



Assessment of the Challenges of Online Teaching Pedagogy among Science Students of Institute of Ecumenical Education, Thinkers Corner Enugu

Regina I. Enebechi ^a & Iyoke, J.O. ^b

^a Department of Science Education, Nnamdi Azikiwe University, Awka.

^b Department of Mathematics/Computer Science Education, Institute of Ecumenical Education, Thinkers Corner Enugu

Corresponding author: ri.enebechi@unizik.edu.ng

Abstract

On-line teaching pedagogy can be described as a method of teaching specifically developed for imparting knowledge through the internet. This new method for implementing teaching became the saving grace during the COVID-19 pandemic as it became handy and provided an online learning platform. This online teaching platform was exploited at the Institute of Ecumenical Education, Thinkers Corner, Enugu. The study employed a descriptive survey design. The instrument for data collection was a questionnaire developed by the researchers and validated by experts. The data collected were trial tested and analysed using the Cronbach Alpha. The reliability coefficient was found to be 0.84 which confirmed the instrument. The population comprised 120 science students from the five departments (Biology, Physics, Chemistry, Integrated Science and Mathematics) of Institute of Ecumenical Education, Thinker's Corner Enugu, (IEcE). The research questions were answered using mean and standard deviation. The findings revealed among others that undergraduates of science education departments of IEcE face the challenges of poor network issues, inadequate power supply and lack of indept knowledge in information and communication technology when studying remotely using online teaching though there was effective communication between the undergraduates science students of IEcE and their teachers. Based on the findings, the researchers recommend that institutions of higher learning should organize staff training and capacity building on online learning for students and teachers.

Keywords: Assessment, Challenges, on-line learning, Science Education, COVID 19, Pandemic,

Introduction

Education is the all-round development of an individual. Education occupies a unique position in the scheme of affairs in the society as it transforms not just the individual, but the entire society (Okeke, Anierobi & Unachukwu, 2021). It is considered an important instrument for an enduring progress of the individual and also for the development of the community and the nation at large. Meaningful and quality education is fundamental to the overall development of a nation and it is also vital for any child's overall development (Kapur, 2018). An educated person is imbued with the capacity not only to accomplish his desired goals and objectives but also possesses the ability to contribute to the well-being of the entire community.

Education in Nigeria is generally divided into three levels namely the primary, secondary, and tertiary. The goals of tertiary education among others are to provide life-long learning opportunities that prepare students with the knowledge and skills required for self-reliance. One of the innovative teaching method that makes this possible is online teaching pedagogy (Sadiku, Adebo, & Musa, 2018). The problem

encountered in the education sector during COVID-19 pandemic made the three levels of education sector to incorporate this in their teaching pedagogy.

The Nigerian Center for Disease Control (NCDC) proposed preventive measures like regular washing of hand with sanitizers, social distancing, wearing of face mask e.t.c. Nigerian president, Muhammadu Buhari ordered a lockdown in key states across the nation in March 2021. This led to the postponement or cancelation of sporting, religious, political, educational and cultural events. In an effort to control the spread of the novel Corona Virus, state governments started the closure of schools, colleges, and universities across the country which disrupted and affected the whole education system nationwide (Li & Lalani 2020).

As the vaccine for the treatment was not forthcoming, the lockdown continued globally and schools remained closed. Over 90 percent of student population was affected by this closure nationwide. After a while, Institute of Ecumenical Education, Thinkers Corner Enugu (IEcE) quickly started online classes/ teaching. Online teaching methodology is a new teaching methodology which replaced the old chalk-talk model during the period of the lockdown. Many researchers



and educationists have tried to define/explain online teaching according to their different perspectives. Jones (2021) stated that on-line teaching pedagogy can be described as a method of teaching specifically developed for imparting knowledge through the internet.

Such methods involve the use of visual graphics, text, animations, videos and audio in teaching (Kacerauskas, King, and Rick 2020). According to the researchers, E-learning in education integrates modern telecommunications equipment and ICT resources, particularly the internet into the education system. Markus and Robey (2018) defines the internet as the International Network of communication in which computers in the Wide Area Network (WAN) talks to each other. Venkatesh, Thong & Xu, (2012) defines ICT as all the digital technologies including; computer, scanner, printer, telephone, internet, digital satellite system (DSS), direct broad cast satellite (DCS), pocket-switching, fiber optic cables, laser disc, microwaves, and multi-media systems for collection, processing, storage and dissemination of information all over the world.

For the purpose of this study, online learning can be described as a method of learning specifically developed for imparting knowledge through the internet such as Whatsapp, Zoom, Goggle classroom, Skype, Goggle hangout(meet), Bomboo learning, Docebo, WIZIQ, Elucidat, Institutions learning management (school learning portal) etc. In addition, any assignment or activity given by the teacher online, are considered as part of online learning.

Some researchers Salloum & Shaalan, (2018) as well as Shehzadi; Nisar; Hussain; Basheer; Hameed; & Chaudhry, (2020) has noticed that online learning has become very popular because it gives room for easy accessibility to content and instruction from any location. According to Oye; Mazleena; & Iahad, (2012) online learning has become an increasingly popular learning approach in the higher educational institutions. Today's modern classrooms, whether online or conventional-based, uses online learning tools and learning management systems that capture student cognition and engages them in the learning process (Galy; Downey; & Johnson, 2011).

Online model emphasizes on interactive learning environment, designed to stimulate dialogue between instructor and students and among students themselves. (Stem, 2020), The online process requires both instructor and student to take active roles, the instructor will often act as a facilitator, organizing

activities that engage students directly rather than relying too heavily on lectures and memorization. Online teaching and learning has come to stay in IECE especially on the days we observe the popular "sit at home" slogan observed by the indigenes/ those living in the South Eastern part of Nigeria. This necessitated the present study which seeks to assess the challenges of online teaching pedagogy among science students of Institute of Ecumenical Education, Thinkers Corner, Enugu.

According to the researchers, assessment is "the act of making a judgement about something" while challenge is a situation of being faced with something that requires some efforts either mentally or physically in order to achieve the required goal or overcome the problem. Science on the other hand is a systematically organized body of knowledge to the study of the structure and behavior of the physical and natural world.

It is against this background that the researchers deemed it necessary to assess the challenges of online teaching pedagogy among science students of Institute of Ecumenical Education, Thinkers Corner Enugu.

Statement of the problem

The rationale behind science education is to enable learners acquire requisite knowledge, attitudes, values and practical skills to enable them adapt and thrive in their environment in an ever-changing world. Due to the pandemic that brought the Nation to a halt in 2020 and affected different sectors of the country's education sector, many institutions of learning adopted digital alternatives for teaching and learning. The lockdown in the world due to the covid-19 pandemic resulted in an unplanned shift from conventional learning to learning out of classrooms through different platforms using the internet, computers and other electronic devices. As a result, many teachers and learners succumbed to the online teaching platform.

The lockdown occasioned by the COVID-19 forced institutions of learning including the Institute of Ecumenical Education, Thinkers Corner Enugu to jump into online learning unprepared in terms of the required hardwares and technical know how as the only viable alternative. Expectedly, this effort was replete with some daunting challenges inspite of the fact that ICT has been integrated into the curriculum of the institution. So far, there has been no studies on the challenges of online teaching at the Institute of Ecumenical Education, Thinkers Corner Enugu. This

study was therefore undertaken to assess the challenges of online teaching among Science Education students at the institution.

Purpose of study

The purpose of this study was to assess the challenges of online teaching pedagogy among science students of Institute of Ecumenical Education, Thinkers Corner Enugu. Specifically, The study sought to:

Find out the extent to which undergraduates science students of IEcE study remotely in a conducive and enabling environment.

1. Determine the extent to which undergraduates science students of IEcE study remotely in a conducive and enabling environment
2. Determine whether there is effective communication between undergraduate science students and lecturers to promote online learning
3. Identify some major challenges in the use of online learning technologies in IEcE.

Research Questions

The following research questions guided the study:

1. To what extent do undergraduate science students of IEcE study remotely in a conducive and enabling environment?
2. To what extent has online teaching provided effective communication between undergraduate science students' and lecturers' to promote online learning?
3. What are the major challenges in the use of online learning technologies in teaching science students of Institutes of Ecumenical Education?

Method

The study was a descriptive survey research design. According to Nworgu (2016) descriptive survey aims at collecting data on and describing in a systematic manner, the characteristics features and facts about a given population. Three research questions guided the study. The population comprised 120 students from the school of sciences Institute of Ecumenical Education,

thinkers' corner Enugu. There was no sampling because the population is manageable. Questionnaire was the instrument or data collection. The instrument consists of 21 items which was developed by the researcher and face validated by three experts. One from measurement and evaluation from the department of Educational Foundation, Enugu state university of science and technology Enugu and two from IEcE. The instrument was trial tested using 20 science students from Enugu State College of Education Technical, who were not part of the study area but has the same characteristics of the study population. Data collected was analyzed using the Cronbach Alpha. The overall reliability coefficient of the instrument was found to be 0.84 which justifies the instrument.

The questionnaire was structured into three sections to answer the research questions. A modified four point Likert scale was used strongly agree (SA) agree (A), disagree (D) and strongly disagree (SD). These were waited (4,3,2,1) points and the reverse (1, 2, 3, 4) for negative response respectively. The Students were expected to indicate their degree of agreement or disagreement on the items by a (✓) in the appropriate column. A mean score of 2.50 and above representing positive response was accepted. Whereas, any mean less than 2.50 was regarded as negative response and was rejected. The researchers visited the Institute to distribute the questionnaire to science students. This was done through other teachers from the same Institute but not from school of science, this is to avoid Hawthorne's effects. Permission were taken from the Registrar of the Institute, copies of the instrument was distributed to the science students during their one hour break period. The researchers stayed there until the last respondent completed his response. This gave the researchers opportunity of ensuring 100 percent completion and submission of the instrument. Mean and standard deviation were used to answer the research questions.

Result

The data collected were analyzed, summarized and presented as follows:

Table 1: Mean and Standard Deviation of the Extent to which Undergraduates' Science Students' of IEcE Study Remotely in a Conducive and Enabling Environment

S/N	Items	\bar{X}	S	Dec
1	I don't enjoy online learning remotely	3.29	0.86	Accept
2	I have a serene learning environment at home	3.25	0.71	Accept
3	I don't always get enough help with my projects and assignments	3.27	0.75	Accept



	remotely			
4	I prefer face to face communication more than learning remotely	3.43	0.83	Accept
5	I am coping well with online learning technologies	3.21	0.77	Accept
6	I always get distracted whenever am having online learning	3.15	0.79	Accept
	Grand mean	3.27	0.79	Accept

Data in Table 1 shows that the 6 items listed on the extent to which undergraduate science students of IECE study remotely in a conducive and enabling environment were agreed by respondents with mean ratings ranging from 3.15 to 3.43. The Grand mean score of 3.27 which is above the decision rule of 2.5.

This implies that undergraduate of science education departments face a lot of challenges when studying remotely using online teaching. The standard deviations for all the items are within 0.71 to 0.86. This shows that the respondents are not wide apart in their ratings.

Table 2: Extent of Effective Communication between Teachers and Undergraduate Science Students of IECE

S/N	Items	\bar{X}	S	Dec
7	I could not attend all the online scheduled classes	3.55	0.75	Accepted
8	I don't always get feedback from my lecturers from the questions I asked during online learning	3.27	0.71	Accepted
9	My lecturers have been uploading all the resources online to learn from home.	3.27	0.71	Accepted
10	I do not elapse the schedule time on online learning	3.53	0.79	Accepted
11	I donot understand all I was taught during online classes	3.51	0.73	Accepted
12	I speak more with my lecturersduring online learning	2.44	0.43	Rejected
13	I contact my lecturers individually to ask questions	2.39	0.39	Rejected
	Grand mean	3.29	0.75	

From table 2 above, the respondents to items numbers 7-11 all agreed that there is effective communication between teachers and undergraduate science students of IECE. This can be seen from the mean ratings ranging from 3.51 to 3.55. in items numbers 12 and 13, which have a mean score of 2.44 and 2.39 respectively, the respondents disagreed that they speak more with their lecturers during online learning and

equally disagreed that they donot contact their lecturers individually to ask questions during online learning. The grand mean of 3.29 with a standard deviation of 0.75 indicated high level of significance and was accepted that there was effective communication between the undergraduates' science students of IECE and their teachers.

Table 3: Major challenges in the Use of Online Technologies in IECE

S/N	Items	\bar{X}	S	Dec
14	Affordability of recharge data/Wi-fi	3.25	1.04	Accepted
15	The network is always fluctuating	3.33	1.05	Accepted
16	Lack of smart phones by the students	3.42	1.07	Accepted
17	Power failures affect classes because there is no alternative source o power.	2.95	1.76	Accepted
18	I get limited internet access	3.42	1.07	Accepted
19	Online learning consumes a lot of data	3.30	2.07	Accepted
20	Schedule time is not always convenient	3.33	1.05	Accepted
21	Not all the teachers are conversant with the online learning technology	2.95	1.76	Accepted
	Grand Mean	2.86	1.13	

From table 3 above, the respondents all agreed that items 14 to 21 are part of the major problems encountered in the use of online learning technologies. The items all have their mean above 2.5. This can be

seen from the mean ratings ranging from 2.95 to 3.42. The grand mean of 2.86 with a standard deviation of 1.13 indicated a high correlation.



Discussion

The study established that undergraduate of science Education department of IECE face a lot of challenges when studying remotely using online teaching pedagogy. This can be seen with mean ratings ranging from 3.15 to 3.42 and grand mean score of 3.27 which indicated high level of significance and therefore was accepted. The finding is in line with earlier assertion by Onyema; Quadri; Alhuseen; Nwafor; Abdullahi; & Faluyi (2020) which started that coronavirus Pandemic created multiple problems for education sector leading to decreased education opportunities for underprivileged learners and those in rural areas. This is equally in line with Fawaz; Alnakhal; & Itani, (2021) who found out that studying remotely during the pandemic adversely affected the students behavioral and emotional state of mind caused by isolation, economic and health problems. Franchi (2020) also asserted that the sudden shift from the traditional teaching to online teaching affected not only the students but equally the teachers who were used to convectional teaching delivery, and who were also obliged to embrace the use of technology remotely despite their lack of technological literacy. Furthermore, the study discovered that there was effective communication between the undergraduates' science students of IECE and their teachers. This can be inferred from their mean rating of 3.51 to 3.55 and grand mean score of 3.29. This is contrary to the earlier assertions of Markus (2018) who stated that unwillingness to adapt to new technological innovation hinders online learning. Getting a new idea adopted even when it has advantages is difficult. Accordingly, innovation such as online learning system in higher education requires facilities, schools to change their ways of teaching, such change does not come easily. This also supported the work of Kacerauskas *et al.* (2020) who asserted that while covid-19 forced Nigerians to embrace online learning with rapid development, implementation is at a low pace because digitalization has not been sufficiently harnessed in many tertiary institutions across the country.

In addition, the study discovered the major problems in the use of online-learning technologies in IECE. This was seen in the mean ratings ranging from 2.95 to 3.42. The Grand mean of 2.86 with a standard deviation of 1.13 indicated a high positive correlation between the responses of the respondents and the research question. This is in line with the assertion by Idowu; Adagunodo; & Poppoola, (2003), that many of

the lecturers in Nigeria Universities, Colleges of education and polytechnics do not have competence in the use of e-learning in their institutions. Majority of lecturers who had taken lecturing jobs were taught without ICTs (e-learning) and they have not developed competence in the use of ICTs (e-learning), thus they cannot model good use of technology. Hence generally, there is still lack of awareness amongst the population (educators and students) especially parents about the effectiveness of e-learning in the 21st century. Many still feel that the traditional learning mode is better. This was also supported by Adeoye; Adanikin; & Adanikin, (2020) which pointed that in Nigeria context, the number of students attending tertiary Institutions out- numbered the schools' infrastructures. The high cost of ICT accessories and inadequate resource persons are among the problems limiting online learning.

Conclusion

The results of the study show that indeed, online teaching at the Institute of Ecumenical Education, Thinkers Corner, Enugu is bedeviled by a number of challenges which impair the effectiveness of imparting knowledge. The implementation of the recommendations made in the paragraphs below will go a long way in alleviating the challenges.

Recommendations

The researchers made the following recommendations.

1. Institutions of higher learning should organize in-service trainings for their staff to build capacity and ensure proficiency in online learning.
2. Massive computer literacy training programmes should be organized nation-wide particularly for lecturers/teachers and students at all levels through workshops, seminars and conferences.
3. Authorities of institutions of higher learning in Nigeria should provide digital libraries in their various institutions and educate both teachers and students on their uses.
4. The government should provide the necessary infrastructural facilities and utilities that will ensure a seamless transfer of knowledge through online leaning. These facilities include provision of generators and uninterrupted power supply (UPS devices) to ensure steady power supply.

References

- Adeoye, I. A., Adanikin, A. F., & Adanikin, A. (2020). COVID-19 and E-Learning: Nigeria Tertiary Education System Experience, *International*

- Journal of Research and Innovation in Applied Science (IJRIAS)*, 5(5), 28-31.
- Fawaz N., Alnakhal M., Itani M. (2021). COVID-19 Quarantine Stressors and Management among Lebanese Students: A Qualitative Study. *Current Psychology*, 5(1), 4-8
- Franchi T. (2020). The Impact of COVID-19 Pandemic on Current Anatomy Education and Future Careers: A Students Perspective, *Anatomical Sciences Education*, 13(3), 312-315
- Galy, E., Downey, C., & Johnson, J. (2011). The Effect of Using E-learning Tools in Online and Campus-based Classrooms on Students' Performance. *Journal of Information Technology Education*, 10, 209-230.
- Idowu, P., Adagunodo E., Poppoola B. (2003). Computer Literacy Level and Gender Differences among Nigeria Universities Staff. *The African Symbolism on annual Journal*, 3(3), 7-12.
- Jones, C.L. (2021). Online Education. Retrieved from [encyclopedia.com](https://www.encyclopedia.com)
- Kacerauskas, K., King K., & Rick R. (2020). Sudden Shift from Traditional Teaching to online Learning in COVID-19 era, *Journal of Education*, 6(7), 19-21.
- Kapur, R.(2018). Factors Influencing the Students' Academic Performance in Secondary Schools in India. Researchgate
- Li, C. & Lalani, F. (2020). Online learning during the Covid-19 pandemic. Retrieved from www.weforum.org
- Markus, B. (2018). Thinking about e-learning. Proceedings FIG International Workshop. Sharing Good Practices: E-learning in Surveying, Geo-information Sciences and Land Administration, 11-13 June 2008, ITC, Enschede, the Netherlands.
- Markus, M., & Robey, D. (2018). Information technology and organizational change: Causal structure in theory and research. *Management Science*, 34(5), 583-598.
- Narad, A., & Abdullah, B. (2016). Academic Performance of Senior Secondary School Students Influence of Parental encouragement and School Environment. Rupkatha. *Journal of Interdisciplinary Studies in Humanities*, 8(2), 12-19.
- Nigeria Centre for Disease Control (2020). Coronavirus in Nigeria. Retrieved from www.ncdc.org. on 12th April, 2020.
- Oye, N. D., Mazleena, S., & Iahad, N.A. (2012). E-Learning Methodologies and Tools, *International Journal of Advanced Computer Science and Applications*, 3(2), 48-52.
- Onyema, E. M., Quadri, N. N: Alhuseen, O. A., Nwafor, C. E., Abdullahi, I. and Faluyi S. G. (2020). Development of a Mobile-Learning Platform for Entrepreneurship Education in Nigeria. *British Journal of Science (BSJ)*, 18(2), 123-131
- Onyema, E. M. et al (2020). Impact of E-Learning Platforms on Students interest and Academic Achievement in Data Structure Course. *CCU journal of Science*, 1(1), 1-16.
- Okeke, N.U., Anierobi, E.I., Unachukwu, G.C. (2021). The Impact of online Teaching and Learning During COVID -19 Pandemic on Selected Primary Schools In Anambra State. *Journal of the Nigerian Academy of Education*. 17(1), 133-147.
- Sadiku, M.N.O., Adebo, P.O. & Musa, S.M.(2018). Online teaching and learning. *International Journal of advanced research in computer science and software engineering*, 3 (2).
- Salloum, S.A., & Shaalan, K.(2018). Investigating Students Acceptance of E-Learning System in Higher Educational Environments in the UAE: Applying the Extented Technology Acceptable Model (TAM), Ph.D dissertation, Brit. Univ>Dubia, Dubia, United Arab Emirates, 2018.
- Sanderson, G. (1995). Objectives and Evaluation, in S. Trueloe (ED), *Handbook of Training and Development* (2nd ed., 113-144.). Blackwell.
- Shehzadi, S., Nisar, Q. A., Hussain, M.S., Basheer, M. F., Hameed, W. U., & Chaudhry, N. I. (2020). The Role of Digital Learning Towards Students' Satisfaction and University Brand Image at Educational Institutes of Pakistan: a Post Effect of COVID-19. *Asian Education and Development Studies*. 10 (2), 276-294.
- Stem, J. (2020). What is online education? Retrieved from [www.indiaeducation.net>articles](https://www.indiaeducation.net/articles)
- Venkatesh, V., Thong, J.Y.L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157-178.
- World Health Organization. (2020). WHO Director-General's opening remarks at the Media Briefing on COVID-19. 11th March, 2020. Geneva, Switzerland.