Availability, Accessibility And Utilization Of E-Learning Facilities In Teaching Biology In Ogidi Education Zone

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Abstract
This study was carried out to assess the availability, accessibility and utilization of e-learning facilities in teaching biology in Ogidi Education Zone. Descriptive survey research design guided by five research questions was adopted. The population was forty-six (46) biology teachers in the thirty eight (38) public secondary schools in Ogidi Education Zone of Anambra State. There was no sample because of the manageable size of the population. The instrument for data collection was a structured questionnaire consisting of two sections, viz- section A and B. Section A consist of demographic data of the respondents, while section B, was the questionnaire titled 'Assessing the Availability, accessibility and Utilization of E-learning Facilities in Teaching Biology in Ogidi Education Zone'. The reliability of the instrument was determined using test, re-test method. Cronbach alpha was used to establish the reliability of the instrument which yielded reliability index of 0.75. The data collected were analyzed using percentages, mean and standard deviation. The mean of 2.50 and above were considered as the acceptance level for the items while below 2.50 was considered rejected. The findings of the study among others showed that only few of the e-learning facilities were available, accessible and utilized for teaching biology in secondary schools in the area. Lack of stable power supply, poor teachers' computer skills and knowledge, network hitches and unavailability, and shortage of quality e-learning facilities were some of the challenges encountered in the cost of utilization of e-learning facilities. The study recommended among others massive computer training programme for teachers, provision of stable power supply, and proper appropriation of fund to school for the provision of e-learning facilities.

Keywords: *Availability, Accessibility, Utilization, E-learning facilities, and Biology*

Introduction

The application of Information and Communication Technology (ICT) to education has drastically improved both the acquisition of knowledge and the learning environment leading to new discoveries to improve life. This innovation is one every professional teacher most especially the biology teachers must embraces for vast knowledge and proper integration of lessons. According to United Nations, (2016), each member country is expected to utilize Information and Communication Technology across various sectors to encourage national development in line with the 2030 United Nations (UN) agenda for sustainable development. Thus, the Federal Government of Nigeria as pointed out in Okoli & Osuafor (2019) encourages science educators to regularly embrace innovations in their fields to be professionally competent, in addition to the basic and professional training received as educators in science.

Among these innovations includes the incorporation of Information and Communication Technology (ICT), a technological tools used to bring about ease in communication and information exchange and this include the use of electronic learning facilities. E-learning is a type of educational approach that uses technology to deliver learning materials and resources online. It allows students to access training and engage in

learning activities using electronic devices and internet access, offering flexibility and accessibility compared to traditional classroom settings (Marc, 2024). It enables students to access training materials, engage in activities, and participate in educational interactions using electronic devices such as computers, internet, cell phones, and even Virtual Reality. It delivers learning materials directly from a teacher to a learner (Marc, 2024).

Biology as a science of life seeks to understand how living things work from the smallest molecules to the largest ecosystems. Sometimes its concept and practical seem difficult to assimilate and the lesson boring to attend thereby lowering the interest of students on the lesson which in turn can lead to low level of achievement in biology thus the use of e-learning facilities as one of the ICT facilities in educational process give students the opportunity to navigate through the difficulties in assimilation of biology concepts and also create an environment for exploit in the field thereby increasing their achievement in biology. However, this can only be achieved if reliable e-learning facilities that can foster the positive changes were adequately available, accessible and properly utilized.

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Statement of the problem

In view of increasing the quality of education in Nigeria, the use of information and Communication Technology which electronic learning is part of was inculcated into education system to facilitate teaching and learning. Despite this effort, there still exists an increase in the deplorable state of educational system in Ogidi Education Zone. Most students lack interest and play nonchalancy in attending lesson. This led to a cursory look at the secondary schools in this area which show that many teachers in the system still rely on the traditional teaching method rather than embracing the use of e-learning facilities, this makes lessons unenticing to students. Thus the availability, accessibility and utilization of e-learning facilities in the teaching process in this area become an issue that needs to be assessed for a positive increase in students' participation in biology in Ogidi Education Zone.

Purpose of the study

The main purpose of this study is to examine the availability, accessibility and utilization of e-learning facilities for teaching and learning of biology in public secondary schools in Ogidi Education Zone. Specifically, this study terms to;

1. find out the available e-learning facilities for teaching biology in public secondary schools in Ogidi Education Zone.
2. determine the accessibility of the available e-learning facilities for teaching biology in public secondary schools in Ogidi Education Zone.
3. determine the extent of utilization of the available e-learning facilities in teaching biology in public secondary schools in Ogidi Education Zone.
4. find out the problem teachers encounter while using e-learning facilities in teaching biology in public secondary schools in Ogidi Education Zone.
5. suggest solutions to the problems teachers encounter while using e-learning in teaching biology in public secondary schools in Ogidi Education Zone.

Research Questions

In order to carry out an intensive and investigative study of this work, the following research questions were designed:

1. What are the e-learning facilities available for teaching biology in public secondary schools in Ogidi Education Zone?
2. Do biology teachers access the available e-learning facilities for teaching biology in public secondary schools in Ogidi Education Zone.
3. Were these available e-learning facilities utilized in teaching biology in public secondary schools in Ogidi Education Zone?
4. What are the problems teachers encounter while using e-learning facilities in teaching biology in public secondary schools in Ogidi Education Zone?
5. What are the solutions to the problems teachers encounter while using e-learning

in teaching biology in public secondary schools in Ogidi Education Zone?

Method

The study adopted a descriptive survey design. The design is considered appropriate for this study because the work is intended to collect data from small growth with view to describing the entire population. The study was carried out in Ogidi Education Zone of Anambra State and comprises three local government areas namely; Idemili North, Idemili South and Oyi local government area. Five research questions were formulated to guide the study. The sample size was all the forty-six (46) biology teachers in the thirty eight (38) public secondary schools in Ogidi Education Zone of Anambra State. The instrument was a standardized instrument which consists of two sections, viz- section A and B. Section A consist of demographic data of the respondents, while section B, was the questionnaire titled 'Assessing the Availability and Utilization of E-learning Facilities in Teaching and Learning and of Biology in Ogidi Education Zone'. The reliability of the instrument was determined using test, re-test method. The test was administered on 14 teachers from Onitsha North Local Government Area of Anambra State and was repeated after two weeks. Chronbach alpha was used to analyze the data collected and the result yielded a high reliability score of 0.90. The questionnaire items were distributed to the respondents by two research assistants employed for this purpose. The respondents were required to fill the questionnaires immediately under the guidance of the research assistants and returned on the spot. The data collected were analyzed using percentages, mean and standard deviation. The mean of 2.50 and above were considered as the acceptance level for the items while below 2.50 was considered rejected

Research Question One:

1. What are the e-learning facilities available for teaching and learning of biology in public secondary schools in Ogidi Education Zone?

Table I:

Percentage count on the e-learning facilities available for teaching and learning of biology in public secondary schools in Ogidi Education Zone.

S/N	E-learning facilities available	Yes	%	No	%	Decision
1	White board	39	84.8	07	15.2	High
2	Projectors	08	17.4	38	82.6	Low
3	Computers	27	58.7	19	41.3	High
4	Personal laptops	18	39.1	28	60.9	Low
5	educational software	11	34.8	30	65.2	Low
6	Digital libraries	11	34.8	30	65.2	Low
7	Instructional media	07	15.2	39	84.8	Low
8	Multimedia	08	17.4	38	82.6	Low
9	Personal smart phone	38	82.6	08	17.4	High
10	Networks and services	10	21.7	36	78.3	Low

From Table 1 above, the data showed a high percentage of non-availability of e-learning facilities for teaching biology in Ogidi Education Zone.

Research Question Two:

Do biology teachers access the available e-learning facilities for teaching and learning of biology in public secondary schools in Ogidi Education Zone.

Table 2:

Percentage count on whether biology teachers do access the available e-learning facilities for teaching and learning of biology in public secondary schools in Ogidi Education Zone.

S/N	Access the available e-learning facilities	Yes	%	No	%	DECISION
1	I always have access to the white board for teaching.	39	84.8	07	15.2	High
2	My school projector is always accessible	02	4.3	44	95.7	Low
3	I have access to my school computers	22	47.8	24	52.2	Low
4	I have access to the software programs in my laptop	18	39.1	28	60.9	Low
5	I have access to my school educational software	05	10.9	41	89.1	Low
6	Digital library is always accessible	07	15.2	39	84.8	Low
7	I have access to the instructional media	05	10.9	41	89.1	Low
8	I have access to pictures, animations and videos in my school computer	01	2.2	45	97.8	Low
9	I always have access to my smart phone	34	73.9	12	26.1	High
10	Networks and services are accessible	03	6.5	43	93.5	Low

From Table 2 above, the data showed a high percentage of teacher not having access to available e-learning facilities for teaching biology in Ogidi Education Zone.

Research Question Three:
Were these available e-learning facilities utilized in teaching and learning of biology in public secondary schools in Ogidi Education Zone?

Table 3:

Percentage count on the utilization of e-learning facilities for teaching and learning of biology in public secondary schools in Ogidi Education Zone.

S/N	Utilization of e-learning facilities	Yes	No	%	%	DECISION
1	I always use the white board for teaching.	39	07	84.8	15.2	High
2	My school projector is used to project lessons.	02	44	4.3	95.7	Low
3	I use the computers to prepare my lessons.	20	26	43.5	56.5	Low
4	I used the software programs in my laptop.	18	28	37.0	63.0	Low
5	I used my school educational software for easy navigation during lesson preparation.	04	42	8.7	91.3	Low
6	I sometimes prepare my lessons in the digital library.	03	43	6.5	93.5	Low
7	I used the instructional media for easy lesson preparation.	03	43	6.5	93.5	Low
8	I use pictures, animations and videos to make my lesson enticing.	04	41	10.9	89.1	Low
9	I always use my smart phone to search for information.	34	12	73.9	26.1	High
10	I use my school networks to gain access to internet.	03	43	6.5	93.5	Low

From Table 3 above, the data showed a high percentage of low utilization of available e-learning facilities for teaching biology in Ogidi Education Zone.

Research Question Four: What are the challenges teachers encounter while using e-learning facilities in teaching and learning of biology in public secondary schools in Ogidi Education Zone?

Table 3

Mean rating and standard deviation on the challenges teachers encounter while using elearning facilities in teaching and learning of biology in public secondary schools in Ogidi Education Zone.

S/N	ITEMS	SA	A	D	SD	X	STD	DECISION
1	Teaching biology with e-learning facilities requires stable power supply.	19	23	03	01	3.30	0.70	Accepted
2	Network problem can affect teaching and learning with e-learning facilities.	25	19	02	0	3.50	0.59	Accepted
3	Some teachers lack computer skills and knowledge, thereby affecting teaching and learning of biology with e-learning facilities.	20	15	07	04	3.11	0.97	Accepted
4	There is shortage of e-learning facilities, thereby affecting teaching and learning of biology.	32	09	04	01	3.57	0.75	Accepted
5	Some of these e-learning facilities are not accessible to the biology teachers while some are faulty.	10	15	15	06	3.63	0.97	Accepted

From the Table 4 above, all the item s were above the accepted mean of 2.50 and thus were accepted as the challenges teachers encounter while using e-learning facilities in teaching and learning of biology in public secondary schools in Ogidi Education Zone.

Research Question Five:
What are the solutions to the challenges teachers encounter while using e-learning in teaching and learning of biology in public secondary schools in Ogidi Education Zone?

Table 5:

Mean rating and standard deviation on the solutions to the challenges teachers encounter while using e-learning in teaching and learning of biology in public secondary schools in Ogidi Education Zone.

S/N	ITEMS	SA			SD	X		
A		D				STD		DECISION
1	There should be massive computer training programme for both teachers and students.	23	19	04	0	3.41	0.65	Accepted
2	There should be adequate internet access.	21	23	01	01	3.39	0.65	Accepted
3	There should be stable power supply for effective and utilization of e-learning in teaching and learning of biology.	29	16	01	0	3.61	0.53	Accepted
4	Government should appropriately fund schools to provide e-learning facilities for teaching and learning of biology.	17	23	05	01	3.37	0.77	Accepted
5	E-learning facilities should be upgraded and the teacher should be given access to the for effective utilization in teaching and learning of biology.	14	17	12	03	2.91	0.92	Accepted

From the Table 4 above, all the items were above the accepted mean of 2.50 and thus were accepted as the solutions to the challenges teachers encounter while using e-learning in teaching and learning of biology in public secondary schools in Ogidi Education Zone.

Discussion

In the course of presenting and analyzing the data collected for this work on the availability and utilization of e-learning facilities for teaching and learning of biology in public secondary schools in Ogidi Education Zone of Anambra State, some findings were made which were discussed below;

From the findings, it was observed that most of the e-learning facilities needed for the teaching of biology were not readily available except for white board and teacher's personal smart phone. This finding was in line with the findings of Owolarafe, *et al.,* (2024) who stated that the elearning tools that are expected to be provided by the school management were not available. It was also in agreement with Nwana&Usifoh (2023) whose study revealed that there were no adequate

resources available for teaching school subjects. This condition differs from the findings of Osuafor&Emeji (2015) whose research reviewed that the required e-learning facilities were moderately available.

The findings also revealed that e-learning resources available for teaching and learning of biology in secondary schools in Ogidi Education Zone were not accessible due to their unavailabilities. And that the once available at sometimes were not accessible due to some factors from both the management and the teachers. This finding was in consonant with Ajah & Chigozie-Okwum (2019), Obodike & Okekeokosis (2020), Nwana & Usifoh (2023), Owolarafe*et al* (2024) whose findings also showed that E-learning resources are not easily accessible by the teachers during the teaching and learning processes of biology.

Findings from the study revealed that most of the available e-learning resources were not utilized for teaching and learning of biology in the study area as a result of some factors. The finding was in agreement with the findings of Wakili (2015), Huan*et al.,* 2019), Nwana & Usifoh (2023), Owolarafe*et al*., (2024) whose findings revealed that learning resources including ICT learning resources are not available and at the same time not in use for teaching purposes in schools.

It further observed that unavailability of stable power supply, poor teachers computer skills and knowledge, network hitches and unavailability, high maintenance cost of e-learning facilities and shortage of quality e-learning facilities were some of the challenges encountered in the cost of utilization of e-learning facilities. This was in line with the findings of Aham&Onyi (2022) who stated that poor funding, lack of competence, inadequate infrastructure, poor internet connectivity, poor administrative and technical support, and erratic power supply affect the utilization of e-learning facilities. It also concur to the findings of Shdaifat*et al*., (2020) and Nwadi, *et al.,* (2023) whose observed that Insufficient training and support for educators can hinder the successful integration of e-learning in schools. According to them, the high costs associated with infrastructure and e-learning materials can also be a significant concern to adopting e-learning. Almosa (2017) also opined that teachers though might have an excellent knowledge in academics, they may not possess the e-learning skills needed to deliver their acquired knowledge to others.

Finally from the findings, it was revealed that there should be massive computer training programme for teachers, workshops, seminar and conferences should be organized for acquisition of the knowledge and skills needed for e-learning utilization, there should be stable power supply for effective utilization of e-learning in teaching and learning of biology, government should appropriate fund to school managements to provide e-learning facilities for teaching and learning of biology and e-learning facilities should be upgraded for effective utilization in teaching of biology. This agrees with the findings of Smedley (2019) who stated that it is flexible when issues of time, power supply and place are taken into consideration, every teacher has the luxury of choosing the environment that suits him/her. It also agrees with the findings of Osuafor (2015) who stated that that schools should be provided with e-teaching and e-learning facilities and science teacher educators should undergo regular in-service training and retraining programs.

Conclusion

The examination of the availability, accessibility and utilization of e-learning facilities in teaching biology in secondary schools in Ogidi Education Area, Anambra State, Nigeria has revealed the deplorable state of Education in the area, starting from the nearly unavailability of the required e-learning facilities for effective teaching and learning of biology to the inaccessibility of the few available by the teachers which led to the poor utilization of these elearning facilities thereby creatingloofholes in the desired academic outcome of students in the area. Based on the findings, it was observed that so many factors played to this degrading state and to improve the quality of education in this area, there is need to yield to the solutions to these factors teachers encounter in order to improve teaching strategy and hence making biology as a subject enticing to

the students of the study area. This if done will definitely increase the students' academic achievement thus achieving the goal of Education.

Recommendations

Based on the findings of the study, the following recommendations were made.

1. There should be massive computer training programme both teachers and students.
2. Workshops, seminar and conferences should be organized for acquisition of the knowledge and skills needed for e-learning utilization.
3. There should be stable power supply for effective and utilization of e-learning in teaching and learning of biology.
4. Government should appropriately fund schools to provide e-learning facilities for teaching and learning of biology.
5. E-learning facilities should be upgrade for effective utilization of teaching and learning of biology.

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