# E-LEARNING AS A TOOL FOR SOCIAL AND COLLABORATIVE TEACHING AND LEARNING IN A PANDEMIC ERA: AN OVER VIEW

**Mohammed M. Kpakiko[1] & Murjanatu Abdulhamid[2],**

[1] *Abdullahi Fodiyo Library, Usmanu Danfodiyo University, Sokoto*

[2] *University Library, Federal University of Technology,Minna*

E-mail: kpakiko.mohammed@udusok.edu.ng

## Abstract

*Covid-19 pandemic has truncated or even brought to halt socio-economic and cultural activities around the world. The worst hit is the educational sector where all educational institutions were closed down for almost a year. Educational institutions around the world have therefore adopted the use of information and communication technology (ICT) at various levels ranging from communication, commerce and even human resource management. This paper explores the use of e-learning as a tool for social and collaborative teaching and learning in pandemic era. The paper adopted descriptive documentary review approach based on the information that advocates for technology adoption for teaching and learning where tools and technologies for creating e-learning platforms were discussed. The Unified Modelling Language (UML) techniques of Use Case and Activity diagrams were used. The models show the interactions based on email interactions, social media network, and learning management system (LMS) were identified and described as tools for social and collaborative teaching and learning models. The paper concluded that educational systems in Nigerian should learn from the experience of developed nations such as America, Britain, France, Germany etc on e-learning to ensure continuity and stability in education systems even in the face of unexpected such as pandemic. The paper recommends that e-learning platforms should be used at various levels of educational institutions in Nigeria, stakeholders in education sector should come up with a policy framework that will enforce the adoption of e-learning in addition to conventional teaching and learning models in Nigeria, library and information services should be digitalized with cutting edge digital infrastructure in order to partake in the information sharing networks amongst others.*

## Introduction

The outbreak of CoronaVirus (COVID-19) pandemic has brought about the popularity and relevance of online educational delivery platforms in developing countries where educational technology infrastructure is inadequate (Barnes, 2020). However, the situation has brought dwindling educational system across the globe and also had negative impact on the Nigeria's education systems. This paper, therefore, advocates for a robust learning management platforms as a stimulating educational mechanism that could provide alternative platforms for continuous teaching and learning in Nigeria. The paper adopted descriptive documentary review approach based on the information that advocates for technology adoption for teaching and learning where tools and technologies for creating e-

learning platforms were discussed. Thus, the implications of studies conducted in developed nations such as America, Britain, France and Germany amongst others were reviewed to inform the understanding of the situation in Nigeria through the use of current citations and discussions.

E-learning is a web-based learning experience in synchronous (real-time communication) or asynchronous (without real-time communication) environment using different devices such as computers, Internets, smartphones etc. It is one of the most popular learning environments (Murshitha, & Wickramarachchi, 2016). E-learning systems help use time and space efficiently; though, their success depends on end users' acceptance and use of these systems (Bhuasiri et al., 2012). In order to support e-learning activities, Murshitha and Wickramarachchi (2016) revealed that several technology-based pedagogical tools have been developed; such as web course tools, web course homepage system, blackboard learning system and system for multimedia integrated learning (Barnes, 2020). E-learning provides many benefits including an increased accessibility to information, better content delivery, personalized instruction, content standardization, accountability, on-demand availability, self-pacing, interactivity, confidence, and increased convenience (Bhuasiri et al., 2012).

Covid-19 pandemic has truncated or even brought to halt socio-economic and cultural activities around the world. The worst hit is the educational sector especially in Nigeria where all educational institutions were closed down for almost a year. Students could not go to school as a result of COVID-19 pandemic. This has led to over 50 million scholars remaining at home (Onuora, 2020). In another dimension, Godwin (2020) asserts that with an education system already burdened with low participation and learning achievements, the closure increases the

challenge in access to education by students where learning was disrupted and terminally hindered in some cases. This has the potential to set back the academic performances if adequate action is not taken. In its response to COVID-19, the Federal Ministry of Education sought to mitigate the immediate impact of the pandemic by using online and offline platforms and television to keep the learning.

In support of federal of government's efforts, Dhawan (2020) reported that UNICEF and HITCH have collaborated to provide a much-needed boost to education during the COVID-19 pandemic through a dynamic online/offline educational and vocational video platform designed especially for Nigeria. HITCH's e-learning tool has been customized for the Nigerian curriculum and has the potential to transform teaching and learning, and make classroom learning a dynamic experience at home.

This collaboration according to Dhawan (2020), is an excellent opportunity to ensure teaching and learning continues during and beyond the pandemic. The learning was packaged to ensure that students can access online fit-for-purpose resources. The package can also equip the teachers to be collaborators and facilitators of learning rather than just remote instructors. This is a much-needed support for the education system and for teachers themselves. As COVID-19 has clearly shown, to move Nigerian education forward, we need to be flexible and open to new ways of both learning and teaching. This e-learning tool will not only ensure Nigerian students do not miss out on their education during the lockdown, but also create a system for lifelong, quality learning for years to come.

**The Concept E-learning**

E-learning is the application of information technology such as Internet, mobile and other computer aided systems in the teaching and learning process, either asynchronously or synchronously. Asynchronous E-learning is used mainly for content management system where users access information at different times without real time collaborations (Jama madar & Willis,

2014). Synchronous E-learning (or pedagogy) is designed for online users who collaborate at the same time (Pauline, 2012). In both case, content management system for E-learning acts as archives for learning materials availed on the web.

E-learning demands different institutional requirements, but in all cases, an institution that deserves to use E-learning must ensure that the system is properly established and maintained. E-learning is a computer based educational tool or system that enables you to learn anywhere and at any time. Today e-learning is mostly delivered though the internet, although in the past it was delivered using a blend of computer-based methods like CD-ROM (Epignosis, 2014). Meanwhile, e-learning is also known as online learning or virtual learning because it involves the use of an internet-enabled device (smartphone, tablet, laptop, or desktop computer) to connect to online resources from virtually anywhere an internet connection is accessible.

## E-learning Approaches

There are two general approaches to e-learning: self-paced and facilitated/instructor-led. Self-paced learners are alone and completely independent, while facilitated and instructor-led e-learning courses provide different levels of support from tutors and instructors and collaboration among learners (Adeola, Adewale & Alese, 2013). Often, e-learning courses combine both approaches, but for simplicity it is easy to consider the two separately.

### 1. Self-paced e-learning

Here E-learning content is developed according to a set of learning objectives and is delivered using different media elements, such as text, graphics, audio and video (Guri-Rosenblit, 2018). It must provide as much learning support as possible (through explanations, examples; interactivity, feedback, glossaries, etc.), in order to make learners self-sufficient. Learners are offered e-learning courseware (also called Web-based training (WBT)), which can be complemented by supplemental resources and assessments. Courseware is usually housed on a Web server, and learners can access it from an online learning platform or on CD-ROM. Learners are free to learn at their own pace and to define personal learning paths based on their individual needs and interests (Wilson, 2016). E-learning providers do not have to schedule, manage or track learners through a process. However, some kind of support, such as e-mail-based technical support or e-tutoring, is normally offered to learners. Examples of applications or platforms that can drive self-paced e-learning as identified by Guri-Rosenblit (2018) include; Social networking tools, e-mail, WebCT, Webinars, Google classroom etc.

### 2. Instructor-led and facilitated e-learning

In this model, according to Murshitha and Wickramarachchi (2016), is a model where linear curriculum is developed that integrates several content elements and activities into a chronological course or syllabus. The course is scheduled and led by an instructor and/or facilitator through an online learning platform. E-learning content for individual study can be integrated with instructor's lectures, individual assignments and collaborative activities among learners. Learners, facilitators and instructors can use communication tools such as e-mails, discussion forums, chats, polls, whiteboards, application sharing, audio and video conferencing to communicate and work together. At the end, learners can be subjected to an exercise or assessment to measure learning. Examples of applications or platforms that can drive the instructor-led and facilitated e-learning as indentified by Murshitha and Wickramarachchi (2016) include; Tencent Voov meeting, Learning Management System (LMS), Zoom Meeting, Canvas etc

### E-learning components

E-learning approaches can combine different types of e-learning components. There are four

components of e-learning as identified by Epignosis (2014) include the following:

i.   E-learning content
ii.  E-tutoring, e-coaching, e-mentoring
iii. Collaborative learning
iv.  Virtual classroom.

**E-learning content** include the following resources:

- Simple learning resources; simple learning resources are non-interactive resources such as documents, PowerPoint presentations, videos or audio files. These materials are non-interactive in the sense that learners can only read or watch content without performing any other action.
- Interactive e-lessons; the most common approach for self-paced e-learning is Web-based training consisting of a set of interactive e-lessons. An e-lesson is a linear sequence of screens which can include text, graphics, animations, audio, video and interactivity in the form of questions and feedback. E-lessons can also include recommended reading and links to online resources, as well as additional information on specific topics.
- Electronic simulations; the term "simulation" basically means creating a learning environment that "simulates" the real world, allowing the learner to learn by doing. Simulations are a specific form of Web-based training that immerse the learner in a real worlds' situation and respond in a dynamic way to his/her behaviour.

**E-tutoring**, e-coaching, e-mentoring; e-tutoring, e-coaching and e-mentoring provide individual support and feedback to learners through online tools and facilitation techniques.

**Collaborative learning**; collaborative activities range from discussions and knowledge-sharing to working together on a common project.

Social software, such as chats, discussion forums and blogs, are used for online collaboration among learners.

**Virtual classroom**; a virtual classroom is an e-learning event where an instructor teaches remotely and in real time to a group of learners using a combination of materials (e.g. PowerPoint slides, audio or video materials). It is also called synchronous learning.

### Benefits of E-learning

Institutions are using e-learning because it can be as effective as traditional training at a lower cost (Stern, 2019). Although developing e-learning can be more expensive than preparing classroom materials and training the trainers, especially when multimedia or highly interactive methods are going to be used. However, delivery costs for e-learning (including costs of web servers and technical support) are considerably lower than those for classroom facilities, instructor time, participants' travel and job time lost to attend classroom sessions.

According to Stern (2019), e-learning as a tool for social and collaborative teaching and learning provide the following benefits:

i.   Saves time and money: eliminates the need to build classrooms and the cost of commuting.
ii.  Capacity Building and Consistency: using e-learning platforms allow educators to build capacity to deliver training to a large number of learners with ease. It also allows for consistency.
iii. Learning Retention: student has the opportunity to go over training as often as needed leading to higher retention rate.
iv.  Measurable: e-learning makes tracking learner progress becomes very easy.

v.    Reduces Printing Cost: eliminate the cost of printing as nothing needs to be paper-based.

vi.   Flexibility: using e-learning offers both students and teachers the freedom to learn at their convenience and pace.

**Models of E-learning Practices in Educational Institutions**

There are various e-learning models being practiced in educational institutions. The models presented below are based on Unified Modeling language (UML) of Use Case and Activities (UCA).

- **Learning Management System (LMS)**

Learning Management System (LMS) is a global term for a computer system specifically developed for managing online courses, distributing course materials and allowing collaboration between students and teachers (International Baccalaureate Organization, 2020). A LMS allow every aspect of a course to be managed. That is, from the registration of students to the storing of test results. It also allows the students to accept assignments digitally and keep in touch with one another. In essence, the LMS is the backbone of most e-learning activities (Epignosis, 2014). LMSs are built on various platforms, commonly PHP, .Net or Java and they will hook up to a database such as PostgreSQL, MySQL or SQL Server. There are many LMSs out there according to International Baccalaureate Organization (2020), both commercial and open source. Proprietary LMS include; Schoology, Sakai, Edmodo, WiziQ, Its Learning, Kadenze etc while the open source LMS include; ATutor, EdApp, CourseSites, MyiCourse, Coggno, GoSkills, Chamilo among others.
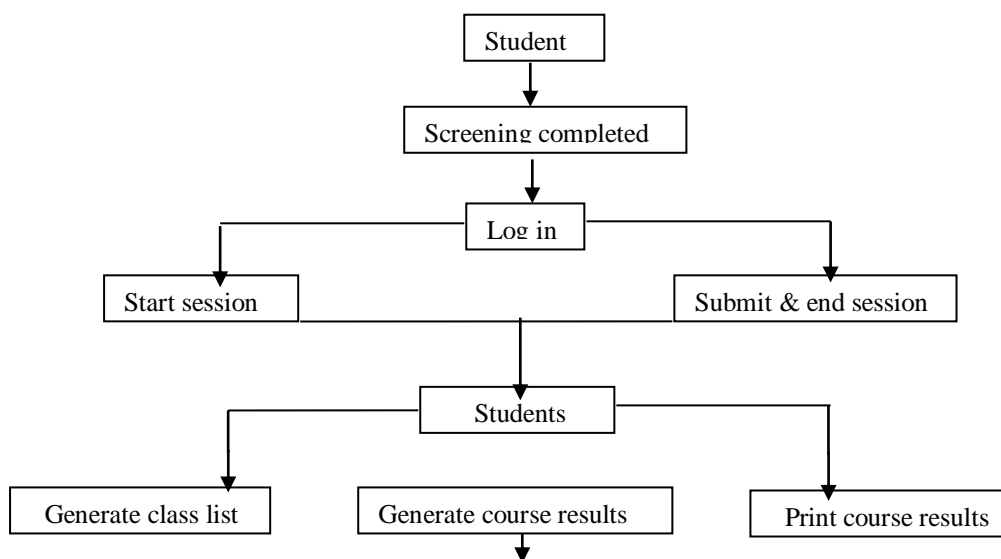


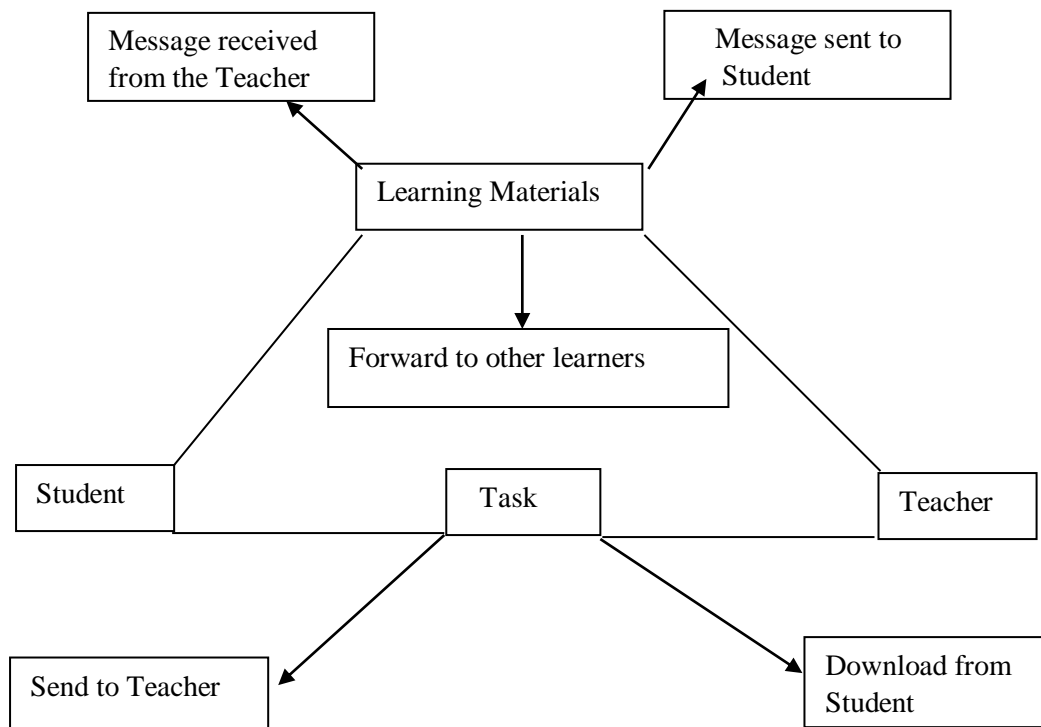*Source: International Baccalaureate Organization (2020)*
**Fig. 1 Diagram showing the beginning of activity, the entire activity and the final stage in LMS platform.**

- **Email Interactions**

Email can assist students with literacy and language learning using email exchanges and online writing exercises. The authentic learning provided by collaboration with peers gets students excited about school. The advantages of using email for teaching and learning as identified by Barnes, (2020) and are listed below:

- Increase motivation through self-directed and collaborative learning.
- Improve literacy with writing activities geared to authentic audiences.
- Gain comfort with tools and skills essential for today's workplace.

- Cultivate knowledge and cultural understanding through real-world email exchanges.
- Increased access to technology, providing new opportunities for students without home-based access.

- Engage in "anywhere, anytime learning" with access from school, library and home.



*Source: International Baccalaureate Organization (2020)*

**Fig. 2 Diagram showing Email interactions between the teacher and students**

- **Social Media Networks**

In the fast changing world of technology it is acknowledge that e-teaching and learning can take place via complex social platforms. This is can be carried out through use case activities to optimize learning by using social networks in eLearning courses. Among many examples identified by Wilson (2016) are:

- Facebook as the world's most popular service was born in 2004 to serve as an academic social network. Students logged onto Facebook from university network and used their academic e-mail address to receive announcements about the schedule of classes, academic plans and access educational materials.
- Twitter can be used share audio-visual reports of scientific conferences, symposiums, references to scientific works from teachers to students and among the students.
- YouTube social network can provide students with services of storage, delivery and demonstration of video. Users can download, view, rate, comment on, send messages and share their video clips.

- Sharing Audio Through iTalk: this makes capturing, editing, and distributing vocal audio even easier than it may seem with nowadays advancements. It allows a speaker to quote on every word.
- Hosting Complex Folder Trees with Wunderlist: this web app will help students to organize all the material needed to be processed such as folders, deadlines, commenting, reminders and check lists.
- Sharing Photos and Images Via Instagram: students can avail themselves of posting photocopies of learning materials on Instagram. It can make organized collections of photos to be easy manage and share. A student can use a unique hashtag(♯) to help the fellow students find the needed photos and pictures.
- Collaborating In Google Docs: allows easier multiple access to text documents with traceable edit history and commenting.
- Taking Notes and Scheduling in Evernote: is a very useful tool for writers. It serves as a digital draft book that can pop up on the laptop or mobile device any time when it is stimulated.
- Bookmarking With Pocket: helps to organize, store and make ready a lot of links in the Pocket. It takes bookmarking links to the shared bookmark folders for collaborative editing and organization.
- Sharing Vids With Vine: is used for giving highlights of interesting lectures including long videos. It allows students to go through an hour long video in few seconds.
- Structuring Tasks with Trello: consists advance scheduling and file hosting features that make it an ultimate platform for collaboration that will introduce real time project management to students.
- Communicating via Snapchat: is an application that allows real time collaboration during the learning sessions. It can be integrated into the classroom by a teacher so that students can do centralized

commenting, image/link sharing and texting.
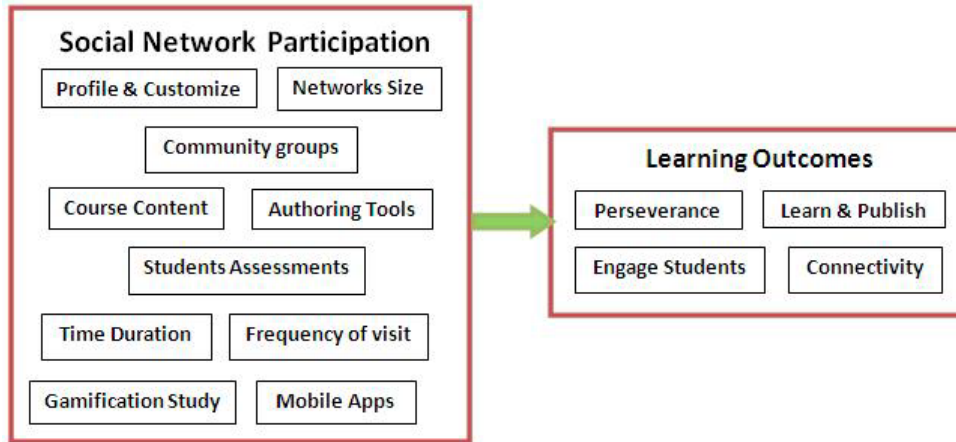
**Fig. 3 Teaching and learning interactions using social networking platforms**

## Social and Collaborative Learning

Collaborative learning is an e-learning approach where students socially interact among themselves including the instructors. In essence, learners work together in order to expand their knowledge of a particular subject or skill (Stern, 2019). In e-learning environments, this is typically done through live chats, message boards, or instant messaging. The principles of collaborative learning are that students can enrich their learning experiences by interacting and benefiting from one another's strengths (Guri-Rosenblit, 2018). Team work is encouraged with collaborative learning because students are responsible for one another's actions and tasks.

This learning method can be conducted either offline or on the web, and can be done asynchronously or synchronously. Meanwhile, Andrade (2015) remarked that collaborative learning allows students to learn from the ideas, skill sets, and experience of others enrolled in the course. Students learn variety of skills such as group analysis and collaborative teamwork building skills engaging in a shared task be it a project or lesson. This also offers an opportunity to students who are unable to attend a live event online to participate in collaborative learning through online forums, message boards, and other various posting sites that don't rely on real-time interaction.

## State of E-learning use for Teaching and Learning in Nigeria

E-learning in Nigerian schools is not as popular as it is in Europe. This is because of one strong factor that facilitates virtual learning; having accessibility to the strong Internet. The Nigeria university system for instance, is still far from ICT compliance. It looks incredible that many universities are still using traditional white-board and marker teaching method in Nigeria. Currently, the flagship tertiary institution for online learning in Nigeria is The National Open University of Nigeria (NOUN) established formally in 2002 (Timothy, Ibrahim & Femi, 2008). The Nigeria Open University combined traditional learning paradigm with visual assisted tools and teaching materials in form of video and projectors. These complimented with web-based instruction materials. This mode of

learning ensures the students obtain maximum knowledge from the facilitators. According to Godwin (2020), the conventional universities in Nigeria are still far behind in taking advantage of huge opportunities in e-learning. Most of the Universities in Nigeria are still lagging behind in taking advantage of the recent revolution in Information and Communicating Technology. Also the libraries are not computerized. In most cases when they are computerized, it is only restricted to searching of materials on the shelf (Onuora, 2020).

There is a huge advantage in online learning which is believed to have the potential of providing opportunities to provide reflective thought and deep learning through realistically integrating and apply the principle to learn. However, despite all these advantages some factors have been identified as potential disadvantages of e-learning. These include but not limited to learner isolation. Also, the need for greater discipline in writing skills, self motivation and time commitment to learning are considered as drawbacks to effective online teaching and learning in Nigerian universities. In view of all these disadvantages a blended learning approach was devised. This is achieved by combining traditional classroom environment with online learning paradigm. Sometimes, students are required to complete online test prior to taking a class in order to ensure that they share common foundation of knowledge and most recently the use of zoom platform.

## Conclusion

Educational systems in Nigerian should learn from the experience of developed nations such as America, Britain, France, Germany etc on e-learning to ensure continuity and stability

in education systems even in the face of unexpected such as pandemic. Internet, bandwidth, electricity, awareness/training and motivation are the major driver of ICT in education and also the major issue in the deployment of e-learning. Policies and programs of e-learning in Nigerian education systems should be financially supported by substantial public funding by yielding to the recommendation of the UNESCO which prescribe 26% of the annual budget for education.

## Recommendations

The paper recommends that:

i.   E-learning platforms should be used at various levels of educational institutions in Nigeria;
ii.  Stakeholders in education sector should come up with a policy framework that will enforce the adoption of e-learning in addition to conventional teaching and learning models in Nigeria;
iii. Library and information services should be digitalized with cutting edge digital infrastructure in order to partake in the information sharing networks;
iv.  Teachers and students should be encouraged to acquire proficiency in ICT skills; and
v.   Teachers should endeavour to share learning materials via electronic portals and tasks the students to using them.

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