Effect of E-Learning in the post- COVID-19 era on Students' Academic Performance in Ahmadu Bello University (ABU) Zaria, Kaduna State Nigeria.

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Abstract

This study examines the impact of E-learning system on the students' academic performance and the quality of education in the post COVID-19 era in Ahmadu Bello University Zaria. The research used mixed method approach utilizing both qualitative and quantitative data. The research is an empirical and employed both primary and secondary sources. For the primary data, questionnaires were administered using Google form. Interviews were conducted with randomly selected students. Quantitative results were presented using Frequency tables, simple percentage and Pearson's Product Moment Correlation. Qualitative data from the interviews were thematically presented to support quantitative data. Findings of the study revealed that E-learning has positive impact on students' academic performance and the quality of education in Ahmadu Bello University Zaria in the post COVID-19 era. It was also discovered that electric power interruption, poor network in remote areas and lack of sufficient fund to buy data were the most critical challenges to efficient online teaching in the University. The study recommends the need to improve internet and power supply. It was also recommended the use of Audio, Video, eBooks and Learning Management System (LMS) so as to improve the performance of the students in the E-learning program.

Key words: E-Learning, post- COVID-19, Academic Performance, Education

Introduction

The discovery of the COVID-19 in December 2019 forced many universities to remain closed temporarily. This situation challenged the education system across the globe and overnight changed the mode of teaching from traditional pedagogical approach to online. Academic institutions that were reluctant to shift to E-learning remained closed until the disappearance of the pandemic. Numerous areas had been affected worldwide and responded differently due to likely recurrence of such obstruction to learning in the future.

In response to the declaration of the disease as a global pandemic in March 2020, many Universities quickly changed the mode of teaching from face-to-face learning system to

online approach (Su, 2020); whereas many universities had no alternative than to close down their schools. However, such closure has its negative consequences on students' learning and academic performance (Huang, Liu, Tlili, Yang, Wang, 2020). To avoid this negative impact, many universities had resolved to maintain the E-learning mode even after the pandemic while others especially in the developing countries maintained the traditional face-to-face mode of teaching. Though there has been E-learning prior to COVID-19 in the ABU Distance Learning Centre (ABUDLC), but Department of Computer Engineering in Ahmadu Bello University Zaria is the pioneering department for E-learning in the post COVID-19 era for regular students in the University.

Although E-learning has proven to be an efficient and effective alternative modern method of delivering lecture and materials offline, but Studies (Selim, 2007; Farooq, 2020; Aini, Budiarto & Putra, 2020; Ardini, Setia, Iswara, & Retnani, 2020) indicate that heavy reliant on E-learning has its own challenges not only to the institutions but to the lecturers and students.

While there are numerous studies on E-learning in Asia and western countries(Selim, 2007; Farooq, 2020; Aini, Budiarto & Putra, 2020; Ardini, Setia, Iswara, & Retnani, 2020; Rannastu-Avalos & Siiman, 2020 e.t.c), but sufficient studies on E-learning during and post COVID-19 era in African universities is lacking. This paper examines the challenges of E-learning mode of delivery in the Ahmadu Bello University Zaria and its impact on students' performance with the view to propose solution to the problems. Efficient and effective use of E-learning systems depends on how these challenges are tackled. Proper investigation of these challenges would provide better guide and alternative for stakeholders including the universities and policy makers to properly address the difficulties being encountered by both students and lecturers in the E-learning system.

Research Questions

The following are the research questions guiding the study: -

a. What is the relationship between students' easy access to online learning platform and student's ability to discuss with other students during online activities?
b. Is there relationship between student's access to online learning platform and student's ability to work in a group during online activities?
c. What is the relationship between student's access to online learning platform and student's collaboration with other students during online activities?
d. Is there relationship between student's access to online learning platform and student's ability to pass a course on the learning platform without their teacher's assistance?

Research Objectives

The following are the research objectives guiding the study: -

a. To examine the relationship between students' easy access to online learning platform and student's ability to discuss with other students during online activities.
b. To analyse the relationship between students' access to online learning platform and student's ability to work in a group during online activities.
c. To describe the relationship between students' access to online learning platform and student's collaboration with other students during online activities.
d. To examine the relationship between students' access to online learning platform and student's ability to pass a course on the learning platform without their teacher's assistance.

Research Hypotheses

The study hypothesized that:

H_{o1} : There is no significant relationship between students' easy access to online learning platform and student's ability to discuss with other students during online activities.

H_{o2} : There is no significant relationship between student's access to online learning platform and student's ability to work in a group during online activities.

H_{o3} : There is no significant relationship between student's access to online learning platform and student's collaboration with other students during online activities.

H_{o4} : There is no significant relationship between student's access to online learning platform and student's ability to pass a course on the learning platform without their teacher's assistance.

Literature Review

This section reviews extant literature relevant to E-learning practice and difficulties being encountered in its delivery. The section also reviews existing literature on the effects of E-learning on students' academic performance.

Challenges of E-learning

Among the challenges of E-learning is the acceptability challenge; because the success or failure of the new policy depends on its acceptability to the public. Studies (Farooq et al. 2020) indicate that lack of acceptability of E-learning is likely to affect the success of the policy. Selim (2007) identified critical success factors (CSFs) for E-learning in universities. These include the technical support for the institution, lecturers' attitude and IT competency, effective infrastructure, students' discipline and time management. Though E-learning demands students to study freely, but they are likely to be compounded by low motivation to

study and ineffective communication with their colleagues (Rannastu-Avalos & Siiman, 2020). This may be aggravated where the ICT knowledge is low (Aini, Budiarto & Putra, 2020). Poor internet coverage or limited Internet data packages are also obstacles to E-learning students, especially in developing countries (Farooq et al. 2020). Learning virtually imposes difficulties for students (Rannastu-Avalos & Siiman, 2020), especially in schools where there is no standard system for delivering online learning, students may find themselves using various education platforms for different courses (Aini, Budiarto & Putra, 2020). Lecturers who are not ICT inclined find it difficult to deliver teaching via online platform (Farooq et al., 2020). Lecturers spend more time preparing for E-learning compared to offline learning (Rannastu-Avalos & Siiman, 2020). In this era of modern technology, online education has increasingly been recognized as a well-accepted learning method in universities; this is because E-learning is considered as a flexible alternative method that helps student access full-time education. Despite these advantages, some institutions still resist E-learning. This is because E-learning requires technical and financial support to provide reliable delivery (Aini, Budiarto & Putra, 2020). This to a large extent would likely enhance students' performance and lecturers' enthusiasm to teach. Supporting this view, study of E-learning in University of Benghazi Libya indicate that, low-quality of Internet services and other technical and financial support, training, improved working conditions, skills, copyright protections and professional development were the most critical challenges for the implementation of E-learning in public universities (Maatuk, Elberkawi, Aljawarneh, Rashaideh & Alharbi, 2021). Corresponding study (Aini, Budiarto, Putr & Rahardja, 2020) found that internet connectivity, E-learning system support, technological and self-regulation are the main challenges for E-learning delivery. While competency, operational, self-regulation, and isolation were the main challenges for lecturers. Financial support and change management were found to be the challenges for effective E-learning delivery. But in Nepal

electricity and internet problems were the core challenges of E-learning during the COVID-19 pandemic. Though E-learning is a good opportunity to continue education but it's not effective in most developing countries like Nepal (Subedi, Nayaju, Subedi, Shah& Shah, 2020). Thus online learning method is an effective method of dissemination of knowledge for many Universities in the contemporary world. But not all the training institutions have sufficient conditions, resources, and experience to carry out online learning, especially in under-resourced developing countries (Oyediran, Omoare, Owoyemi, Adejobi & Fasasi, 2020). Yet teaching-learning platforms have rapidly changed during the COVID-19 pandemic from offline to online classrooms on a global scale (Aslam & Sonkar, 2021). Nevertheless E-learning has its shortcoming mostly in developing countries, but has more accessibility, affordability and flexibility (Dhawan, 2020). This makes E-learning to be considered by students as effective method for dissemination of knowledge, but there are still obstacles which need to be considered for effective and efficient E-learning delivery (Ardini, Setia, Iswara, & Retnani, 2020). Cultural and contextual-oriented support is crucial for developing a safe learning environment (Ardekani, Hosseini, Tabari, Rahimian, Feili, Amini & Mani, 2021). Similarly constraints were found to be the major obstacles to the compliance and prospects of e-learning in the Private Tertiary Institutions in Nigeria (Oyediran, Omoare, Owoyemi, Adejobi & Fasasi, 2020).

This indicates that though E-learning is an effective method of disseminating knowledge in the modern world due to its flexibility and ability to provide wider coverage and participation at low cost. However E-learning has found to be very difficult to implement mostly in developing countries due to challenges of inadequate power supply and poor internet accessibility, finance and insufficient ICT knowledge to both students and facilitators/lecturers.

E-learning and Students' Performance

E-learning is considered as an effective teaching method that encourages active engagement of students and mitigating poor performance through the use of small group activities and projects (Olusegun, 2023). E-learning parameters alone can predict student' performance and limit grade inflation in the age of online learning due to educational malpractices (Alsharhan, Salloum & Aburayya, 2021). Though E-learning contributes to learning, but it reduces the workload on faculty and increases it on students (Elberkawi, Aljawarneh, Rashaideh& Alharbi, 2021). E-learning also has a negative effect on the attitudes of secondary school students in Nigeria and not effective as traditional face-to-face teaching due to poor internet connectivity, lack of collaborative activities, unavailable and accessible E-learning materials to students (Olusegun, 2023). The study focused on secondary school students in Nigeria but with the exception of University students. Another study by Agbo, Onayemi1& Edo (2022) found that network problem, limited time and inability to use online facilities were also found to be the main challenges for E-learning among the Nursing students. Thus students differs in their performance, those rated with high performance want online education to continue while those with low rating were those low academic performance. Conversely, Adebayo, Saini & Singh (2021) observed that despite the challenges encountered in the E-learning during the COVID-19 pandemic, the outcomes come to be satisfactorily favouring online learning. Supporting this study Rossettini,Geri, Turolla,Viceconti, Scumà1, Mirandola, Dell'Isola, Gianola, Maselli, & Palese (2021) found that students in Italy favoured online teaching over face-to-face teaching. But Abdullah, Al-Ayyoub, AlRawashdeh &Shatnawi (2021) found that the proportion of students with high marks remained similar to that of pre-pandemic courses. This shows that there is no significance difference between performance of students before and after the pandemic. This indicates that students are indifference in their performance between the face-to-face and online mode of teaching. While Mahdy (2020) observed that although E-learning affords a chance for self-study, but it become very difficult

for veterinary medical science students to have practical lessons via E-learning since most of the subjects are practical. Corroborating study (Ichsan, Sigit, Edi, Dewi, Wirdianti, Hermawati & Marhento, 2020) found that Whatsapp was the highest E-learning media with 65.54% and concludes that E-learning was not yet perfect and needs to be improved. Supporting study by Mok, Xiong & Bin Aedy Rahman (2021) in Hong Kong University shows that students were not satisfied with their online learning experiences and effectiveness. Income level and ICT literacy have effect on effectiveness of E-learning. On the contrary, Torad, Ahmed & Elkalla (2023) found that online learning was an effective teaching method for physical therapy students during the COVID-19 pandemic with respect to basic medical knowledge. But its impact on clinical and practical skills of the students was not confirmed. Similarly Anwar, (2020) study of the undergraduate medical and dental students of CMH Lahore Medical College indicates that students have easier access to online teaching resources and thus online lectures were more organized and stimulated student' interest. This corresponds to Wisman, Ramadhana & Perdana (2020) research which suggests that online teaching of Physical Education Health and Sport were effectively implemented during the COVID-19. Google classroom was the most convenient application used by students. While internet network problem was considered as the most serious challenge to E-learning in the University of Palagkaraya Indonesia. E-learning is likely to increase independence in learning and provide an incentive for students to interact with technology as a practical learning tool (Rasjid, Al Yakin, Muthmainnah & Obaid, 2023). Online learning platform has potential to provide some beneficial effects for them because the platform were easily followed and challenge them to strive for keeping their balance motivation and interest to accomplish the online learning. Undergraduate Indonesian students were comfortable communicating and interacting with classmates and lecturers electronically. They were also able to manage their study time and self-disciplined (Sari & Oktaviani, 2021). Similar

research in Mercu Buana University found that management students use E-learning to complement their learning than engineering students (Viciwati, 2021). While the most frequently encountered challenges by medical students in Philippines were the difficulty to adjust learning styles and to perform responsibilities at home, poor communication between educators and learners. Only (41%) students considered themselves physically and mentally capable of engaging in online learning (Baticulon, 2020). This proves negative effect of E-learning on students' performance in Philippines.

From the foregoing we can deduce that there are divergent views on the success and challenges of E-learning during the COVID-19 pandemic across countries. In some countries E-learning has recorded remarkable success. Apart from increasing students' academic performance it has also reduces the difficulties of physical communication during the COVID-19 pandemic. Other researches show that E-learning in most developing countries was not fully successful generally due to lack of ICT knowledge, resistance to change, insufficient funds, ineffective internet service and poor power supply.

Though most of these studies were empirical, but focused on either the challenges of E-learning or its impact on the students' performance. The scope and emphases of most of these researches were on the COVID-19 pandemic era in Europe or Asia with little or no emphasis was made on Africa. This study examines the challenges and effect of E-learning on students' performance in the department of Computer Engineering Ahmadu Bello University Zaria in the post COVID-19 era**.**

Theoretical framework of analysis

The theory of technology acceptance model

The Technology Acceptance Model (TAM) is a widely used theoretical framework for understanding and predicting users' acceptance and adoption of new technologies. It was originally proposed by Fred Davis in 1989 and has undergone several extensions and

modifications since then. The primary focus of TAM is to explore the factors that influence individuals' intentions to use a particular technology and, subsequently, their actual usage behaviour. The model is especially relevant in the context of E- learning, as technology plays a crucial role in enhancing individuals, organizations, and systems performance.

The main components of the Technology Acceptance Model (TAM) are:

i. Perceived Usefulness (PU): This factor refers to the extent to which a person believes that using a particular technology will enhance their performance or productivity. The more useful a technology is perceived to be, the more likely individuals are to adopt it for cybercrime prevention purposes.

ii. Perceived Ease of Use (PEOU): This factor relates to the degree to which users believe that the technology is easy to use and understand. If a technology is perceived as easy to use, individuals are more likely to adopt it for cybercrime prevention, as it reduces the complexity and effort required to implement protective measures.

iii. Behavioural Intention to Use (BI): TAM posits that an individual's intention to use a technology is a direct result of their perceived usefulness and perceived ease of use. The stronger the intention to use the technology, the more likely individuals are to take preventive actions against cybercrime.

iv. Actual Usage Behavior (AU): This represents the real adoption and usage of the technology. It is influenced by the behavioural intention to use the technology and external factors that may facilitate or hinder the adoption process (Devis, 1989).

Methodology

The data was collected from questionnaires and interviews. The questionnaire applied a 5-point Likert scale with the scale strongly agree, agree, undecided, disagree, and strongly disagree. A questionnaire consisting of nineteen questions was administered to the respondents through Google Forms. To corroborate the results from the questionnaires, an

open-ended interview via telephone calls was conducted with eleven students. The respondents were randomly selected to allow each participant chance of being selected.

The subjects were undergraduate 400 level students of the department of Computer Engineering in Ahmadu Bello University Zaria Kaduna State Nigeria. The department was chosen because it is among the few departments that has maintained E-learning in the post COVID-19 period.

Qualitative data from the interviews conducted on the other hand, were presented and analysed using thematic method. The findings from two methods were harmonized together and form the summary of major findings of the study.

Quantitative data was generated from the questionnaires administered to respondents. Both descriptive and statistical tools were used to test the hypotheses in this study. Frequency tables and simple percentage were used to analyse the data collected. Pearson's Product Moment Correlation was used as inferential statistical tool to test correlation between variables using Statistical Package for Social Science (SPSS). The SPSS was chosen based on its accuracy over manual computation. The choice of Pearson's Product Moment Correlation is justified on the ground that it measures the strength of the linear correlation between two variables. The decision rule is that if the calculated value is greater than the critical (tabulated) value at the level of 5%, the null hypothesis should be rejected, but if otherwise, it should be accepted.

Data Presentation

Presentation of Questionnaires administered and Interviews conducted.

A total of 73 respondents were administered with questionnaires using the 400 Level students' class Whatsapp group, out of which 69, representing 95% of the total number of the students responded by dully filling the questionnaires. Hence 46 respondents formed the basis

for analysis and interpretation which was considered sufficient and valid for conclusions of this study.

Table 1: Measures of variables that is Dependent and Independent variables

Frequency Table

Table 1: I have insufficient money to buy data for my E-learning activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	28	40.6	40.6	40.6
	Undecided	14	20.3	20.3	60.9
	Disagree	14	20.3	20.3	81.2
	Strongly Disagree	13	18.8	18.8	100.0
	Total	69	100.0	100.0	

Source: Author's Computation, 2024.

Table 1 presents challenge of E-learning with regard to sufficient money to buy data for E-learning activities. The results show that majority 40.6% of the respondents (students) testified that they didn't have sufficient money to buy data. 20.3% were undecided. 18.8% strongly disagree, 20.3% disagree. This proves that most students have no sufficient money to buy data for E-learning. The results from the interview also supported this assertion. The respondents pointed out that:

> We had access to free data when we were in school premises (particularly around specific areas with strong internet connectivity), but when we went back to hostel or out of the school, it has been difficult for us to subscribe data for the E-learning study'. This makes it very difficult for us to use internet for E-learning outside the school premises (R3 & R5).

Table 2: Difficulty of accessing network for my E-learning activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	27	39.1	39.1	39.1
	Undecided	28	40.6	40.6	79.7
	Disagree	14	20.3	20.3	100.0
	Total	69	100.0	100.0	

Source: Author's Computation, 2024.

Table 2 presents students' responses on the difficulty of accessing network for E-learning activities. The results show that 39.1% agree that they had difficulty of accessing network for E-learning activities. 40.6 were undecided, only 14% disagree. This shows that many students

had difficulty in accessing internet network. This is an indication of lack of strong internet network connectivity in some places. Results from the interview supported this view. Respondents testified that 'the internet network in some remote areas was not strong to sufficiently allow them to participate in online study' (R1).

Table 3: Difficulty of having sufficient electricity power supply for my E-learning activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	55	79.7	79.7	79.7
	Strongly Agree	14	20.3	20.3	100.0
	Total	69	100.0	100.0	

Source: Author's Computation, 2024.

Table 3 presents responses on difficulty of having sufficient electricity power supply for E-learning activities. The results show that 79.7% of the respondents have no sufficient electricity power supply for E-learning activities. Only 20.3% of the respondents strongly agree that they have sufficient power supply for their E-learning activities. This is an indication of shortage of power supply in some places. Interviewee respondents testified that 'there was no sufficient electric or other source of power supply most especially in the off campus. It became very difficult to charge Laptop and cell phones' and use it for E-learning purpose'(R2).

Table 4: Effect of E-Learning on Students' Performance

Correlations

I can easily access the online learning platform as needed for my studies	I can easily access the online learning platform as needed for my studies	I can discuss with other students during online activities through an online learning	I can work in a group during online activities through an online learning platform	I can collaborate with other students during online activities through an online learning platform	I could pass a course on the online learning platform without any teacher assistance
	1	0.229	0.869**	0.959**	0.959**
		0.058	0.000	0.000	0.000
	69	69	69	69	69

Source: Author's Computation, 2024.

Table 4 show the result of Pearson's product movement correlation (PPMC). The result shows that there is a positive but insignificant correlation between students' easy access to online learning platform and students' ability to discuss with other students during online activities at 5% level of significance. A unit increase in students' access to online learning platform causes students' ability to discuss with other students during online activities to increase by about 0.2. Therefore, the null hypothesis that "there is no significant relationship between students' easy access to online learning platform and students' ability to discuss with other students during online activities" could not be rejected. This implies that there is significant relationship between students' easy access to online learning platform and students' ability to discuss with other students during online activities in the Department of Computer Engineering, Ahmdu Bello University, Zaria. The result in table 4 also shows that there is a positive and significant relationship between student's access to online learning platform and student's ability to work in a group during online activities at 1% level of significance. A unit increase in students' easy access to online learning platform causes student's ability to work in a group during online activities to increase by about 0.8. Therefore, the null hypothesis that "there is no significant relationship between students' easy access to online learning platform and student's ability to work in a group during online activities could be rejected. This implies that there is significant relationship between students' easy access to online learning platform and student's ability to work in a group during online activities in the Department of Computer Engineering, Ahmdu Bello University, Zaria. The result in table 4 further revealed that there is a positive and significant correlation between students' access to online learning platform and student's collaboration with other students during online activities at 1% level of significance. A unit increase in student's access to online learning platform causes students' collaboration with other students during online activities to increase by about 0.9. Therefore, the null hypothesis that "there is

no significant relationship between students' access to online learning platform and students' collaboration with other students during online activities" could be rejected at 1% level of significance. This implies that there is significant relationship between students' access to online learning platform and students' collaboration with other students during online activities in the Department of Computer Engineering, Ahmdu Bello University, Zaria. The result in table 4 also revealed that there a positive and significant correlation between student's access to online learning platform and student's ability to pass a course on the learning platform without their teacher's assistance at 1% level of significance. A unit increase in student's access to online learning platform causes student's ability to pass a course on the learning platform without their teacher's assistance to increase by about 0.9. Therefore, the null hypothesis that "there is no significant relationship between student's access to online learning platform and student's ability to pass a course on the learning platform without their teacher's assistance" could be rejected at 1% level of significance. This implies that there is significant relationship between student's access to online learning platform and student's ability to pass a course on the learning platform without their teacher's assistance in the Department of Computer Engineering, Ahmdu Bello University, Zaria.

These results were supported by the interview finding from the respondents that 'E-learning is cheaper and has the potential to improve students' ability to study at ease and improve their performance'. This indicates that there are some beneficial impacts of E-learning despite its challenges in Nigeria.

Research findings

The following constitute the research findings:-

- The finding shows that students have no sufficient money to buy data for E-learning, thereby affecting their performance.

- The finding further demonstrate that there is free data within the school premises, but outside the school premises there is no free data which is affecting students performance.
- The finding also shows that many students had difficulty in accessing internet network due to poor network within the school premises.
- The finding also shows that there was difficulty of having sufficient electricity power supply for my E-learning activities.

Discussion of Major Findings of the Study

The finding shows that students have no sufficient money to buy data for E-learning, thereby affecting their performance, this finding also rhyme with study conducted by Oyediran, Omoare, Owoyemi, Adejobi & Fasasi (2020) who also discovered similar issue in private universities.

Similarly, the interviews conducted also revealed that there is free data within the school premises, but outside the school premises there is no free data which is affecting students performance.

The finding also shows that many students had difficulty in accessing internet network due to poor network within the school premises, the usage of the network was much resulting to fluctuation in the network. The finding also rhymes with the result of the interviews conducted which was as a result of network overload by the students.

The finding also shows that there was difficulty of having sufficient electricity power supply for my E-learning activities, the interview conducted also shows that there was shortage of power supply in some places most especially in the off campus as a result students could not charged their laptops and used it for E-learning.

Conclusion

E-learning is one of the contemporary modern methods of imparting knowledge in very efficient and effective manner in the post COVID-19 era. E-learning classes are still valuable because it encourage students to continue studying without boundaries and to take charge of their own education. However E-learning especially in developing countries has been facing different challenges ranging from poor internet sand electricity supply, insufficient fund to

both institutions and students have been considered as critical factors for the success of E-learning. This study proves that Ahmadu Bello University Zaria is bedevilled with these challenges. This has negatively affected the performance of students and ability of the teachers to deliver lectures online.

The findings of this study shows positive effect of E-Learning in the post- COVID-19 era on students' academic performance of Ahmadu Bello University Zaria, Kaduna State Nigeria. It has proved success of using E-learning platform for online learning process. The results established that most students accepted all statements with positive responses. Students were able to communicate with their lecturers and their colleagues through an online learning platform. Policy implication for this study is that, in spite of the enormous problems associated with online teaching in developing countries, E-learning will continue to serve as a vital and alternative platform for disseminating knowledge. This study concluded that the success of E-learning in Ahmadu Bello University Zaria depends on how these challenges are mitigated.

Recommendations

The study suggested the need to improve online education by making it more interactive. This can be achieved by using E-learning systems such Learning Management System (LMS) which can ease online activities at anytime and anywhere as long as their users are connected to the system via the Internet.

Simple online modules, lecture video and audio, e-books and lecture materials are very important for E-learning process. Universities should therefore need to improve availability of these materials so as to increase the performance of students and allow students access to lectures everywhere.

Reliable, sufficient and availability of Information Communication Technology infrastructure, stable power supply by diversifying other energy source and reliable internet

connectivity etcetera are very important for E-learning. Universities need to enhance these. This will reduce challenges of E-learning within campus.

Suggestion for future studies

Some students lack technical proficiency required for E-learning while others prefer traditional face-to-face education. Future research should pay emphasis on the effect of E-learning on low performance of some students. Next research should focus on perception of category of these students. This is an exciting issue for future research to explore.

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Questionnaire on Students' Perception on the challenges and quality of education using online learning platform

S/ No	Statement	Responses				
1	E-learning system has negatively affected my academic performance	A	SA	U	D	SD
2	E-learning system has negative impact on the quality of education I receives	A	SA	U	D	SD
3	I can easily access the online learning platform as needed for my studies	A	SA	U	D	SD
4	I am comfortable communicating with my lecturer and other classmates electronically	A	SA	U	D	SD
5	I enjoy working independently through an online learning platform	A	SA	U	D	SD
6	I enjoy working with other students in groups through an online learning platform	A	SA	U	D	SD
7	I have sufficient skills for doing online work through an online learning platform	A	SA	U	D	SD
8	I possess computer/laptop/smartphone for my E-learning activities	A	SA	U	D	SD
9	I feel that face-to-face contact with my lecturer is necessary to learn	A	SA	U	D	SD
10	I can discuss with other students during online activities through an online learning platform	A	SA	U	D	SD
11	I can work in a group during online activities through an online learning platform	A	SA	U	D	SD
12	I can collaborate with other students during online activities through an online learning platform	A	SA	U	D	SD
13	Learning is the same in class and at home on the online learning platform	A	SA	U	D	SD
14	Online learning platform is more motivating than a regular course	A	SA	U	D	SD
15	A complete course can be given by the online learning platform without difficulty	A	SA	U	D	SD
16	I could pass a course on the online learning platform without any teacher assistance	A	SA	U	D	SD
17	I have insufficient money to buy data for my E-learning activities	A	SA	U	D	SD
18	I have difficulty of accessing network for my E-learning activities	A	SA	U	D	SD
19	I have difficulty of having sufficient electricity power supply for my E-learning activities	A	SA	U	D	SD