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Online Learning in Nigerian Universities During COVID-19 Pandemic: The Experiences of Nursing and Radiography Undergraduate Students

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Abstract

Online education spreads even in the medical field where traditional method of learning is more convenient. This study was designed to evaluate the experiences of nursing and radiography undergraduate students of online learning in Nigerian universities during the COVID-19 pandemic. This was a cross-sectional questionnaire-based study, which included 540 nursing and radiography students. The completed questionnaires were retrieved by the researchers. Both descriptive and inferential statistics were used for statistical analysis with significance level set at p < .05. Large numbers, 41.3% (n = 223) of the respondents perceived the online learning to be slightly stressful, and the least, 7.4% (n = 40) perceived the online learning to be extremely stressful. The challenges were financial constraints (29.6%, n = 160), no internet access (22.2%, n = 120), lack of technical know-how (14.8%, n = 80), and poor communication with lectures and peers (5.6%, n = 30). This study revealed good and positive attitudes of the students toward the online learning method during the COVID-19. Most of them perceived online learning method to be beneficial to their educational progress. The challenges encountered by the students as revealed in this study included the following: financial constraints, internet access, unstable/slow internet access, lack of mobile data, poor communication with lecturers and peers, and no access to computer device.

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Introduction

The COVID-19 pandemic significantly affected every aspect of human endeavor, and education is one important sector mostly affected by the pandemic globally. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020), the closure of schools and universities have significantly affected over 1.5 billion students and youths worldwide during the COVID-19 pandemic. In Nigeria, educational institutions suspended their regular activities and students were sent home...
The radiography students were not left out as practical demonstration sessions on university campuses and hospitals were suspended (Okpalek et al., 2021). Students were also scared of the COVID-19 pandemic due to the lack of personal protective equipment in most health care facilities as documented by Ogolodom et al. (Ogolodom et al., 2020a). According to Adeoye et al. (Adeoye et al., 2020), the rapid spread of the COVID-19 forced the Nigerian government to shut down schools and directed the schools to adopt an electronic learning (online learning) system, which most of the tertiary schools in Nigeria were not used to before the pandemic.

Online learning, also known as electronic learning (e-learning) or digital learning, is referred to as the use of technology and network communication for teaching and learning. It is also referred to as a technology-based transfer of skills and knowledge to the student. This method of learning uses computer and internet devices in its teaching and learning activities; that is, the learning material can be accessed anytime and anywhere as long as the necessary facilities and infrastructure are available. Online learning is one of the growing trends in education. Coogle et al. (Google and Floyd, 2015), stated that online learning can be practiced in synchronous, asynchronous, or hybrid learning environments. Synchronous learning environments are those settings where learning occurs in real time. Asynchronous environments are those settings where the students engage in activities that occur independently from the instructor or other peers. Online education spreads even in the medical field where the traditional method of learning is more convenient (Thapa et al., 2021). Students’ attitude toward online learning seems to be the most important factor for a successful online learning experience (Akbari et al., 2012). Online learning depends on technological devices and the Internet; therefore, technology is the most pressing challenge of online learning. Some typical technological issues include lack of knowledge of how to use the applications, unstable/slow internet connections, outdated communication devices, and incompatible browsers. As a result of the inadequate finances of some individuals, acquiring the necessary equipment for online learning is challenging. Problems such as poor network connectivity, lack of electricity, and inadequate information and communication technology (ICT) facilities to carry out lectures may negatively impact the successful implementation of online education (Afolabi and Uhomoibhi, 2017). According to Linjawi et al. (Linjawi and Alfadda, 2018), previous knowledge of ICT and good internet connectivity are the keys to successful online learning.

The significance and efficacy of e-learning, including ease of use, flexibility, and better control over the environment, have been reported by previous studies. However, regardless of its rewards, there are a few disadvantages or limitations of online learning such as a lack of student-teacher interaction, interaction with other students, and technical connectivity problems (Abbassia et al., 2020). The online system of education is entirely new in our setting and faces several obstacles among which are the ineptitude of the students, lack of basic computer knowledge, and the inability of the students to afford basic computer gadgets for online learning. In nursing and radiography programs where most of the teaching-learning is physical, the pandemic compelled the use of online learning classes to complete the syllabus. The online methods of learning can be more difficult compared to classroom teaching for both the lecturers and students, as it takes time to get used to the new method of learning. In this regard, it is very crucial to evaluate the acceptability, perception, and setbacks of the new approach to learning in Nigeria. This study aimed to assess the attitude and challenges of nursing and radiography students toward online learning in Nigeria during the COVID-19 pandemic.

### Materials and methods

This was a cross-sectional questionnaire-based survey, which involved students from eleven universities [University of Nigeria Nsukka [UNN], Nnamdi Azikiwe University [NAU], Bayero University Kano, University of Lagos, Lead City University, University of Calabar, University of Maiduguri, Federal University of Technology, Owerri, Ahmadu Bello University [ABU], University of Benin [UNIBEN], and University of Port Harcourt] offering nursing and/or radiography programs in Nigeria at least 2 years before the COVID-19 pandemic era. The purpose of the study was adequately explained to each respondent via the written informed consent form and their consent to voluntarily participate in this study was duly sought and obtained. No information that revealed the identity of the respondent was included in the study and the retrieved information was treated with a high level of confidentiality and used for this study only. This study lasted for a period of 2 months (November 2021—December, 2021).

A simple self-administered questionnaire constructed in the English language was the instrument for data collection. This 35-item questionnaire consists of two sections A and B. Section A—captures questions on the respondent’s sociodemographic variables (age, level of study, school, program of study, and gender). Section B—contains questions that evaluated the participants’ attitude, utilization or usage, benefits, and challenges of nursing and radiography students toward online learning in Nigeria during the COVID-19 pandemic.

The validity of the questionnaire was computed using the index of Item Objective Congruence (IOC) method used by previous authors (Mbaba et al., 2021; Ogolodom et al., 2020b; Turner and Carlson, 2003). The content validity of the questionnaire was assessed by computing the IOC. Based on the index parameters, an IOC score >0.6 was assumed to show excellent content validity. All the scores obtained in this study for all the items of the questionnaire after IOC interpretation were >0.6. We obtained a Cronbach alpha reliability value of 0.92 for internal consistency of the questionnaire.

#### Table 1

| Variable            | Category          | Frequency | Percentage (%) |
|---------------------|-------------------|-----------|----------------|
| Age                 | Less than 20 years| 123       | 22.78          |
|                     | 20 to 29 years    | 367       | 67.96          |
|                     | 30 years and above| 50        | 9.26           |
|                     | Total             | 540       | 100.0          |
| Sex                 | Female            | 354       | 65.60          |
|                     | Male              | 186       | 34.40          |
|                     | Total             | 540       | 100.0          |
| Level of study      | 200 Level         | 50        | 9.26           |
|                     | 300 Level         | 85        | 17.74          |
|                     | 400 Level         | 182       | 33.70          |
|                     | 500 Level         | 223       | 39.30          |
|                     | Total             | 540       | 100.0          |
| Institution of study| ABU               | 4         | 0.74           |
|                     | BUK               | 20        | 3.70           |
|                     | UNIPORE           | 10        | 1.85           |
|                     | FUTO              | 19        | 3.52           |
|                     | Lead City University | 8 | 1.48          |
|                     | UNIBEN            | 10        | 1.85           |
|                     | UNICAL            | 21        | 3.89           |
|                     | UNILAG            | 23        | 4.26           |
|                     | UNIMAIID          | 10        | 1.85           |
|                     | NAU               | 361       | 66.85          |
|                     | UNN               | 44        | 8.15           |
|                     | Total             | 540       | 100.0          |

ABU = Ahmadu Bello University; BUK = Bayero University Kano; FUTO = Federal University of Technology Owerri; UNIPORE = University of Port Harcourt; UNIBEN = University of Benin; UNICAL = University of Calabar; UNILAG = University of Lagos; UNIMAIID = University of Maiduguri; UNN = University of Nigeria Nsukka; NAU = Nnamdi Azikiwe University.
The questionnaire was arranged in line with the objectives of study and was prepared in both electronic (Google form) and hard-copy (paper) versions. The electronic version was distributed electronically to the WhatsApp platforms of the students of the selected universities, while the paper version was distributed to the students by the researchers using the one-to-one method. The completed electronic version of the questionnaire was retrieved electronically whereas the hardcopy version was collected immediately by the researchers. A total of 540 respondents participated in the survey and their responses were collected using data capture sheet.

The data were arranged according to the objectives of the study and were analyzed using statistical package for Social Sciences, version 21 (IBM Corp, Amornk, NY, 2012). Both descriptive (frequency, median, mean, percentage, and standard deviation) and inferential statistics chi-square were used for statistical analysis. The chi-square was used to evaluate the relationship between the challenges encountered during online learning, attitudes, benefits, and usage of online learning and the participant’s levels of study. The statistical significance level was set at p value less than 0.05.

| Variable                                      | Responses                  | Frequency | Percentage |
|-----------------------------------------------|----------------------------|-----------|------------|
| How often do/did you participate during lectures? | Always                     | 37        | 6.85       |
|                                               | Never                      | 49        | 9.07       |
|                                               | Occasionally               | 371       | 68.70      |
|                                               | Very often                 | 83        | 15.38      |
|                                               | Total                      | 540       | 100.0      |
| How many hours did you spend each day during online lectures? | 1 to 3 hr                  | 416       | 77.00      |
|                                               | 3 to 5 hr                  | 106       | 19.63      |
|                                               | 5 to 7 hr                  | 18        | 3.37       |
|                                               | Total                      | 540       | 100        |
| Where did you mostly partake in online learning? | At work                    | 4         | 0.74       |
|                                               | Cyber cafe                 | 78        | 5.19       |
|                                               | Home                       | 386       | 71.48      |
|                                               | None                       | 5         | 0.93       |
|                                               | On the Go                  | 67        | 12.47      |
|                                               | Total                      | 540       | 100        |
| How conducive is/was the environment while learning? | 1.0                        | 40        | 7.40       |
|                                               | Not conducive               | 80        | 14.8       |
|                                               | Conducive                  | 270       | 50.2       |
|                                               | Moderately conducive       | 102       | 18.9       |
|                                               | Very conducive              | 47        | 8.70       |
|                                               | Extremely conducive        | 540       | 100        |
| How stressful is/was online learning?         | Extremely stressful        | 40        | 7.4        |
|                                               | Not stressful              | 60        | 11.1       |
|                                               | Slightly stressful         | 223       | 41.3       |
|                                               | Stressful                  | 150       | 27.8       |
|                                               | Very stressful             | 67        | 12.4       |
|                                               | Total                      | 540       | 100        |
| How helpful was/were online learning during the pandemic? | Moderately helpful         | 331       | 61.30      |
|                                               | Not helpful                | 58        | 10.7       |
|                                               | Very helpful               | 151       | 28.00      |
|                                               | Total                      | 540       | 100        |
| How helpful was/were provided learning materials? | Moderately helpful         | 343       | 63.5       |
|                                               | Not helpful                | 62        | 11.53      |
|                                               | Very helpful               | 135       | 25         |
|                                               | Total                      | 540       | 100        |
| How helpful was/were your lecturers?          | Moderately helpful         | 296       | 54.80      |
|                                               | Not helpful                | 128       | 23.70      |
|                                               | Very helpful               | 116       | 21.50      |
|                                               | Total                      | 540       | 100        |
| Did you enjoy online learning?                 | No                         | 178       | 33.00      |
|                                               | Yes                        | 362       | 67.00      |
|                                               | Total                      | 540       | 100        |
| Do you think online learning will be helpful for the growth of your career? | No                         | 166       | 30.70      |
|                                               | Yes                        | 374       | 69.30      |
|                                               | Total                      | 540       | 100        |
| Do you think online learning makes students slaves to technology? | Agree                      | 140       | 25.90      |
|                                               | Disagree                   | 310       | 57.40      |
|                                               | I don’t know               | 60        | 11.10      |
|                                               | Neutral                    | 30        | 5.60       |
|                                               | Total                      | 540       | 100        |

Table 2: Frequency distribution of assessment of attitudes of nursing and radiography students toward online learning during COVID-19.
Results

The Respondents’ Sociodemographic Variables

Out 540 respondents, the majority (367, 67.96%) were in the age group of 20 to 29 years and the least 50 (9.26%) were above 30 years of age. A greater number (354, 65.60%) of the respondents were females when compared with their male counterparts (186, 34.4%). A large proportion (223, 39.30%) of the respondents were in their 500 level of study and the least (50, 9.26%) were in their 200 level of study. The highest number (361, 66.85%) were students of the NAU, followed by students from the UNN (44, 8.11%).

Table 3

| Variable                                                      | Responses | Frequency | Percentage |
|---------------------------------------------------------------|-----------|-----------|------------|
| Did you use online method of learning during COVID-19?        | No        | 204       | 37.8       |
|                                                               | Yes       | 336       | 62.2       |
|                                                               | Total     | 540       | 100        |
| Do you have access to device for online learning?             | No        | 210       | 38.9       |
|                                                               | Yes       | 330       | 61.1       |
|                                                               | Total     | 540       | 100        |
| What device did you use for learning?                         | Laptop    | 154       | 28.5       |
|                                                               | Smartphone| 351       | 65.0       |
|                                                               | Tablet    | 35        | 6.5        |
|                                                               | Total     | 540       | 100        |
| Are you satisfied with the technology used?                   | No        | 217       | 40.2       |
|                                                               | Yes       | 323       | 59.8       |
|                                                               | Total     | 540       | 100        |
| How do you rate: [The ease of your technology]                | Average   | 153       | 28.3       |
|                                                               | Good      | 121       | 22.4       |
|                                                               | Poor      | 266       | 49.3       |
|                                                               | Total     | 540       | 100        |
| How do you rate: [The quality of the internet connection used]| Average   | 94        | 17.4       |
|                                                               | Good      | 163       | 30.2       |
|                                                               | Poor      | 283       | 52.4       |
|                                                               | Total     | 540       | 100        |
| How do you rate: [The extent to which the courses relied on the use of technology in classroom.] | Average | 202 | 37.4  |
|                                                               | Good      | 281       | 52.0       |
|                                                               | Poor      | 57        | 10.6       |
|                                                               | Total     | 540       | 100        |
| How do you rate: [The quality of technology used]             | Average   | 261       | 48.3       |
|                                                               | Good      | 189       | 35.0       |
|                                                               | Poor      | 90        | 16.7       |
|                                                               | Total     | 540       | 100        |

Figure 1. Bar chart on participant’s perceived benefits of online learning during COVID-19 pandemic.
8.15%) and the least (4, 0.74%) were students of the Ahmadu Bello University (Table 1).

**Attitudes of Nursing and Radiography Students Toward Online Learning During the COVID-19 Pandemic**

A greater proportion (371, 68.7%) of the respondents occasionally participated during online lectures, and 37 (6.85%) respondents always participated in the lectures. Most of the respondents (416, 77%) spent 1 to 3 hr each day during the online lectures and the least (18, 3.37%) spent 5 to 7 hr each day during the online learning lectures. The majority (386, 71.48%) of the respondents mostly took part in the online lectures at the comfort of their homes. A large number (223, 41.3%) of the respondents perceived the online learning to be slightly stressful and the least (40, 7.4%) perceived the online learning to be extremely stressful. A greater proportion (343, 63.5%) of the respondents perceived the lecture materials to be moderately helpful. The majority (362, 67%) of the respondents enjoyed online learning. The highest percentage of the respondents (374, 69.3%) agreed that online learning will be helpful for the growth of their career (Table 2).

**Usage of Online Learning During COVID-19 Pandemic**

Out of 540 respondents, 336 (62.2%) respondents used online method of learning during the COVID-19 pandemic, while 204 (37.8%) respondents did not use the online method of learning during the COVID-19 pandemic. The majority (351, 65%) of the respondents used the smart phone for the online learning during the COVID-19 pandemic. Most of the respondents (283, 52.4%), perceived the quality of the internet connection to be poor. The majority (323, 59.8%) of the respondents were satisfied with the technology they used (Table 3).

**Respondents’ Perceived Benefits of Online Learning During the COVID-19 Pandemic**

The respondents’ perception of the benefits of online learning is captured in Figure 1 as follows: improved comfortability while learning 200 (37%) respondents, improved quality of learning materials 163 (30.2%) respondents, and time-saving 34 (22.8%) respondents.

**Challenges of Online Learning Encountered by the Respondents During the COVID-19 Pandemic**

The challenges encountered by the respondents while using online learning during the COVID-19 pandemic as presented in Figure 2 out of which, 160 (29.6%) respondents revealed financial constraints, 120 (22.2%) respondents had no internet access, 80 (14.8%) respondents lacked technical know-how, and 30 (5.6%) respondents had poor communication with lectures and peers.

**Relationships Between Studied Variables**

There were statistically significant relationships between the respondent’s attitude and some of their sociodemographic variables such as their age ($\chi^2 = 67.462$, $p = .000$) and institution ($\chi^2 = 122.796$, $p = .000$) (Table 4). There were no statistically significant relationships between the respondent’s attitude and the level of study and how often the respondent participated in online lectures ($\chi^2 = 14.805$, $p = .096$), how many hours they spent each day during online lectures ($\chi^2 = 6.292$, $p = .391$), where they mostly partake in online learning ($\chi^2 = 12.126$, $p = .436$), how conducive the environment was while learning ($\chi^2 = 14.576$, $p = .265$), and how stressful is/was online learning ($\chi^2 = 13.987$, $p = .302$) (Table 5). There were statistically significant relationships between usage or utilization and level of study and access to devices for online learning ($\chi^2 = 12.476$, $p = .006$), the devices used for online learning ($\chi^2 = 16.890$, $p = .010$), satisfaction with the technology

| Table 4 | Chi Square showing relationship between attitudes and sociodemographics |
|---------|-------------------------------------------------|
| Variable | Chi square | Df | p value | Remark       |
| Age     | 67.462    | 6  | .000    | Significant  |
| Sex     | 18.521    | 3  | .604    | Not significant |
| Institution | 122.796 | 5  | .000    | Significant  |
you used ($\chi^2 = 13.675, p = .003$), and the quality of technology used ($\chi^2 = 14.284, p = .027$). However, there were no statistically significant relationships between usage or utilization and the level of study and the extent to which the courses relied on the use of technology with ($\chi^2 = 8.534, p = .202$) (Table 6). There were statistically significant relationships between statement on benefits and level of respondent's studies ($\chi^2 = 120.952, p = .005$) and online learning makes learning interesting ($\chi^2 = 25.014, p = .003$). However, there were no statistically significant relationships between benefits and levels of study in enhancing learning experiences ($\chi^2 = 15.028, p = .090$), confidence is an important feature of online learning ($\chi^2 = 16.049, p = .066$) (Table 7). There were statistically significant relationships between changes and levels of study of the participant, challenges encountered during online learning ($\chi^2 = 206.327, p = .007$), and perceived enjoyment while studying educational technology courses ($\chi^2 = 19.181, p = .024$). However, there were no statistically significant relationships between the levels of study and challenges statements, such as online learning promotes social isolation ($\chi^2 = 16.034, p = .066$), acquisition of significant information is difficult through the internet ($\chi^2 = 10.130, p = .340$), and online learning is difficult ($\chi^2 = 11.738, p = .228$) (Table 8).

**Discussion**

We found that the respondents in our study showed good and positive attitudes toward the online learning method during the COVID-19. This could be associated with the fact that most students did not want to have extra years in the university and, so they were ready to adopt the new learning method. This finding is consistent with the findings of the studies conducted by Thapa et al. (Thapa et al., 2021) on nursing students’ attitudes toward the practice of e-learning amid COVID-19 in Nepal, Adewoke’s (Adewole-Odeshi, 2014) the study on attitudes of students toward e-learning, in South-West Nigerian Universities, Sharma and Jeba (Sharma and Jeba, 2021) study on the perception of nursing students toward online classes in selected nursing colleges at Jammu, which also reported favorable attitudes of their respondents toward online learning. In Thapa et al. (Thapa et al., 2021) study, out of 470 nursing students, 58.9% had a favorable attitude regarding e-learning, and Sharma and Jeba (Sharma and Jeba, 2021) in their study, reported a mean perception score of 73.5 ± 9.72 among nursing faculty. However, Barzani and Jamil (Barzani and Jamil, 2022) in their study, which was conducted to evaluate the student’s perception toward online education during the COVID-19 among 200 students of University Kurdish EFL in Iraq, reported a contrary finding in which majority of their respondent’s showed negative attitudes toward online education as they preferred and saw on-campus education more effective. The differences in our findings could be attributed to the different sample sizes used in our various studies as well as the geographical variation of our different studies.

The majority of our respondents used online learning method during the COVID-19 pandemic in Nigeria. This is in agreement with the findings of the studies conducted by Boca (Boca, 2021) on the evaluation of the factors influencing student’s behavior and attitude toward online education during the COVID-19 at the University of Cluj Napoca, Romania, and Thapa et al. (Thapa et al., 2021) on nursing student’s attitude on the practice of e-learning avoid COVID-19 in Nepal, reported high usage of online method during the COVID-19 pandemic. However, the respondents in Thapa et al. (Thapa et al., 2021) study preferred the traditional face-to-face learning to the online method, which they attributed to practical issues and introduction of new phenomena of learning.

The challenges encountered by the respondents in our study include but are not limited to financial constraints, internet access, lack of technical know-how, instability/slow internet access, lack of mobile data, poor communication with lecturers and peers, and no access to a computer device. These findings are in keeping with the findings of the studies carried out by Thapa et al. (Thapa et al., 2021) and Barzani and Jamil (Barzani and Jamil, 2022), which also reported similar challenges encountered during the use of online methods of learning. In this study, we found that our respondents perceived online learning methods to be beneficial to their educational progress. Some of the benefits of the online learning method identified in our study include improved quality of learning materials, improved comfort ability while learning, time saving, and ready access to missed or previous lectures. This is in harmony with the findings of

| Questions                                                                 | Chi square | Df  | p value | Remark     |
|--------------------------------------------------------------------------|------------|-----|---------|------------|
| How often do/did you participate in online lectures?                     | 14.805     | 9   | .096    | Not significant |
| How many hours did you spend each day during online lectures?            | 6.292      | 6   | .391    | Not significant |
| Where did you mostly partake in online learning?                         | 12.126     | 12  | .436    | Not significant |
| How conducive is/was the environment while learning?                     | 14.576     | 12  | .265    | Not significant |
| How stressful is/was online learning?                                    | 13.987     | 12  | .302    | Not significant |
| How helpful was/were: Online learning during the pandemic?               | 7.852      | 6   | .249    | Not significant |
| How helpful was/were: Provided learning materials?                       | 14.571     | 6   | .024    | Significant |
| How helpful was/were: Your lecturers?                                   | 16.905     | 6   | .010    | Significant |
| Did you enjoy online learning?                                           | 4.994      | 6   | .545    | Not significant |
| Do you think online learning will be helpful for the growth of your career? | 3.484      | 3   | .323    | Not significant |
| Do you think online learning makes students slaves to technology?        | 13.651     | 9   | .135    | Not significant |
| **Table 5** Chi-Squares showing relationship between level of study and their attitudes |

**Table 6** Chi-square showing association between level of study and their usage of online learning

| Questions                                                                 | Chi square | Df  | p value | Remark     |
|--------------------------------------------------------------------------|------------|-----|---------|------------|
| Did you use online method of learning during COVID-19?                    | 8.658      | 3   | .034    | Significant |
| Do you have access to device for online learning?                        | 12.476     | 3   | .006    | Significant |
| What device did you use for online learning?                             | 16.890     | 6   | .010    | Significant |
| Are you satisfied with the technology you used?                          | 13.675     | 3   | .003    | Significant |
| How do you rate: The ease of your technology?                            | 15.148     | 6   | .019    | Significant |
| How do you rate: The quality of the internet connection used?            | 12.714     | 6   | .048    | Significant |
| How do you rate: The extent to which the courses relied on the use of technology in classroom? | 8.534 | 6 | .202 | Not significant |
| How do you rate: The quality of technology used?                         | 14.284     | 6   | .027    | Significant |
the studies carried out by Thapa et al. (Thapa et al., 2021), reported that the respondents in their studies found online learning beneficial. Even when students found that online learning was stressful, they also found it beneficial especially in terms of evaluation of their assignments.

There were statistically significant relationships between the respondent's attitudes and some of their sociodemographic variables such as their age and institution. This finding implies that the attitudes of our respondents toward online learning during the COVID-19 pandemic in Nigeria were significantly influenced by their age and institutions. Based on these findings, we think that some institutions had already introduced e-learning platforms to their students before the outbreak of the COVID-19 pandemic.

We found that there were no statistically significant relationships between the respondents' level of studies and the attitude statements such as how often the respondent participated in online lectures, how many hours they spent each day during online lectures, where they mostly partake in online learning, how conducive the environment was while learning, and how stressful it was online learning. This means that the respondent's attitude toward online learning during the COVID-19 era was not influenced by their level of studies. This we think could be attributed to the fact that all students were seriously affected by the pandemic, and so they took decisions toward the new learning platform personally, which could have resulted in our findings.

There were statistically significant relationships between levels of study and usage or utilization statements such as access to devices for online learning, the devices used for online learning, satisfaction with the technology you used, and the quality of the technology used. These may be ascribed to the fact that many parents usually buy electronic gadgets, such as smartphones and laptop computers, for their children as they advance in the levels of their studies. Also, those who have these devices responded to the adoption of the online learning method during the COVID-19 pandemic. Nevertheless, there were no statistically significant relationships between levels of study and usage or utilization statements such as the extent to which the courses relied on the use of technology.

There were statistically significant relationships between levels of study and benefits statements such as enhancing learning experiences; confidence is an important feature of online learning. There were statistically significant relationships between challenges and level of study of the participant, challenges encountered during online learning, and perceived enjoyment while studying educational technology courses. Nonetheless, there were no statistically significant relationships between the level of study and challenges statements such as online learning promotes social isolation, acquisition of significant information is difficult through the internet and online learning is difficult.

Limitations

The major setback of this study is the small sample size of the respondents and also, students from most of the private universities were not captured in this study. Therefore, the findings can not be generalized. In addition, how the strategies used by the respondents to overcome some of the challenges encountered during the online learning during the COVID-19 pandemic were not captured in this study.

Conclusion

Attitude and perception are important predictors of acceptance of a new system of learning. The success of the system will be based on appreciation and continued adaptability of the system in line with the challenges faced by the users of the system. This study revealed good and positive attitudes of the students toward the online learning method during COVID-19. Most of them perceived online learning methods to be beneficial to their educational progress. The challenges encountered by the students as revealed in this study included, financial constraints, internet access, unstable/slow internet access, lack of mobile data, poor communication with lecturers and peers, and no access to computer device. To ensure the success of e-learning in our setting, we recommend that the identified constraints should be considered in educational strategy and planning.

CRediT authorship contribution statement

All authors contributed to the design of the work, the acquisition and analysis of the data. All authors were involved in drafting and commenting on the paper, and approved the final version.
Ethical approval

Informed consent was obtained from the participants.

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