



Biology Students' Perception of Online Learning in Selected Colleges of Education in Nigeria

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ABSTRACT

This study investigated perception of online learning by Biology students in Federal College of Education (Technical), Umuze, Anambra State and Kwara State College of Education, Ilorin. A survey research design was adopted for the study. The population of the study comprised all the 258 Biology students from the two Colleges of Education who participated in the study. There was no sampling technique as the intact number of the population was used for the study. A four-point Likert scale Questionnaire developed by the researcher was used to elicit data for the study. The instrument which has four (4) sections and a total of forty-six (46) items was subjected to pilot test in College of Education, Zuba, FCT with the original draft containing thirty-eight (38) items. The instrument was further subjected to reliability test using Cronbach Alpha reliability and a reliability index of 0.84 was obtained. Descriptive statistics of simple Percentage (%) and Arithmetic Mean (\bar{x}) were used to analyse the research questions. Findings revealed that the respondents are aware of Telegram (100%), YouTube (90.8%), Zoom (92.5%), Khan Academy (68.6%) and Coursera (57.3%) as platforms that can be used for online learning. Findings showed that the ease of use of online learning as perceived by majority of the respondents is generally positive (grand \bar{x}); they perceive online learning platforms are easily accessible ($\bar{x} = 2.89$), user-friendly ($\bar{x} = 2.76$), easily navigable ($\bar{x} = 2.72$) and they find it easy to use them amongst other things. The perception which majority of the respondents have about online learning is generally positive (grand \bar{x}); they perceive online learning as useful in assisting them achieve mastery through repetition of course taken rather than just passing exams ($\bar{x} = 3.08$), helping them improve their virtual communication and collaboration skills ($\bar{x} = 2.82$), amongst other things. It was found that the perceived barriers to online learning include slow internet connection ($\bar{x} = 3.16$), high cost of internet subscription ($\bar{x} = 2.87$), limited communication with the instructor ($\bar{x} = 2.65$) and lack of proper training on online learning ($\bar{x} = 2.53$), amongst others. The study recommends among others that college managements should actively seek partnership with telecommunications companies to provide free access to selected platforms for learning purposes only.

ARTICLE INFO

Article History
Received: July, 2022
Received in revised form: August, 2022
Accepted: September, 2022
Published online: December, 2022

KEYWORDS

Online learning, Perception, Biology students

INTRODUCTION

It is without doubt that every aspect of human life has been affected by advancements in

technology, especially the internet. Education is one of these aspects of society which has received a boost owing to the benefits which the



internet offers and one of such areas is online learning. A review of existing research shows that there has been a significant increase in the number of universities that offer online learning as a mode educating their student population (Baczek et al, 2021; Bali & Liu, 2018; Ansari, 2021). Jeenia (2021) stated that today, many universities are embracing online learning even as some of them are targeting potential students and encouraging them to obtain an education online, since that seems significantly cheaper. There are reasons which make universities to adopt online learning. All over the world, the COVID-19 pandemic for example, made it necessary for educational organizations to consider running their teaching and learning activities via the Internet. This mean that teachers/lecturers are required to teach remotely in front of their computers/laptops while also making students/learners more dependent on the Internet (Binshehab, 2021).

According to Ansari (2021), online learning is the approach of learning by the means of Internet technology and the use of software applications. This new learning mode has recently become popular because it has proven to be an effective teaching approach (Binshehab, 2021). Many universities today have adopted this already existing, but barely used learning strategy. Awadallah et al. (2020) argues that in the face of the COVID-19 pandemic, it is obvious that the world must push for online learning in modern educational environments. The scholar stated that teachers can utilize online learning platforms to remotely host lectures at their convenience which when students logged in, they will be able to interact live with each other using video and audio conferencing. He further believes that if students are active participants in the learning process, there will be a positive effect on their online learning skills.

Jeenia et al. (2021) stated that "electronic or online learning can be defined as the utilization of electronic technology and media to deliver, support and enhance both teaching and learning and it involves communication between learners and teachers using online content". Mahajan and Kalpana (2018) defined online learning as the use of Internet technology to improve the quality of education, and that online

learning is changing the way teaching and learning is taking place in university campuses. The scholar further noted that as it is a relatively new phenomenon, both the educators and students are currently struggling with the idea of its implementation and adaptation respectively, a major aspect of which begins with how online learning is perceived by the learner as well as their attitude towards it. (Binshehab) argues that with the present scenario of learning, it appears that online teaching will no longer remain optional. (Baczek et al, 2021) believes that online training is best used to train students, when implemented in combination with traditional classroom instruction, not as a stand-alone method.

According to Bao (2020), a well completed online course requires a detailed and organized lesson plan design, technical skills, instructional materials, early preparation, and online teaching experience. Furthermore, studies show that students have to deal with many problems, such as the lack of motivation and suitable learning environments since they are isolated. In the case of on campus learning, if the students struggle, the faculty members can determine, through the observation and reactions, whether they are in need of something and attempt to take over the situation, which could not be completely possible during online learning. The scholar further stated that when it comes to the success of online learning, there are a number of factors to consider, including a wide availability, easy methods of use, learning course content, and assessment criteria. The scholar was quick to note that online learning, just like any other method of teaching, is to the advantage of both students and teachers.

Prior to the pandemic that compelled the world to resort to a non-traditional mode of learning, online learning has never been adopted and accepted as real learning or the formal mode of education. Now, at the hour of pandemic crisis, most of the educational institutions are exploring and approaching towards online learning to make it easy for students to work out at new normal. Also, various software are being explored by teachers or educators to bring maximum possible ease for their students. As Bali and Liu (2018) noted, online learning has been promoted as being more cost effective and convenient than



traditional educational environments as well as providing opportunities for more learners to continue their educations. However, online learning has been perceived as lacking interactivity compared to face-to-face learning, due mainly to the lack of social presence, lack of social interaction, and lack of students' satisfaction.

Findings from existing research reveal that there are more issues which students perceive concerning online learning. For example, in a study carried out by Dost et al (2020), it was discovered that students did not find online learning to be engaging or enjoyable, with limited opportunities to ask questions. Furthermore, on average students were neutral when asked whether online teaching and learning should be more interactive, but majority of the respondents indicated that they did not find it as effective as face-to-face teaching. Gismalla et al (2021) found that a quarter of their study population were hostile to the idea of online learning because they are unaware of its effectiveness compared to the face-face teaching style and are unfamiliar with online learning systems. They found that majority of the respondents have poor perception towards online learning and concluded that knowledge on effectiveness of online learning among Biology students is extremely important in a limited resource setting.

Their study further reported that the lack of face-to-face communication with lecturers and students during online learning sessions contributed to a poor environment for professional communication and the exchange of learning experiences. Similarly, the scholars found that lack of face-to-face interaction was considered as an inhibitory factor for online learning implementation. In contrast, Ansari et al (2021) found that majority of their study population perceive online learn to be very advantageous. In their responses, it was found that perceived advantages of online learning include saving the students' time on travelling, flexibility in terms of the option for students to learn at their own pace, learning at their convenience and comfort as well as the cost effectiveness associated with online learning.

Studies report that the unanticipated transition of the education system from traditional to a web-based approach especially as occasioned by the COVID-19 pandemic has been quite challenging. Despite the challenges however, findings show that online learning has potential benefits such as the fact that students being autonomous, they can undergo a self-paced study format, be able to review their learning resources, and the instructors can monitor their progress, which means that this model of learning is more focused on the students and offers flexibility in choosing the proper time for their studies.

Although, it cannot be said to have gained full acceptance in Nigeria, it can be said that the COVID-19 pandemic most definitely brought up online learning into the consciousness of many. The pandemic impacted public health and safety and the educational systems worldwide. For fear of the further spread of diseases, most educational institutions, including those in Nigeria, postponed their face-to-face teaching and learning when the government order a lockdown. Undoubtedly, online learning was seen as a good initiative for carrying on teaching, learning and other educational programs during the period of the lockdown at the same time, students and teachers faced myriads of challenges most of which bothered on unstable electric power supply, slow internet bandwidth for going online and in some cases, lack of internet-enabled device. Although, the online learning method is not new in Nigeria's education system yet many people until the pandemic were not acquainted with the process, and this unpreparedness was what led to both students and teachers have to face difficulties during online classes. As Gopal et al., (2021) noted developing countries still follow traditional face-to-face classes while teachers delivering their lectures, students and teachers using virtual technology to run educational activities for the first time during the pandemic. Nigeria fits into this picture and these challenges no doubt, influenced the perception of online learning by some of the stakeholders especially the students.

Meanwhile, some scholars have carried out research on the perception students have about online learning especially in the aspects of

ease of use and usefulness. Akimanimpaye and Fakude (2015) found that the perceived ease of use by nursing students was proven to be significant and thus influenced their attitude about online learning. Other literature confirms that perceived ease of use has a significant impact on the e-learner's attitude (Coman et al., 2020). According to Kharve and Gogia (2016), the ease of use of an e-learning system makes it possible for students to devote their attention to learning the course material instead of spending additional effort learning the online system. On their parts, Snekalatha et al. (2021) reported that a majority of students perceived the online tests being part of online learning, helped them learn the subject while Bali and Liu (2018) analysed responses to tell whether a hybrid, flexible teaching method, in comparison to traditional face-to-face lectures, improved learning outcomes. The results suggested a positive change in students' grades when the traditional approach was used in combination with extensive use of multi-media resources. In contrast however, Abbasi, Ayoob, Malik and Memon (2020) surveyed the perceptions of students towards e-learning during the lockdown at Liaquat College of medicine and dentistry. The result indicated that majority of the students have negative perceptions towards e-learning.

Almaiah and Alismaiel (2019) argue that since the success of e-learning system depends on students' willingness and acceptance to use this system a lack of e-learning system usage hampers the realisation of benefits. This results in an unsuccessful system and is a waste of universities money (Almaiah & Al-Khasawneh, 2020). Research on this topic is still at its infancy, where the views of the students are not fully studied (Tarhini et al. 2017; Almaiah and Alamri 2018). Studying e-learning adoption can lead universities to better understand their students' needs, and eventually lead to a successful e-learning system (Idris & Osman).

The success of any information system depends on the usage of the system by users (Almaiah 2018). Thus, in the context of e-learning system, student's acceptance of e-learning is considered as one of the main criteria for the success e-learning system. Several studies in the literature have addressed issues related to e-

learning adoption in many countries over the world. For instance, in Malaysia, Al-Rahmi et al. (2016) used the TAM with IDT model to investigate the critical factors that affect the use of e-learning system Malaysian students. The results revealed that relative advantages, observability, trialability, perceived compatibility, complexity, and perceived enjoyment are the factors that play a significant role in students' decision to use e-learning system in Malaysia. Chung, Subramaniam and Dass (2020) surveyed students' readiness for online learning in Malaysia. The result shows the readiness of students to participate in online learning is slightly moderate as some of them were not ready for online learning due to lack of learners control, self-directed learning and online communication efficacy.

As a matter of fact, as this online learning wave is a recent development, teachers as well as students are in the process of adapting this new teaching and learning methodology. At this prevailing situation of virtual teaching and setting of new normal of teaching-learning methodology, scholars insist that it becomes all more important to get to know the opinion of learners and to explore learners' inclination towards this novel teaching methodology, such as their degree of adaptation and amendment if any they would like to suggest for the same or want to reject it altogether. Against such a backdrop, this study aims to examine the perception of online learning by students of Biology.

Objectives of the Study

The general objective of this study is to investigate the perception of online learning by Biology students in Colleges of Education in Nigeria. The specific objectives are to:

- i. ascertain the awareness of online learning platforms by Biology students in Federal College of Education (Technical) Umuze, Anambra State and Kwara State College of Education, Ilorin, Kwara State
- ii. find out the perceived ease of use of online learning by Biology students in the two Colleges of Education
- iii. determine the perceived usefulness of online learning by Biology students in the two Colleges of Education

- iv. identify the Biology students' perceived barriers to online learning in the two Colleges of Education

Research Questions

In line with the objectives of this study, the following research questions have been formulated:

- i. Are the Biology students in Federal College of Education (Technical) Umunze, Anambra State and Kwara State College of Education, Ilorin, Kwara State aware of online learning platforms?
- ii. What is the perceived ease of use of online learning by Biology students in the two Colleges of Education?
- iii. What is the perceived usefulness of online learning by Biology students in the two Colleges of Education?
- iv. What are the Biology students' perceived barriers to online learning?

METHODOLOGY

Descriptive survey research design was adopted for this study. The population for the study comprised 250 Biology students in Federal College of Education (Technical), Umunze, Anambra State and Kwara State College of Education, Ilorin as at the 2021/2022 academic session. There was no sampling technique due to the manageable size of the population. The instrument for data collection was a self-developed questionnaire based on the variables of the study. The questionnaire was titled: *Perception of Online Learning by Biology Students in Selected Colleges of Education in Nigeria (POLBSSCEN)*. The questionnaire consisted of two parts: A and B. Part A had four items which elicited demographic information from the respondents while Part B which was made up of four sections (B – E) with 38 items, sought information in the sub-variables of the study. The modified Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) was used and scored 4, 3, 2 and 1 respectively.

The appropriateness and comprehensiveness (content validity) of the

instrument were done by two experts; one from Educational Measurement/Evaluation of the National Commission for Colleges of Education (NCCE), Nigeria and the other from the Department of Biology Education in FCE (T) Umunze, Anambra State. The total number of items in the initial draft was forty-six (46) and this number became thirty-eight (38) after the validation. The internal consistency of the instrument (*POLBSSCEN*) was determined through administering of 50 copies of the instrument to students of Biology Education, College of Education, Zuba, F.C.T. The College of Education, Zuba was used at the time due to its proximity to the researcher. Cronbach Alpha was used to determine the reliability of the instrument. The reliability co-efficient of 0.84 was obtained. Simple Percentage (%) and Arithmetic Mean (\bar{x}) were used for data analysis. These enabled the researcher to see and present the similarities, differences and relationship between the data. The results of the administered researcher-designed questionnaire were subjected to inferential and descriptive statistics and was coded and analyzed using Statistical Package for Social Sciences (SPSS) version 24 for windows.

Results

Table 1 shows the awareness of online learning platforms by Biology students in the Colleges of Education under study. The table shows that 239 (100%) respondents indicated that they are aware of Telegram and YouTube channels as platforms that can be used for online learning, 221 (92.5%) are aware of Zoom, 164 (68.6%) are aware of Khan Academy, while 137 (57.3%) are aware of Coursera. The table also shows that 76 (31.8%) respondents are aware of edX, 33 (13.8%) are aware of Lecturio.com, 22 (9.7%) are aware of Alison, 14 (5.9%) are aware of the Biju's learning app, 3 (1.3%) are aware of Udacity while no respondent indicated awareness of Unacademy. It can be concluded therefore that majority of the respondents are aware of Telegram, YouTube, Zoom, Khan Academy and Coursera as platforms that can be used for online learning.

Table 1: Awareness of Online Learning Platforms by Biology Students Colleges of Education

| S/N | Online Learning Platforms | Frequency | Percentage (%) |
|-----|---------------------------|-----------|----------------|
| 1. | Khan Academy | 164 | 68.6 |
| 2. | Lecturio.com | 33 | 13.8 |
| 3. | Coursera | 137 | 57.3 |
| 4. | edX | 76 | 31.8 |
| 5. | Udacity | 3 | 1.3 |
| 6. | Unacademy | 0 | 0 |
| 7. | YouTube Channels | 239 | 90.8 |
| 8. | Biju's The Learning App | 14 | 5.9 |
| 9. | Alison | 22 | 9.7 |
| 10. | Zoom | 221 | 92.5 |
| 11. | Telegram | 239 | 100 |

Table 2 shows responses to questions on perceived ease of use of online learning by Biology students. Whereas seven of the items got mean scores above the criterion mean of 2.50 or above while just one item got mean score less than 2.50, the table shows a grand mean of 2.74 for the eight items. These results therefore indicate that the ease of use of online learning as perceived by majority of the respondents is generally positive. From the results, it can be concluded that online learning serves them better

than physical learning as they can choose when and where to learn ($\bar{x} = 2.98$), online learning is compatible with the way they prefer to learn ($\bar{x} = 2.89$), online learning platforms are easily accessible ($\bar{x} = 2.89$), are user-friendly ($\bar{x} = 2.76$), easily navigable ($\bar{x} = 2.72$) they find it easy to use online learning platforms ($\bar{x} = 2.65$) and that the user interface of online learning platforms is generally encouraging ($\bar{x} = 2.56$).

Table 2: Perceived Ease of Use of Online Learning by Biology Students

| S/N | Perceived Ease of Use | SA | A | D | SD | Mean (\bar{x}) | Decision |
|------------|---|----|-----|-----|----|--------------------|----------|
| 1. | I find it easy to use online learning platforms | 49 | 81 | 72 | 29 | 2.65 | Agree |
| 2. | Online learning platforms are user friendly | 62 | 91 | 44 | 37 | 2.76 | Agree |
| 3. | My ICT literacy skills makes me confident when using online learning platforms | 33 | 72 | 108 | 29 | 2.45 | Disagree |
| 4. | Online learning platforms are easily accessible | 59 | 119 | 32 | 26 | 2.89 | Agree |
| 5. | The user interface of online learning platforms is generally encouraging | 51 | 89 | 28 | 62 | 2.56 | Agree |
| 6. | Online learning platforms are easily navigable | 57 | 91 | 55 | 34 | 2.72 | Agree |
| 7. | Online learning is compatible with the way I prefer to learn | 69 | 102 | 38 | 28 | 2.89 | Agree |
| 8. | Online learning serves me better than physical learning as I can choose when and where to learn | 74 | 108 | 34 | 22 | 2.98 | Agree |
| Grand Mean | | | | | | 2.74 | |

Table 4.3.3 shows responses to questions on perceived usefulness of online learning by Biology students. Whereas six of the items got mean scores above the criterion mean of 2.50 or above while just four items got mean scores less than 2.50, the table shows a grand mean of 2.64 for the eleven items. These results therefore indicate that the perception which majority of the respondents have about online learning is generally positive. From the results, it

can be concluded that they perceive online learning as useful in assisting them achieve mastery through repetition of course taken rather than just passing exams ($\bar{x} = 3.08$), time management ($\bar{x} = 3.02$), helping them improve their virtual communication and collaboration skills ($\bar{x} = 2.82$), making them motivated to learn ($\bar{x} = 2.77$), providing them with networking opportunities with people who are far away from

them ($\bar{x} = 2.61$) as well as in the achievement of learning outcomes ($\bar{x} = 2.55$).

Table 3: Perceived Usefulness of Online Learning by Biology Students

| S/N | Perceived Usefulness | SA | A | D | SD | Mean (\bar{x}) | Decision |
|------------|---|----|-----|----|----|--------------------|----------|
| 1. | Online learning assists me in the achievement of learning outcomes | 44 | 91 | 52 | 49 | 2.55 | Agree |
| 2. | I am motivated to learning when using online learning platforms | 41 | 129 | 37 | 29 | 2.77 | Agree |
| 3. | I learn the content of a course better with online learning | 43 | 71 | 76 | 47 | 2.46 | Disagree |
| 4. | Online learning is more interesting than face-to-face instruction | 32 | 54 | 96 | 56 | 2.26 | Disagree |
| 5. | Online learning helps me manage my time better | 73 | 118 | 24 | 22 | 3.02 | Agree |
| 6. | Online learning helps me to improve my virtual communication and collaboration skills | 56 | 112 | 41 | 29 | 2.82 | Agree |
| 7. | Online learning helps me develop better critical thinking skills | 41 | 81 | 59 | 56 | 2.45 | Disagree |
| 8. | Online learning helps me become more self-disciplined | 42 | 56 | 95 | 45 | 2.40 | Disagree |
| 9. | Online learning provides me with networking opportunities with people who are far away from me | 48 | 83 | 73 | 33 | 2.61 | Agree |
| 10. | Online learning helps me to achieve mastery through repetition of course taken rather than just passing exams | 75 | 121 | 27 | 15 | 3.08 | Agree |
| Grand Mean | | | | | | 2.64 | |

Table 4.3.4 shows responses to questions on Biology students' perceived barriers to online learning. From the results, it can be concluded that the perceived barriers include slow internet connection ($\bar{x} = 3.16$), high cost of internet subscription lack of self-discipline on the

part of the student ($\bar{x} = 2.83$), limited communication with the instructor ($\bar{x} = 2.65$), incessant electric power failure ($\bar{x} = 2.60$) and lack of proper training on online learning ($\bar{x} = 2.53$).

Table 4: Biology Students' Perceived Barriers to Online Learning

| S/N | Perceived Barriers | SA | A | D | SD | Mean (\bar{x}) | Decision |
|------------|--|----|-----|----|-----|--------------------|----------|
| 1. | Lack of self-discipline on the part of the student | 64 | 99 | 46 | 29 | 2.83 | Agree |
| 2. | Lack of proper training on online learning | 58 | 77 | 33 | 68 | 2.53 | Agree |
| 3. | Limited communication with the instructor | 49 | 81 | 72 | 29 | 2.65 | Agree |
| 4. | Lack of self-motivation | 23 | 34 | 67 | 112 | 1.86 | Disagree |
| 5. | Lack of comfort with technology | 5 | 17 | 99 | 113 | 1.63 | Disagree |
| 6. | Slow internet connection | 79 | 127 | 21 | 10 | 3.16 | Agree |
| 7. | High cost of internet subscription | 61 | 113 | 35 | 29 | 2.87 | Agree |
| 8. | Lack of ICT literacy skills | 23 | 95 | 43 | 69 | 2.31 | Disagree |
| 9. | Lack of internet-enabled device | 6 | 24 | 39 | 156 | 1.46 | Disagree |
| 10. | Incessant electric power failure | 44 | 93 | 62 | 39 | 2.60 | Agree |
| Grand Mean | | | | | | 2.39 | |

DISCUSSION

From the analyses carried out on the retrieved questionnaire, findings revealed that majority of the respondents are aware of Telegram, YouTube, Zoom, Khan Academy and

Coursera as platforms that can be used for online learning. Khan et al. (2021) found that most students recognize YouTube as a very useful platform to learn just about anything, whether academic or not. The scholars also noted that

students are getting very familiar with online learning platforms especially due to the COVID-19 pandemic. Coman et al (2020) found that students are very much aware of online learning platforms such as Coursera and edX.

Findings revealed that the ease of use of online learning as perceived by majority of the respondents is generally positive. From the results, it was discovered that online learning serves them better than physical learning as they can choose when and where to learn, online learning is compatible with the way they prefer to learn, online learning platforms are easily accessible, are user-friendly, easily navigable, they find it easy to use online learning platforms and that the user interface of online learning platforms is generally encouraging.

In line with these findings, Khan et al. (2021) found that as regards the ease of use of online learning, 52.2% of the students believe that online learning platforms are user friendly. They found that 68% of the students have observed that through online learning system it is easy to access the necessary information and course content, despite the fact that only 13% of the students have opined that they are unable to explore the necessary information through online learning system. Also, 50% of the sample respondents believed that web-based learning system simplifies the learning process for the students. In the last variable, 42.3% of the students have observed that the set-up of the online learning service is compatible with the way they learn. In their study, Akimanimpaye and Fakude (2015) found that the perceived ease of use by nursing students was proven to be significant and thus influenced their attitude about online learning. Other literature confirms that perceived ease of use has a significant impact on the e-learner's attitude (Coman et al., 2020). According to Kharve and Gogia (2016), the ease of use of an e-learning system makes it possible for students to devote their attention to learning the course material instead of spending additional effort learning the online system.

Findings further showed that the perception which majority of the respondents have about online learning is generally positive. From the results, it was discovered that they perceive online learning as useful in assisting them achieve

mastery through repetition of course taken rather than just passing exams, time management, helping them improve their virtual communication and collaboration skills, making them motivated to learn, providing them with networking opportunities with people who are far away from them as well as in the achievement of learning outcomes.

Ali (2020) found that students agree that blended learning can positively impact on their academics. Snekalatha (2021) reported that a majority of students perceived the online tests being part of online learning, helped them learn the subject. Bali and Liu (2018) analysed responses to tell whether a hybrid, flexible teaching method, in comparison to traditional face-to-face lectures, improved learning outcomes. The results suggested a positive change in students' grades when the traditional approach was used in combination with extensive use of multi-media resources. On their part, Wong and Fong (2015) studied the perceptions of learning effectiveness, motivation and impact on assessment outcomes. According to scholars, research into student attitudes and perception toward traditional and online methods of delivery is important in order to determine whether the increased usage of technology in the curriculum has been beneficial to their learning.

Shetty, Shilpa, Dey and Kavya (2020) surveyed the attitude of the students towards online learning during COVID-19 crisis in India. The result showed that the students have favourable perceptions towards online learning for sustaining their academic interest and development during the pandemic. Nevertheless, they perceived many challenges during online learning like lack of face-to-face interactions, lack of socialization, distraction by social media, technology related issues etc. Xhelili, Ibrahim, Ruci and SHEME (2021) found that about 68.1% of students showed that they were more motivated in the classroom, 5.9% in online class and 26% were equally motivated in both learning environments. Additionally, the learning process for the 75.4% of students was more attractive in class and for 11.2% learning was more interesting during e-learning. Results from the same study also showed that about 15.2% of students with a technology background of study say that online

learning is more interesting, while 8.9% of students enrolled in non-technology-based programs considered the learning process more interesting during online class. Rafiq et al. (2020) found that overall students' attitude towards e-learning is positive. Students' positive attitude determines that they are accepting use of technology especially e-learning at higher educational level. The scholar also discovered that there is overall acceptance of students for e-learning initiatives.

Finally, it was discovered that the perceived barriers include slow internet connection, high cost of internet subscription lack of self-discipline on the part of the student, limited communication with the instructor, incessant electric power failure and lack of proper training on online learning. Coman et al. (2020) found that when using E-learning platforms there are some elements that might be considered obstacles in students' process of learning, such as decreased motivation in students, delayed feedback or help due to the fact that teachers are not always available at the time students may need help while learning, or feelings of isolation due to lack of physical presence of classmates. Lakbala (2016) reported that lack of proper training on e-learning and the limited communication with the instructor were the most critical barriers. In contrast, as the scholar found, the lack of comfort with technology was the least important factor. Gardner, et al. (2016) reported that among the obstacles of e learning is the need to be personally motivated to complete learning modules. Bączek et al. (2020) investigated students' perception of online learning during the COVID-19 pandemic in Poland. The result shows that majority of the students had never experienced any form of e-learning before the pandemic, hence they identified technical issues as one of their key challenges. This result, according to the authors, might stem from the fact the students were not previously exposed to online learning due to inadequate awareness and accessibility to facilities required.

Nganga, Waruru and Nakweya (2020) noted that online learning preparedness varies from one institution to the other. Not all the student and lecturers had been trained on how to participate in online learning. Most students do not

have laptops or money to buy internet bundles. Dube (2020) investigated the challenges faced by rural learners in South Africa in the context of the COVID-19. The result indicated that the greatest challenge faced with online education is internet connection to which respondents claim to be very expensive or, in some cases, very limited. Other challenges mentioned are unavailability of network, shortage of devices for online learning, closure of internet cafés, lack of computer skills, and expensive internet data.

CONCLUSION

Online learning is growing rapidly as the preferred mode of learning both by educators and students. Today, online learning represents an important, growing trend in the application of technology to facilitate student learning—especially in higher institutions of learning where programs and curricula must evolve to meet the changing needs of a competitive global economy. This study sought to investigate the perception Biology students in Federal College of Education (Technical), Umunze, Anambra State and Kwara State College of Education, Ilorin, have towards online learning. The focus was on three key aspects namely, ease of use, usefulness and barriers. While the study exposed some factors which majority of the respondents perceive as barriers to online learning, it concludes that despite these barriers, the general perception the students have towards online learning in terms of ease of use and usefulness, is positive.

RECOMMENDATIONS

Arising from the findings and conclusion from this study are the following recommendations:

- i. College of Education managements should actively seek partnership with telecommunications companies to provide free access to selected platforms for learning purposes only. The companies should also be encouraged to boost the strength of their network bandwidth with and around the Colleges. To achieve this, the school management may allow promotional content of the partnering company within campus as well as provide

steady power supply for keeping the network masts on always

- ii. Bodies such as the National Information Technology Development Agency (NITDA) should double-up in its support to Colleges of Education and go as far as providing cheap, subsidized and if need be, custom-made smart devices to students and lecturers in partnership with their Colleges of Education to aid online learning
- iii. College of Education managements should do well to properly plan, implement and fund a solid online learning programme that will not be abandoned
- iv. Lecturers should be at the fore-front in promoting online learning in this present era. They should not shy away from the endless possibilities online learning offers and should ensure to attempt it, note the challenges they face for possible solutions

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