A Pragmatic Study on E-Learning System for Higher Education in Developing Countries

Najeem Adelakun & Samuel Omolola
Department of Electrical/Electronics Engineering
Federal Polytechnic, Ilaro, Ogun state, Nigeria.
adelakunnajeem@gmail.com; samuelomolola@gmail.com

ABSTRACT

The Internet has become one of the greatest inventions of mankind for learning and sharing of useful information through electronic means. For some years now, the developed nations have adopted the use of the e-learning system. Presently, the COVID-19 outbreak has given rise to the adoption of the e-learning system by many countries of the world being the most viable alternative for teaching and learning. This paper uses a pragmatic approach to evaluate the benefits and challenges associated with the e-learning system. A survey was conducted among students in a higher institution and a total of one hundred and twenty-five responses was gathered from the online questionnaire to know the likely challenges faced by students with the e-learning system and also at an online researchers’ forum. The result shows that 30.40% of students complained about weak internet connectivity from the questionnaire administered which is also the major problem in most developing nations, and for optimal performance of the e-learning system, there should be adequate provision for strong internet connectivity, standard IT infrastructure, and user-friendly e-learning platform.

KEYWORDS: COVID-19, e-learning, learning platform, survey, teaching.

1. INTRODUCTION

The evolution of modern computer and smart devices revamped the learning structure, the need for e-learning has risen remarkably and will continue doing so, as society starts adapting to social distancing, it is imperative to note that electronic learning has come to stay been the most viable approach for learning especially during this pandemic period. Many higher institutions of learning have adopted the e-learning process as an important tool and it is gaining an educational foothold worldwide (Abou El-el-seoud et al., 2009; Gunasekaran et al., 2002). The emergence of the e-learning system is influenced by several factors which include but not limited to ease of access, flexibility, availability, reduced cost of training, and convenience (Odegbesan et al., 2019). E-learning is known as the use of information and communication technologies to provide access to online learning/teaching resources (Arkorful & Abaidoo, 2014). In a broader view, e-learning can be defined as the use of computer 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 utmost flexibility regardless of time and place of learning (Ghirardini, 2011; Poonam, 2015; Shahmoradi et al., 2018). Similarly, e-learning includes the use of the internet and other relevant teaching aid to produce learning materials, teach learners, and also regulate courses in an organization (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. E-learning can suit the needs of both active and passive learning (Liu et al., 2020). The study investigating the effectiveness of e-Learning has increased nowadays (Noesgaard & Ørngreen, 2015), which prompt a practitioner studying in a developed country to assess the strengths and weaknesses of different e-learning platforms from the viewpoint of a user from a third world country (Adzobu, 2014).

The global COVID-19 pandemic has made e-learning system the safest and easiest way to impart and acquire new skills, e-learning system is useful for creation of informative online sessions, supplementary lessons for students, webinars, e-
mentoring and online conferences (Adelakun, 2020d). Several e-learning authoring tools/learning management system platforms help lecturers/tutors to deliver lectures with ease. It also provides the learners with the flexibility to learn at a remote location and also gives room for the exploitation of additional knowledge (Epignosis, 2014). 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 (Adelakun et al., 2020f).

E-Learning platform can be defined as an array of online interactive programs that give learners access to knowledgeable resources to enhance educational delivery, class management, and prevention of submission errors through the Internet (Ghirardini, 2011; Benta et al., 2014). Several educational institutions and organisations use different e-learning platforms to deliver and manage their learning processes. Technological prerequisites of the approach adopted should be kept to a minimum to increase the participation and implementation (Kamba, 2009).

There are several benefits associated with e-learning which include but not limited to: enhancing the student Information Technology skill, making available swift and enormous access to learning resources, easy distribution of learning resources, ability to serve a large number of students at low cost, quick creation and revision of study materials, it promotes active and independent learning, flexibility: lectures can be taken at any location, it promotes a carbon-free environment, it offers self-paced learning and personalization, it enhances retention capability (Noesgaard & Ørngreen, 2015; Adelakun, 2020d).

There are several online learning management system platforms with different levels of functionality and complexity, the table below displayed major e-learning platforms in use in no chronological order.

Table 1: Major Online Learning Management System

| 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    |
| CourseSera    | Articulate 360  | Udemy           | Podia       |
| Kajabi        | Ruzuku          | Educadium       | Paradiso LMS|
| CourseCraft   | 360 Learning    | TalentLMS       | OpenOlat    |
| ATutor        | ISpring Learn   | Opigno          | Ilias       |
| Forma LMS     | Latitude Learning | Coggno         | Eliademy    |
| Docos         | Claroline       | Chamilo         | DigitalChalk|

Source: (Adelakun, 2020e; Dalton, & Turner, 2020; Ouadoud et al., 2016; Obeidallah & Shdaifat, 2020; Raouna, 2020; Parr, 2020; Ann, 2018).

This paper uses a pragmatic approach to evaluates the benefits and challenges associated with the e-learning system, several pieces of literature were studied, reviewed, analysed, and the suggestions pointed out was also worked on for effective delivery.

2. METHODOLOGY

In this study, two separate research processes were implemented: A questionnaire and a survey to study the respondent's individual learning experience. The first study used an online questionnaire for collecting quantitative and qualitative data from students of Federal Polytechnic Ilaro, which cuts across different cadres of students irrespective of gender, age, or departments. The second study used an online Question / Answer forum on researchgate to obtain qualitative
data from researchers and academics from different parts of the globe on their own e-learning experience as well as their advice for effective delivery.

Table 2 – Questionnaire On Major Challenges of E-Learning System

| S/N  | Major Challenges of E-Learning          | Male Respondent | Female Respondents | Total number of respondents |
|------|----------------------------------------|-----------------|--------------------|-----------------------------|
| 1.   | Social Isolation                       | 8               | 3                  | 11                          |
| 2.   | Feedback is limited                    | 6               | 2                  | 8                           |
| 3.   | High cost of using Internet            | 26              | 6                  | 32                          |
| 4.   | Weak internet connection               | 28              | 10                 | 38                          |
| 5.   | Low level of Assimilation              | 17              | 4                  | 21                          |
| 6.   | Lack of Communication Skill development| 12              | 3                  | 15                          |
|      | Total Respondents                      | 97              | 28                 | 125                         |

Source: Extracted from the questionnaire conducted

After a pragmatic 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 with the e-learning system globally include but not limited to; weak internet connection, high cost of using the internet, lack of human interaction, financial restriction i.e. lacks 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, the credibility of the e-learning exam in a remote location cannot be ascertained.

3. RESULTS AND DISCUSSION

This paper has used a pragmatic approach to evaluate the benefits and likely challenges associated with the e-learning system. From the questionnaire conducted online, it is appalling that students face different challenges, Table 3 shows the percentage of major challenges with the e-learning system. Fig. 1 displays a chart comparing major challenges students faced with the e-learning system, and it is clear that weak internet connection and high cost of using internet are the major challenges faced by students with the e-learning system.

Fig. 3. displays the percentage of major challenges with the e-learning system, where weak internet connection has the highest percentage of 30.40% while low level of assimilation with 16.80%, lack of communication skill development with 12.00%, Social isolation with 8.80%, feedback is limited with 6.40% and high cost of using the internet with 25.60%. Similarly, from the question and answer forum from researchgate, the qualitative data obtained from different researchers/academics shows that different countries have different challenges and benefits, but the majority of researchers complained about weak internet connection and high cost of using the internet which is also similar to the survey 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 (Adelakun, 2020a; Adelakun, 2020b; Adelakun, 2020c; Adelakun, 2020d; Adelakun, 2020e; Adelakun et al., 2020f).

16
Table 3 – The Total Percentage of Major Challenges with The E-Learning System

| Major Challenges of E-Learning                  | Total Percentage of respondents |
|------------------------------------------------|---------------------------------|
| Social Isolation                               | 11/125 x 100% = 8.80%          |
| Feedback is limited                            | 9/125 x 100% = 6.40%           |
| High cost of using Internet                    | 22/125 x 100% = 25.60%         |
| Weak internet connection                       | 30/125 x 100% = 30.40%         |
| Low level of Assimilation                      | 21/125 x 100% = 16.80%         |
| Lack of Communication Skill development        | 15/125 x 100% = 12.00%         |
| **Total**                                      | **100%**                       |

Fig. 1 – Chart comparing major challenges of e-learning system
Fig. 2 – The percentage of male to female respondents in the e-learning system

It should be noted from the questionnaire conducted that 77.60% of male respondents participated while 22.40% were female respondents as shown in quantitative and Fig. 2.

\[
\frac{97}{125} \times 100\% = 77.60\% \text{ Percentage of male respondents}
\]

\[
\frac{28}{125} \times 100\% = 22.40\% \text{ Percentage of female respondents}
\]

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

From all indications, in the years to come e-learning system will be adopted as the major form of learning globally, the e-learning system usage has increased especially during this pandemic period. However, for effective delivery and optimal performance of the e-learning system, there should be; establishment of standard IT infrastructure, adoption of expert judgment from developed countries, provision of strong internet connectivity at a cheaper rate, familiarizing
learners and teachers to the development and use of e-learning material, usage of a dynamic e-learning platform that is user friendly and easy to use, a remote desktop software should be adopted for credible exam administration, provision of stable electricity supply.

4. CONCLUSION

The need for e-learning has risen remarkably and will continue doing so, a suitable approach for effective delivery e-learning system must be put in place. This paper has used a pragmatic approach to evaluate the benefits and likely challenges associated with the e-learning system. It should be noted that some developing and less-developed nations are yet to adopt the e-learning system while those that have adopted it have more challenges with the transitioning. From the questionnaire distributed and obtained from the students of the Federal Polytechnic, Ilaro, the result shows that 30.40% of students complained about weak internet connection which is the highest, while 6.40% of students complained about limited feedback, the result is similar to qualitative data obtained from researchgate questions and answer forum. Furthermore, the credibility of the e-learning exam depends on the implementation of remote desktop software. Hence, for optimal performance of the e-learning system, there should be provision for modern technology, availability of well-trained personnel, provision for strong internet connectivity, standard IT infrastructure, user-friendly e-learning platform, and adequate awareness and sensitization on the usage of the system.

5. ACKNOWLEDGEMENTS

The authors sincerely acknowledge the active responses of the students to the questionnaire and also our profound gratitude to all research scholars that contributed on Researchgate. All your contributions and participation are highly appreciated.

6. REFERENCES

Abou El-seoud, M. S., Taj-Eddin, I. A. T. F., Seddiek, N., El-khouly, M. M., & Nosseir, A. (2009). E-Learning and Students’ Motivation: A Research Study on the Effect of E-Learning on Higher Education. International Journal of Emerging Technology in Learning, 9(4), 20–26. https://doi.org/http://dx.doi.org/10.3991/ijet.v9i4.3465
Adelakun, N. O. (2020a). Dear Researchers, what are the likely challenges students encounter with e-learning system. https://www.researchgate.net/post/Dear_Researchers_What_are_the_likely_challenges_students_encounter_with_e-learning_system [Accessed July 27, 2020].
Adelakun, N. O. (2020b). How credible is online examination? https://www.researchgate.net/post/How_credible_is_online_examination [Accessed July 27, 2020].
Adelakun, N. O. (2020c). Online teaching versus Classroom teaching, which one do you prefer and why? https://www.researchgate.net/post/Online_teaching_versus_Classroom_teaching_which_one_do_you_prefer_and_why [Accessed July 27, 2020].
Adelakun, N. O. (2020d). What are the major benefits of e-learning system especially during this pandemic period? https://www.researchgate.net/post/What_are_the_major_benefits_of_e-learning_system特别是在_pandemic_period [Accessed July 27, 2020].
Adelakun, N. O. (2020e). What is the best interactive e-learning platform you are using for online classes? https://www.researchgate.net/post/What_is_the_best_interactive_e-learning_platform_you_are_using_for_online_classes [Accessed July 27, 2020].
Adelakun, N. O., Olanipekun, B. A., & Bakinde, S. A. (2020). Easy Approach to A Responsive Website Design Using Artisteer Application Software. In International Research Journal of Modernization in Engineering Technology and Science (Vol. 2, Issue 3).
Adzobu, Y. N. A. (2014). Design, Use and Evaluation of E-Learning Platforms: Experiences and Perspectives of a Practitioner from the Developing World Studying in the Developed World. Informatics, 1, 147–159. https://doi.org/10.3390/informatics1020147
Ann, M. (2018). 10 elearning platforms you can use for online courses. https://elearningindustry.com/elearning-platforms-use-online-courses-10 [Accessed July 27, 2020].
Arkorful, V., & Abaidoo, N. (2014). The role of e-learning, the advantages and disadvantages of its adoption in Higher Education. International Journal of Education and Research, 2(12), 397–410.
Benta, D., Bologa, G., & Dzitac, I. (2014). E-learning Platforms in Higher Education. Case Study E-learning Platforms in Higher Education. Case Study. *Procedia - Procedia Computer Science, 31*(June), 1170–1176. https://doi.org/10.1016/j.procs.2014.05.373

Dalton, W & Turner, B. (2020). Best online learning platforms of 2020: LMS and VLE for education. https://doi.org/, https://www.techradar.com/best/best-online-learning-platforms [Accessed July 27, 2020].

Epignosis, L. (2014). E-learning Concepts, Trends, Applications (E. LLC (ed.)).

Ghirardini, B. (2011). E-learning methodologies (FAO (ed.)) FAO.

Gunasekaran, A., Mcneil, R. D., & Shaul, D. (2002). E-learning: Research and applications. *Industrial and Commercial Training, 34*(2), 44–53. https://doi.org/10.1080/00197850210417528

Kamba, M. A. (2009). Problems, Challenges and Benefits of Implementing E-learning in Nigerian Universities: An Empirical Study. *International Journal of Emerging Technology in Learning, 4*(1), 66–69. https://doi.org/10.3991/ijet.v4i1.653

Liu, Z.-Y., Lomovtseva, N., & Korobeynikova, E. (2020). Online Learning Platform: Reconstructing Modern Higher Education. *International Journal of Emerging Technology in Learning, 15*(13), 4–21.

Noesgaard, S. S., & Ørngreen, R. (2015). The Effectiveness of E-Learning: An Explorative and Integrative Review of the Definitions, Methodologies and Factors that Promote e-Learning Effectiveness. *The Electronic Journal of E-Learning, 13*(4), 278–290.

Obeidallah, R., & Shdaifat, A. (2020). An Evaluation and Examination of Quiz Tool within Open-Source Learning Management Systems. *International Journal of Emerging Technology in Learning, 15*(10), 191–201. https://doi.org/10.3991/ijet.v15i10.11638

Odegbesan, O. A., Ayo, C., Oni, A. A., Adeoba, T. F., Okezie, C. G., & E, Udenwagu, N. E. (2019). The prospects of adopting e-learning in the Nigerian education system: a case study of Covenant University. *IOP Conf. Series: Journal of Physics: Conf. Series, 1299*(012058), 1–16. https://doi.org/10.1088/1742-6596/1299/1/012058

Ouadoud, M., Amel Nejjari, M. Y. C., & El Kadiri, K. E. (2016). Studying and Comparing the Free E-learning Platforms. *IEEE: Information and Communication Technology for Education, 581*–586. https://doi.org/10.1109/CIST.2016.7804953

Pande, D., Wadhai, V. M., & Thakare, V. M. (2016). E-Learning System and Higher Education. *International Journal of Computer Science and Mobile Computing, 5*(2), 274–280.

Parr, S. (2020). *List of Online Learning Platforms*. https://www.paradisosolutions.com/blog/list-of-online-learning-platforms/ [Accessed July 27, 2020].

Poonam, G. (2015). Research Trends in E-Learning Poonam Gaur. *Media Communique, 1*(1), 29–41.

Raouna, K. (2020). *The 11 Best Online Learning Platform*. https://www.learnworlds.com/online-learning-platforms [Accessed July 27, 2020].

Shahmoradi, L., Changizi, V., Mehraeen, E., Bashiri, A., Jannat, B., & Hosseini, M. (2018). The challenges of E-learning system: Higher educational institutions perspective. *Journal of Education and Health Promotion, 7*(September), 1–6. https://doi.org/10.4103/jehp.jehp

---

**How to Cite**

*Adelakun, N. O. & Omolola S. A. (2020), A Pragmatic Study on E-Learning System for Higher Education in Developing Countries, Proceedings of the 1st National Conference, Nigerian Society of Engineer, Ilaro Branch, Ogun State, Nigeria. November 2-3, Pp 14-20*