs and PowerPoint started making their marks. During the mid 1990's when the World Wide Web (www) started evolving, instructors started exploring the possibilities of using the new technology to deliver instruction in more efficient and cost effective ways. This period saw the growth of email, web browsers, HTML, media players, low definition audio/video files and basic Java applications. Then in the early 20th century the world started seeing a major growth in the field of computers and webs. People started moving from the age of CD ROMs to USB and low bandwidth web to the high bandwidth web. Faster and portable computers were replacing slower and bigger computers.

The time chart below represents the technological growth in the field of the e-learning.



E- LEARNING APPLICATIONS

The American Society of Training and Development defines E-Learning as a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. Mallinson (2013) provides an expanded definition of e-learning as including the use of all digital resources, systems, computers, and electronic communication in the support of education.

Web based learning

Web based learning in an institution is often integrated with conventional, face to face teaching. This is normally done via an intranet, which is usually “password protected” and accessible only to registered users. Thus it is possible to protect the intellectual property of online material and to support confidential exchange of communication between students. “Web teaching is all about making connections: connecting your students to one another and to resources around the world; combining different materials – music, motion, text, narration – into one presentation; collecting related information from multiple sources... enable students to make their own connections by offering materials for download and use in their scholarship or by having them construct web documents as part of their coursework. And this process of making meaningful connections is at the core of all learning” (Chung, 2003). Web based learning is often called online learning or e-learning because it includes online course content. Discussion forums via email, videoconferencing, and live lectures (video streaming) are all possible through the web. Web based courses may also provide static pages such as printed course materials. One of the values of using the web to access course materials is that web pages may contain hyperlinks to other parts of the web, thus enabling access to a vast amount of web based information.

Virtual learning

A “virtual” learning environment (VLE) or managed learning environment (MLE) is an all in one teaching and learning software package. A VLE typically combines functions such as discussion boards, chat rooms, online assessment, tracking of students’ use of the web, and course administration. VLEs act as any other learning environment in that they distribute information to learners. VLEs can, for example, enable learners to collaborate on projects and share information.

Computer based learning

Any use of computers to aid or support the education or training of people is called Computer based learning. CBL means any kind of learning that involves the use of the interactive elements of computer applications and software and the ability to present any type of media to the users. Computer-based learning has many benefits, including the advantage of users learning at their own pace and also learning without the need for an instructor to be physically present.

There are many advantages associated with computer-based learning. It provides more learning opportunity for people from disadvantaged environments. People can learn at a pace comfortable for them, unlike in a traditional classroom. Users need to spend only the required time to learn the subject in the case of computer-based learning, and it is also available all the time. Computer-based learning is cost effective in many ways, as it reduces travel time and also the same application can be used to teach new students or users. The learning also offers safety and flexibility as well as helps learners to track their progress. Another big advantage is in the reduction of overall training time.

The computer-based learning model can be used by a myriad of learning programs across the world. It can also be combined with traditional teaching methods to enhance the overall educational and training

experience. As far as organizations are concerned, computer-based learning could help in training employees in a more effective and profound manner. Individual courses can be imparted in a cost-effective manner to learners.

Computer-based learning is mainly used in:

- Knowledge-based training and assessment
- Simulation-based learning and training
- Creative and instructional games
- Problem-solving training

There are, however, some drawbacks associated with computer-based learning. Students do not have the opportunity for physical interaction with the instructors. Development of computer-based learning can be time consuming. The software or the hardware required for learning can be expensive. Furthermore, not all subjects or fields can be supported or assisted by computer-based learning.

Virtual classroom

Virtual Classroom is a simulated classroom via internet. It allows the learners to attend a class from anywhere in the world. Virtual Education is a learning environment where the teacher and the students are separated by time and space or both. They communicate via Multimedia, Internet and Videoconferencing. Virtual Education is made possible only by the e-content development and use of ICT. In a virtual classroom students will be present with his teacher and fellow learners in the classroom, they will not present physically but connected to the classroom via internet, everyone will be able to share experiences with other participants virtually (Kaware, 2015).

Digital collaboration

Collaborative learning is a successful; research based instructional method that meets the needs of all students. Collaboration in the Digital Classroom offers an in-depth look at collaboration with a focus on online collaborative tools. Digital collaboration is the process of finding and sharing information. Technology is more than just a means of socializing, and the idea behind digital collaboration is to bring all resources together so that information can be easily shared and ideas can be easily synthesized. Our smartphones, tablets, laptops, and cloud technology have given rise to remote working, diversifying the talent pool and allowing teams to work more efficiently. Digital collaboration is collaborating and getting things done using technology and digital devices. These may include apps, tools, software, processes, procedures or an entirely new methodology of getting work done. Some of the tools for students collaboration include Edmodo, classcraft, Yammer, Penpal schools, popplet, cuethink, Minecraft Education Edition, Economics-games.com, GooseChase EDU, makerempire

4. Implication of E-learning on COVID-19 Issues

Most governments decided to temporarily close educational institutions in an attempt to reduce the spread of COVID-19 (Skulmowski & Rey, 2020), and Nigeria states are not exempted despite some believed it was a coax until the realities began to steer them in the face. COVID-19 orchestrated school

closures in Nigeria in March 2020, after the outbreak has been firstly reported in February 2020 and its impact is not only on students, teachers, and families, but have far-reaching economic and societal consequences.

The lack of student to teacher interaction during the pandemic has also led students to feel less passionate about the integrity of their works. Some students find it difficult to stand their feet after the first wave of the pandemic. This leaves students to turn in half-completed assignments, get the answers from their friends in class, or turn in nothing at all simply because education has become less important due to COVID-19, the ugly trend cut across every area of educational sector (The Beacon, 2020). In response to school closures, UNESCO recommended the use of distance learning programmes and open educational applications and platforms that schools and teachers can use to reach learners remotely and limit the disruption of education. School closures in response to the COVID-19 pandemic have shed a light on numerous issues affecting access to education. UNICEF (2020) remarked that the COVID-19 pandemic has affected more than 91% of students worldwide, with approximately 1.6 billion children and youngsters unable to attend physical schools due to temporary closures and lockdowns. These have resulted into unplanned pregnancy among the female undergraduates, low morale to education, high social and economy cost, wage loss among others.

Many schools across the globe began conducting classes via video telephony software such as Zoom, Google Classroom and/or Google Meet in order to bridge the gap and time. Although, unreliable internet access prevented students in the rural areas and disadvantage families to cope with the new normal (Stelitano et al., 2020). Some Universities in Nigeria devised measures to reach their students through online classes, there lean resources could not enable them many institution to go beyond online peripherals and interaction.

5. Conclusion

E-learning is enabled electronically” or an Internet enabled learning. Different kinds of e-learning include: online learning, blended learning, Synchronous, Asynchronous, Instructor- led group, Web based, self study with subject matter, • Video/audio tape. E-Learning is divided into three different types namely; type 1, type2 and type 3 depending on the use of technological advancement and interactive capabilities of the learning system. Evolution of e-learning ranges from instructor-based learning in the 80’s to wireless in the 21st century. E-Learning as a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. E-learning has become a new channel and substitute to face to face interaction whenever occasion demands.

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