

Challenges of Electronic Learning of Agricultural Science during Coronavirus Pandemic in Secondary Schools in Delta State

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Abstract

The investigated the challenges of electronic learning of agricultural science during coronavirus pandemic in secondary schools in Delta State. The study was guided by three research questions. The descriptive survey research design was utilized for the study. The population of the study comprised all the agricultural science teachers in secondary schools in Delta State. Simple random sampling technique was used to draw 121 teachers as sample for the study. The instrument used for data collection was questionnaire titled ‘‘Challenges of E-learning during Covid-19 Questionnaire (CECQ)’. The instrument was duly validated by three experts and subjected to internal consistency using Cronbach alpha which yielded 0.79. Mean and standard deviation were utilized for data analysis. The findings of the study revealed among others that there are personnel, technical and financial challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State. Based on the findings, it was recommended among others that Delta State Post Primary Education Board should annual training programmes for teachers to improve their skills in the use technological devices to promote e-learning in secondary schools.

Keywords: Challenges, Electronic-learning, Agricultural Science, Coronavirus, Pandemic

1. Introduction

Coronavirus (COVID-19) is a highly infectious disease that originated from Wuhan, China in December 2019. Some of the symptoms of Coronavirus include; Sore throat, runny nose, constant coughing/sneezing, breathing difficulty and fatigue (Edeh, Nwafor, Obafemi, Shuvro, Atonye, Sharma & Alhuseen, 2020). The up-surge of the COVID19 outbreak has resulted in developing viable measures to curtail the spread of the virus. Some measures to halt the spread of Covid-19 include regular washing of hands with alcohol-based sanitizers, social distancing, coughing and sneezing with bows, wearing of face masks among others. Nigeria confirmed her first Covid-19 case on 27th February 2020. The first confirmed case in Nigeria was an Italian who returned from Milan, Italy, on 25 February 2020. Edeh et al stressed that an Italian who was reported to be the first case of coronavirus in Nigeria was successfully treated and discharged according to the government, but new cases emerged thereafter.

The virus continued to spread which forced the Federal Government to Nigeria to take develop some preventive measures. One of the measures of the Federal Government to contain the spread of the virus in Nigeria was to shut down all educational institutions and allow students

to go home as cases of reported COVID-19 increased to 13 (Ogunode, Iriogebu & Abashi, 2020). To buttress this, Alaba and Oyelade (2020) stressed that as part of measures to contain the spread of COVID-19 in Nigeria, the Federal Ministry of Education, through the Permanent Secretary in the Ministry, on March 19th ordered the immediate closure of tertiary institutions, secondary and primary schools across the nation over the outbreak of the disease in the country. In addition to this, the authors averred that restriction was placed on interstates movement, market places were locked, religious gatherings of more than 10 persons were banned, and social activities such as parties, ceremonies and club meetings were placed on hold. All the public and private education institutions complied with the directive of the Federal Government. The shutdown of the educational institution from pre-primary to tertiary education levels disrupted the academic calendar. Olayemi, Adamu and Olayemi (2021) reported that the ripple effect of the closure of educational institutions includes disruption of student cognitive learning process, delay in student graduation, tendencies of postponing academic sessions, and the likelihood of student indulging in unwholesome behavior during the lockdown known as juvenile delinquency amongst others. The closure of educational institutions has accelerated the use of electronic-learning. Ajibola, Damilola and Nwadioke (2020) pointed out that some proactive Nigerian educational institutions commenced e-learning to engage the students while they are staying at home.

Electronic learning (e-learning) is the mean of computers and other digital devices to teach the learners. According to Obibuba (2020), e-learning denotes an electronic method of learning which is associated with computerized learning in an interactive interface at the convenience of both the learners and teachers. Obeta, Etukudoh and Ejinaka (2020), noted that electronic learning which is shortened for e-learning is the fastest and easiest means of learning that has been in existence for many years with everyday technological innovations and development that makes it reliable. E-learning is the use of modern devices to facilitate virtual or non-virtual instructional delivery. During e-learning, the communication process between instructors and learners is often computer-assisted with the use of a variety of technologies like laptops, smartphones, tablets (Okereke, Alison, Nzeribe, Ashinedu & Muhammad, 2020). E-learning also entails the use of platforms such as Zoom for delivering instruction, emails for submitting their assignments and Whatsapp for the exchange of audio recorded lessons among others. Similar to this, Obeta, Etukudoh and Ejinaka (2020) pointed that the possible online teaching and learning platforms are Google duo, Webex Meet, Canvas Student, Skype, WhatsApp, Hangouts, Google meeting, Google classroom, GoToMeeting, Microsoft Teams and Zoom. The teachers use videoconference or chatrooms to interact with students during e-learning.

E-learning platform helps to maintain social distancing to reduce the spread of Covid-19 virus among students of educational institutions. Aini, Budiarto, Putra and Rahardja (2020) noted that a well-designed e-learning system typically does not only provide learning materials, but also facilitate other activities such quizzes, written examinations, and discussion forum. The authors also added that properly designed e-learning materials may prove an efficient and

effective alternative to materials that are delivered offline. Thus, e-learning was the alternative mean of teaching agricultural science during the Covid-19 pandemic.

Agriculture is one of the subjects offered in Junior and Senior Secondary Schools in Nigeria. Agricultural science is the cultivation of crops and animal rearing for processing, storage, marketing and distribution for man's usage and consumption. Ojimba, Nwafor and Onyekwere (2018) defined Agricultural science as the art and science of cultivating the soil, providing livestock, preparing livestock feeds, processing crops and livestock products for the use of man. Akanmu, Adejare and Uphai (2020) noted that the curriculum content of the senior school level was structured to focus on three major areas: production (food production), projection (agronomy and forestry) and economics (agricultural economics and farm management). The objectives of agricultural science is not only to produce professional and skilled manpower but, also to educate the rural community to ensure complete transformation of agricultural production from the subsistence level to mechanized agriculture (Ndem & Akubue, 2016). The main method of teaching agricultural science in Nigeria secondary schools is a traditional face-to-face system involving textbooks, chalkboards, or whiteboards with little explanation by the teachers. The up-surge of the COVID19 outbreak has induced some agricultural science teachers to utilize e-learning platforms.

Teaching agricultural science at the secondary schools during Covid-19 requires requisite skills and sound knowledge of the application of technological devices to promote e-learning. The technological literacy of most agricultural science teachers and students are limitations that seem to undermine e-learning in secondary schools in Delta State. Many secondary school students in Delta State cannot afford the expensive data bundles, technological devices or electronic gadgets to participate in e-learning. Edeh, Nwafor, Obafemi, Shuvro, Atonye, Sharma and Alhuseen (2020) observed that the realities of receiving formal education from home in Nigeria could be very challenging to many educators, learners and parents especially those in developing countries where the accessibility, availability and use of technology in education are not widespread. The authors also stressed that apart from the cost of accessing online education, many other factors such as network issues, poor power supply, distractions, poor digital skills, inaccessibility and availability issues can also hinder smooth study from home. Some secondary school students and teachers in Delta State are rarely conversant and proficient on the e-learning platform. Shaikha and Najlee (2021) stressed that the challenges of e-Learning could be grouped into four namely: personnel, technical, financial and logistical. These challenges have necessitated this study.

1.1 Purpose of the Study

The main purpose of the study was to determine the challenges of electronic learning of agricultural science during coronavirus pandemic in secondary schools in Delta State. Specifically, the study seeks to find out the:

1. Personnel challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State.

2. Technical challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State.
3. Financial challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State.

1.2 Research Questions

The following research questions guided the study

1. What are the personnel challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State?
2. What are the technical challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State?
3. What are the financial challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State?

1.3 Method

Descriptive survey research design was employed for the study. The population of the study comprised all the agricultural science teachers in secondary schools in Delta State. Simple random sampling technique was used to draw 121 teachers as sample for the study. The instrument used for data collection was questionnaire titled “Challenges of E-learning during Covid-19 Questionnaire (CECQ). The researchers developed the instrument based on insight from literature review and consultation of experts in the field of Education and Agricultural Science. The instrument had three sections of B1 to B3 covering the specific objectives with six, seven and five items respectively. The instrument contained 18 items structured on a four-point rating of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) weighted 4, 3, 2 and 1 respectively. The instrument was duly validated by three experts, two in the Faculty of Education and a specialist in Agriculture Science, all from Nnamdi Azikiwe University, Awka. The experts scrutinized the items in terms of language clarity and content adequacy in addressing the purposes and research questions. The corrections and suggestions of the experts were reflected in the final draft of the instrument. The instrument was trial-tested twice on 20 agricultural science teachers from secondary schools in Bayelsa State which is outside the study area but share a similar boundary, culture and school characteristics with the study area. Data gathered from their responses were analyzed using g Cronbach alpha which yielded 0.79. The researchers together with five secondary school agricultural science students utilized a direct method of data administration. A total of 121 copies of the questionnaire were distributed but 113 copies were successfully retrieved indicating a 93% return rate. Mean and standard deviation were utilized for data analysis. The decision rule is that any mean score of 2.50 and above for an item is adjudged agreement and if otherwise, adjudged disagreement.

1.4 Results

Research Question 1: What are the personnel challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State?

Table 1: Mean Ratings and Standard Deviation Scores of Teachers on the Personnel Challenges of e-learning of Agricultural Science during Coronavirus Pandemic

S/N	ITEMS	Teachers (N = 113)		
		Mean	SD	Remark
1	Shortage of skilled teachers to handle digital devices for promoting e-learning	2.91	1.10	Agree
2	Irregular training of teachers	2.74	1.05	Agree
3	Resistance to change among teachers	2.62	1.11	Agree
4	Poor motivation of teachers to promote e-learning	2.55	1.03	Agree
5	Poor interests of teachers in adopting e-learning	2.64	1.07	Agree
6	Low readiness of teachers for the use of e-learning as the main method of instructional delivery	2.55	1.08	Agree
Mean of Means		2.67	1.07	Agree

The data analysis presented on Table 1 shows that all items have mean scores 2.50 and above showing that they are personnel challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State. The overall standard deviation scores of 1.07 shows homogeneity in their responses. The mean of means values of 2.67 shows that there are personnel challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State.

Research Question 2: What are the technical challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State?

Table 2: Mean Ratings and Standard Deviation Scores of Teachers on the Technical Challenges of e-learning of Agricultural Science during Coronavirus Pandemic

S/N	ITEMS	Teachers (N = 113)		
		Mean	SD	Remark
7	Limited access of students to e-learning platforms	2.73	1.08	Agree
8	Unstable internet connectivity	2.54	1.13	Agree
9	Difficulty in preparing materials for an online class	2.46	1.06	Disagree
10	Erratic power supply	2.60	1.03	Agree
11	Inaccessibility to online library resources	2.69	1.00	Agree
12	Difficult applying e-learning for practical sessions	2.71	1.12	Agree
13	Difficult dividing students into subgroups for group task	2.58	1.05	Agree
Mean of Means		2.62	1.07	Agree

As shown on Table 2 shows that all items except item 9 have mean scores 2.50 and above showing that they are technical challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State. The overall standard deviation scores of 1.07 shows homogeneity in their responses. The mean of means values of 2.67 shows that there are personnel challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State.

Research Question 3: What are the financial challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State?

Table 3: Mean Ratings and Standard Deviation Scores of Teachers on the Financial Challenges of e-learning of Agricultural Science during Coronavirus Pandemic

S/N	ITEMS	Teachers (N = 113)		
		Mean	SD	Remark
14	High cost of computer facilities	2.89	0.98	Agree
15	Expensive software for preparing e-learning content	2.76	1.10	Agree
16	Huge cost of internet connectivity	2.66	1.00	Agree
17	High cost of maintenance of digital technological devices	2.87	1.06	Agree
18	Increasing cost of fuel to power generators for e-learning	2.53	1.02	Agree
Mean of Means		2.74	1.03	Agree

Result on Table 3 indicated that all items have mean scores 2.50 and above showing that they are financial challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State. The overall standard deviation scores of 1.03 shows homogeneity in their responses. The mean of means values of 2.74 shows that there are financial challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State.

1.5 Discussion

The result of the study revealed that there are personnel challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State. The personnel challenges of e-learning of agricultural science during coronavirus pandemic were the shortage of skilled teachers to handle digital devices for promoting e-learning, irregular training of teachers, resistance to change among teachers, poor interests of teachers in adopting e-learning and low readiness of teachers for the use of e-learning as the main method of instructional delivery. This is in agreement with the finding of Edeh, Nwafor, Obafemi, Shuvro, Atonye, Sharma and Alhuseen (2020) who observed that poor digital, lack of training and resistance to change are the major barriers for online education during the COVID-19 pandemic school

closures. This conforms with the finding of Zalat, Hamed and Bolbol (2021) who reported that limited technology skills of the staff, Staff resistance and negative attitude towards e-learning and lack of incentives were the challenges facing e-learning during the outbreak of coronavirus pandemic. The possible explanation for this finding is probably because most teachers in secondary schools in Delta State are conversant with only the traditional method of use of chalk and blackboard in teaching. Some secondary school teachers are resistant to e-learning because of insufficient skills to utilize technological devices to teach. The insufficient skills of teachers to utilize e-learning may be attributed to irregular training.

The finding of the study indicated that there are technical challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State. The technical challenges of e-learning of agricultural science during coronavirus pandemic were limited access of students to e-learning platforms, unstable internet connectivity, erratic power supply, inaccessibility to online library resources, difficulty applying e-learning for practical sessions and difficulty dividing students into subgroups for the group task. This is in line with the finding of Olayemi, Adamu and Olayemi (2021) reported that poor internet services, erratic power supply and inaccessibility to online library resources were the major perceived challenges to effective online learning. This also supported the finding of Shaikha and Najlee (2021) who identified limitations of networks, insufficient investment and service and inability to access e-learning platforms easily as technical challenges facing e-learning during the Covid-19 pandemic. Bączek, Zagańczyk-Bączek, Szpringer, Jaroszyński and Woźakowska-Kapłon (2020) identified technical issues as one of the challenges of e-learning during the Covid-19 pandemic. The instability of electric power and internet connectivity are great technical problems of the use of e-learning. Internet connectivity is usually slow which disrupts e-learning in Nigeria. The students in different geographical locations made it technically difficult for teachers to group them for teamwork in practical agricultural science classes.

It was also found out that there are financial challenges of e-learning of agricultural science during coronavirus pandemic in secondary schools in Delta State. The financial challenges of e-learning of agricultural science during coronavirus pandemic were the high cost of computer facilities, expensive software for preparing e-learning content, huge cost of internet connectivity, high cost of maintenance of digital technological devices and increasing cost of fuel to power generators for e-learning. This agreed with the finding of Obibuba (2020) who reported that major obstacles to e-learning in Nigeria is tied towards the high cost of computer facilities, internet data services and cost of purchasing the data bundle, This agreement could be attributed to the fact that the two studies were conducted in the same country where information and communication technology facilities are too expensive. The costs of digital devices for e-learning are still very high in Nigeria. The financial capacity of most teachers and parents are too low to afford modern devices. Few students that are privileged to have personal phones or computers may find it difficult to afford data bundles for effective participation in e-learning.

1.6 Conclusion

Based on the findings, it was concluded that e-learning which has been the most widespread platform for instructional delivery during the outbreak of coronavirus pandemic is faced with numerous challenges in secondary schools in Delta. There are personnel, technical and financial challenges in the use of e-learning during Covid-19. Therefore, the unprecedented school closures as a result of Coronavirus remains a lesson for Nigeria to develop digital infrastructure in secondary schools to support e-learning through overcoming the personnel, technical and financial challenges of the school system.

1.7 Recommendation

Based on the findings of this study the following recommendations were made:

1. Ministry of Education should supply sufficient computers and other digital facilities to secondary schools to promote e-learning.
2. Delta State Post Primary Education Board should annual training programmes for teachers to improve their skills in the use of technological devices to promote e-learning in secondary schools.
3. The Federal Ministry of Education should integrate practical use of technological devices for e-learning as general courses in the curriculum of all tertiary institutions to enable the would-be teachers to acquire technical skills for promoting e-learning.

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