Empirical Study on Electronic Learning System:

Benefits, Challenges and Prospects

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Abstract: The swift growth of digital technology has led to the adoption of emerging technologies in all human endeavours. Over the years, the rate of smartphone users has increased rapidly which makes so many developed nations adopt online learning as a means of taking education to everyone irrespective of their geographical location. Similarly, the COVID-19 outbreak makes so many developing countries adopt the electronic learning system as a viable approach to teaching and learning. Consequently, the e-learning system is useful for the creation of informative online sessions, supplementary lessons for students, webinars, e-mentoring and online conferences. This paper uses an empirical approach to evaluate the benefits and challenges associated with the e-learning system using two special approaches. An online questionnaire was shared among students in the higher institution in Nigeria to know the benefits and likely challenges faced by students with the e-learning system, a total of four hundred and ninety-five (495) responses were gathered and the data was analysed using descriptive statistics. The result shows that 33.94% of students complained about weak internet connectivity from the questionnaire administered which is also a major problem in most developing nations, while only 7.27% of respondents complained about limited feedback, while on the second approach, several questions were shared on Researchgate Academic website to sample researcher views across the globe about on e-learning system. it is recommended that there should be a provision of standard IT infrastructure, strong internet connectivity, user-friendly e-learning platform, and its implementation will improve performance and lead to greater productivity.

Keywords: E-learning, internet, learning platform, teaching, survey.

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Introduction

The rapid increase in the number of smart device users and the ever-dynamic growth of emerging technologies has prompted the need for a redress in the education section sector to make education accessible to all irrespective of their geographical location (Najeem Olawale Adelakun, 2022). Hence, the need for e-learning has become a necessity and will continue to be so, it is worthy of note that the outbreak of COVID-19 outbreak makes so many developing countries adopt the electronic learning system as a viable approach for teaching and learning during and after the pandemic period. It is imperative to note that electronic learning has come to stay and has been adopted by several higher institutions of learning as a vital tool for teaching and learning, and it is gaining an educational foothold worldwide (El-seoud et al., 2009; Gunasekaran et al., 2002). The following are the major factors that influenced the exigence of the e-learning system: flexibility, ease of access, reduced cost of training, availability, and convenience (Odegbesan et al., 2019). E-learning is the process whereby information and communication technologies are used to provide access to online learning/teaching resources (Arkorful & Abaidoo, 2014; Ouadoud et al., 2016). Consequently, e-learning is defined as the use of smart devices and Internet technologies to disseminate an array of results through media such as the internet, computer, visual tapes, audio, satellite broadcasting, and compact drives to provide learners with the utmost flexibility regardless of time and place of learning (FAO, 2011; Gaur Poonam, 2016; Shahmoradi et al., 2018). Similarly, the e-learning system uses the internet and other relevant teaching aid for learning, teaching and most importantly for courses regulation in an organisation (Pande et al., 2016).

The efficiency of the electronic learning system requires adequate planning and teaching to improve the quality of learning and the general performance of the students to suit the need of the learners (Liu et al., 2020). The study investigating the effectiveness of e-Learning has increased nowadays (Noesgaard & Ørngreen, 2015), which prompts a practitioner studying in a developed country to assess the strengths and weaknesses of e-learning platforms from a third-world country (Adzobu, 2014).

The global COVID-19 pandemic has made the e-learning system the safest and easiest way to impart and acquire new skills, e-learning system is useful for the creation of informative online sessions, supplementary lessons for students, webinars, e-mentoring and online conferences (N. O. Adelakun, 2020a). It is paramount that all e-learning platforms must be responsive, user-friendly, and also easy to use irrespective of the device used for connectivity (Najeem O. Adelakun & Omolola, 2020; Epignosis, 2014).

The aim of this research study is to use two major approaches: the students' perspective and the researcher's perspective to examine the present state of e-learning system its benefits and the likely challenges that may hindered effective delivery of teaching and learning from respondents and researchers from different part of the world.

Literature Review

Several pieces of literature were reviewed, studied, examined, and the appropriate techniques were adopted to improve performance and productivity.

Major Online Learning Management System platform

E-Learning platform can be known as a technique whereby online interactive programs give learners access to knowledgeable resources to enhance educational delivery, class management, and prevention of submission errors through the Internet (Benta et al., 2014; FAO, 2011; Obeidallah & Shdaifat, 2020). The suitable approach to any meaningful e-learning system is to make it simple to use and straightforward (Kamba, 2009). There are several online learning management system platforms with different levels of functionality and complexity, the table below displays major e-learning platforms in use in no chronological order.

Table 1 Major Online Learning Management System (Najeem O. Adelakun & Omolola, 2020)

Zoom	Moodle	Edmodo	Google Meet
Google Classroom	Microsoft Teams	Blackboard	Edjet
Skype	IMO	Whatsapp	YouTube
Teachable	Learnworlds	WiziQ	Thinkific
LearnDash	Skillshare	Docebo	Slack
Edpuzzle	Cisco Webex meeting	Google Duo	Canvas
Sakai	Academy of Mine	Schoology	Showbie
itslearning	Adobe Captivate	Shift	Elucidat
Coursera	Articulate 360	Udemy	Podia
Kajabi	Ruzuku	Educadium	Paradiso LMS
CourseCraft	360 Learning	TalentLMS	OpenOlat
ATutor	ISpring Learn	Opigno	Ilias
Forma LMS	Latitute Learning	Coggno	Eliademy
Dokeos	Claroline	Chamilo	DigitalChalk

Research Method

The study implemented two separate research processes: An online questionnaire and a survey to study the respondent's individual learning experiences. The first study used an online questionnaire for collecting data from students of The Federal Polytechnic Ilaro, which cuts across students from different levels and fields of study. The second study adopted the use of an online Question/Answer forum on Researchgate Academic website to obtain qualitative data from academicians and researchers from different parts of the world to know what is achievable in their countries for robust research and their views on the e-learning system.

A total of four hundred and ninety-five (495) responses were gathered from the online questionnaire. The table below shows the demographic profile of the respondents who took part in the questionnaire.

Table 2: Questionnaire on Major Challenges of the E-Learning System

S/N	Major Challenges of E-Learning	Male Respondents	Female Respondents	Total number of respondents
1.	Social Isolation	31	18	**49**
2.	Feedback is limited	29	7	**36**
3.	High cost of using Internet	86	23	**109**
4.	Weak internet connection	135	33	**168**
5.	Low level of Assimilation	64	19	**83**
6.	Lack of Communication Skill development	39	11	**50**
	Total Respondent	**384**	**111**	**495**

(Source: Extracted from the questionnaire conducted)

Result and Discussion

Results

The section displayed the key benefits, challenges and the way forward for effective delivery of the e-learning system.

Benefits of the E-learning System

Some of the key benefits of the e-learning system include but are not limited to the following:

- It enhances student ICT skills.
- It provides swift and enormous access to learning resources.

- Easy distribution of learning resources.
- It is Scalable i.e. ability to serve a large number of students at a low cost
- Easy creation of study materials.
- It promotes active and independent learning.
- Flexible: lectures can be taken at learner's pace.
- It promotes a carbon-free environment.
- It offers self-paced learning and personalization.
- It enhances retention capability.

Challenges of the E-learning System

After an empirical study of the questionnaire, the online questions and answers forum, and also from information obtained from the review of similar studies, it is apparent that several challenges arise from the e-learning system. Some of the major challenges faced by the e-learning system globally include but are not limited to the following: Weak internet connection.

- High cost of using the internet
- Lack of human interaction
- Financial restriction i.e., absence of computer/smart devices
- Adaptability Struggle
- Technical issues
- Lack of self-motivation
- Intermittency of Electricity Supply.
- The Complexity of the system
- Lack of perfect e-learning authoring tool/learning platform.
- Social isolation
- Low level of computer literacy
- Lack of adequate awareness.
- Low level of assimilation
- Feedback is limited

Prospects of the E-learning System

From all indications, in the years to come e-learning systems will be adopted as the major form of learning globally, the e-learning system usage has increased especially during this pandemic period. The following are the suggestions for the effective delivery and optimal performance of the e-learning system: Establishment of standard IT infrastructure.

- Establishment of standard IT infrastructure.
- Adoption of expert judgment from developed countries
- Provision of cheaper internet connectivity.
- Familiarising learners and teachers with the development and use of e-learning material.
- Provision of user-friendly e-learning platform.
- Provision of remote desktop software for credible exam administration.
- Provision of stable electricity supply.

Discussion

This paper has used an empirical approach to examine the benefits and challenges of the e-learning system, and a solution to the challenges for the smooth operation of the e-learning system was proffered. From the online questionnaire conducted it is alarming that students face different challenges; It should be noted that a smaller number of female respondents about 22.42% participated in the questionnaire while 77.58% of male respondents participated in the questionnaire as shown in Figure 1.

Figure 2. Illustrates with a chart the major challenges students faced with the e-learning system, it was observed from the results chart that a larger number of respondents complained about weak internet connection which hindered the smooth operation of the e-learning system, while the least numbers of respondents complained that limited feedback affected their capabilities.

$\frac{384}{495}$ x 100% = **77.58%** Percentage of male respondents

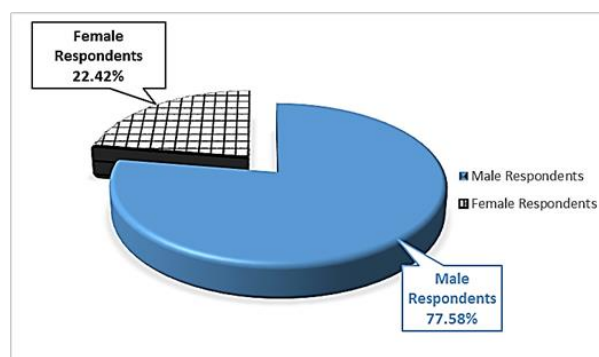$\frac{111}{495}$ x 100% = **22.42%** Percentage of female respondents

Figure 1 The percentage of male to female respondents in the e-learning system

Table 3 The Total Percentage of Major Challenges with the E-Learning System

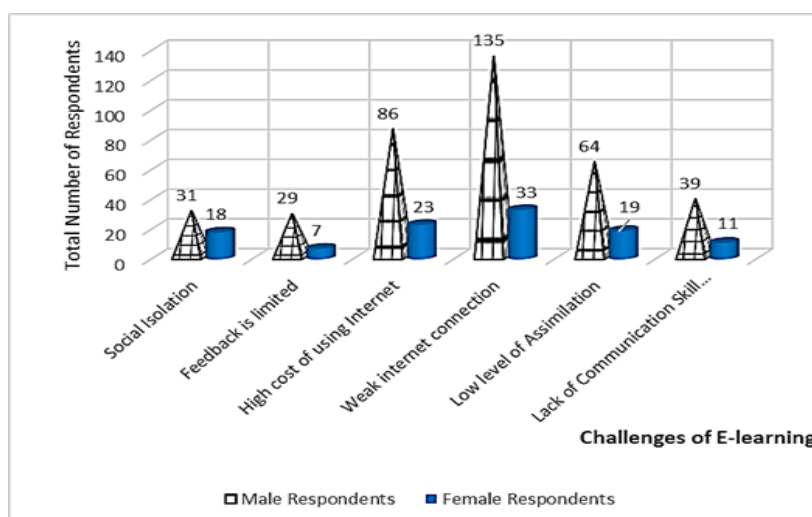| Major Challenges of E-Learning	Total Percentage of respondents
Social Isolation	$\frac{49}{495}$ x 100% = **9.90%**
Feedback is limited	$\frac{36}{495}$ x 100% = **7.27%**
High cost of using the Internet	$\frac{109}{495}$ x 100% = **22.02%**
Weak internet connection	$\frac{168}{495}$ x 100% = **33.94%**
Low level of Assimilation	$\frac{83}{495}$ x 100% = **16.77%**
Lack of Communication Skill development	$\frac{50}{495}$ x 100% = **10.10%**
Total	**100%**

Figure 2 Chart comparing major challenges of the e-learning system
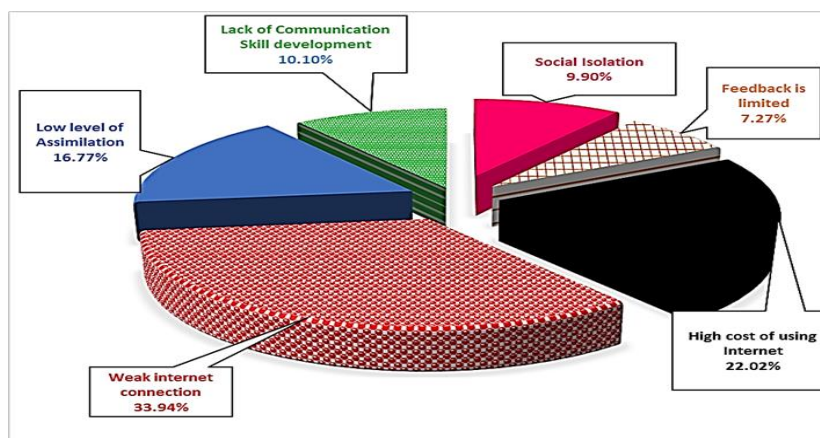

Figure 3 The percentage of major challenges with the e-learning system

However, table 3. Shows the percentage of major challenges with the e-learning system, which is illustrated graphically in Figure 3 also, where weak internet connection has the highest percentage of 33.94% while low level of assimilation with 16.77%, lack of communication skill development with 10.10%, Social isolation with 9.90%, feedback is limited with 7.27% and high cost of using the internet with 22.02%.

Similarly, from data obtained from the question and answer platform on Researchgate from researchers/academicians across the globe, it was observed that different nations have different challenges and benefits, but a larger percentage of researchers from developing nations complained about two major challenges which are the weak internet connection and high cost of using the internet, the two major challenges are also similar to the major challenges from the questionnaire conducted at federal polytechnic Ilaro, and it is also emphasized that credibility of e-learning exam in a remote location cannot be ascertained except a remote desktop software is implemented for proper and effective monitoring to prevent malpractice and abnormality during the exam (N. O. Adelakun, 2020c, 2020b, 2020d, 2020e, 2020a).

Conclusion

The study concluded that e-learning system adoption will continue to rise globally due to its flexibility, ease of access, reduced cost of training, availability, and convenience. It should be noted that underdeveloped nations are yet to adopt the e-learning system while some developing nations face challenges with the high cost of using the internet, from the online questionnaire conducted at the Federal Polytechnic Ilaro, The result shows that 33.94% of students complained about weak internet connectivity from the questionnaire administered which is also a major problem in most developing nations, while only 7.27% of respondents complained about limited feedback form the lecturers/facilitators. Similarly, the data collected from the online Questions and Answers forum on Researchergate from researchers across the globe it was discovered most researchers from developing countries complained about weak internet connection and high cost of using the internet. It is pertinent to note that the credibility of the e-learning exam in a remote location cannot be ascertained except that remote desktop software is implemented for proper and effective monitoring to prevent malpractice and abnormality during the exam. It is recommended that there should be a provision of standard IT infrastructure, strong internet connectivity, and a user-friendly e-learning platform, its implementation will improve performance and lead to greater productivity.

Acknowledgements

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