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AVAILABILITY, ACCESSIBILITY AND UTILIZATION OF E-LEARNING RESOURCES IN TEACHING AGRICULTURAL SCIENCE IN SENIOR SECONDARY SCHOOLS IN ANAMBRA STATE

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ABSTRACT

This study investigated availability, accessibility and utilization of E-learning resources in teaching Agricultural science in senior secondary schools in Anambra state. Six research questions guided the study and three hypotheses were tested. The study adopted a descriptive survey research design. The population consisted of 431 Agricultural science teachers from public and private schools in Onitsha North and South Education Zones of Anambra State. There was no sample for the study as the population was of manageable size. Checklist questionnaire was the instrument used for data collection. The instrument was validated by four experts and tested for reliability. Cronbach alpha was used to establish the reliability of the instrument which yielded reliability index of 0.871. Frequency count, mean and standard deviation were used to answer the research questions while chi-square and independent t-test were used to test the null hypotheses at 0.05 level of significance. The findings of the study among others showed that most of the e-learning resources are available, accessible and utilized but not sufficient enough for teaching Agricultural science in secondary schools in Anambra state. Findings of the study also revealed among others that there was no significance difference between public and private secondary schools on the extent of availability of e-learning resources for teaching Agricultural science in Anambra state. The study recommended among others that adequate e-learning resources should be provided for effective teaching and studying processes. Again, that instructional material is one of the major determinants of effective teaching and learning of Agricultural science in secondary schools which cannot be separated from teaching resources, it is therefore imperative to ensure they are made readily available during Agricultural science lessons by both the school head and the government as the case may be.

Keywords: Availability; Accessibility; Utilization; E-Learning Resources; Teaching; Agricultural Science

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Introduction

Education is recognized as the nation's greatest asset towards the quick development of its technological advancement, scientific potentials, sociological and human resources. Hence it focuses on the integration of the individual into a sound and effective citizen. The Federal Republic of Nigeria, (FRN, 2014), expressed the national goals of education to include: the acquisition of appropriate knowledge, technological skills, competencies; development of mental, physical and scientific abilities; equipment of individuals to live in and contribute meaningfully to the development of the society. The importance of education in general and technology education in particular in national development cannot be overemphasized. Technology education occupies a very high position in Nigerian educational policies. The Federal Republic of Nigeria (FRN) stated amongst other goals that: technology education shall emphasize the teaching and learning of information and communication technology and in addition to general education, the study of related information and communication technology skills.

These national goals could be in response to the rapid advancement in science and technology so that the country would be able to move forward and keep pace with development in other parts of the world. According to Ucheagwu-Okoye, (2025) & Nneka Anthonia Obumse & Uju Egenti (2021), Science and its applied form of technology, according to Izuchukwu, Ugwaka, Arazu & Ezechi, (2023), Abonyi, (2021), have contributed to the comfort of man through the production of goods and services in various parts of the world. Science is acknowledged as the bedrock of national development. Ucheagwu-Okoye, (2025), Onyekwelu, (2024); Osegbue, and Nnubia, (2020), are of the opinion that any nation who desires to attain national development must make science and technology education a priority. The Federal Government of Nigeria acknowledged the importance of science and technology education for all, hence she made provisions for science and technology education at all levels of education.

In pursuit of goals of "Science for all", Okechukwu, (2025), Enwezor, & Obi, (2022), Ezeaku, (2025), asserts that current reforms in science and technology lay emphasis on scientific literacy and the need to achieve equity and excellence in education In Nigeria, the situation is not different. The government, according to Onyekwelu, (2021), Azubuike, (2025), Ucheagwu-Okoye, (2021) & Okoye, (2025), through official policies and actions has demonstrated commitment to the inculcation of scientific and technological literacy among all Nigerians and not only those pursuing scientific or technological careers or science professions but also for those in non-science related courses. One

obvious example of government action in this regard is making science subjects compulsory (that is, a core subject) in both Basic, Junior and Senior secondary schools and one of such subjects is Agricultural science at the senior secondary school level.

Agricultural science is the natural science that studies life and living organisms, including their physical structure, chemical processes, molecular interactions, physiological mechanisms, development and evolution (Aquarena Wetlands Project glossary of terms, 2014). According to Ezeamama, Ofozoba (2023) & Ibe, (2022), Okoye,& Ezeaku,(2025), agricultural science as a branch of science contributes immensely to the technological growth of the nation. Agricultural science is the branch of science that deals with plants and animals, their structure, function, growth and their relationship with their environment. It is a subject that Osegbue, (2021); Ekwesianya, (2025), Ezeaku and Okoye, (2025), Okechukwu, (2025), permeates into all other science subjects. With knowledge of Agricultural science, Okaforcha, (2021), Adinna & Onyekwelu, (2021), Anthony (2014), are of the opinion that students are in a position to understand the structure and function of different parts of the body the environment in which they live and how best to conduct themselves therein.

Despite the important place of science in general and Agricultural science in particular, evidence of poor achievement and performance in this subject abound. Educators are also becoming increasingly concerned about the poor achievement of students in the subject at both internal and external examinations. For instance, a review of students' achievement in Senior School Certificate Examinations (SSCE) in Agricultural science from 2010-2022 in Nigeria showed a persistent trend of poor performance of students in Agricultural science for students' result in Agricultural science at West African Senior School Certificate Examination 2010 to 2022). It can be observed from the table that from 2010-2015, the number of Agricultural science students who made grade A1-C6 was less than 50% of the students enrolled for the examination.

Many factors have been adduced for students' poor performance in Agricultural science. Prominent among these factors are teacher quality, learner's factors, and the use of ineffective and teacher-centered methods in addition to the non-use of appropriate instructional materials for teaching Agricultural science in secondary schools, among others with teaching methodology being the most dominant factor in Nigeria. According to Okaforcha, (2021), Adinna & Onyekwelu,(2021), Anthony (2014), in a bid to change the status quo, the teaching methodology should be well strategized and include modern teaching materials as well as e-technology facilities, Bola (2018) also reported that teachers lack of appropriate teaching and learning materials constitute

major impediments to adequate implementation of Agricultural science curriculum in Nigeria secondary schools.

For the products of Agricultural science education (graduates) to maintain technological leadership, they must be equipped with technological competencies to meet up with the tremendous surge and demands of the ever-changing technologies in the world of work. Osuala (2019) recognizes new technologies as a developing force. According to Ofozoba, (2020), Ibe, (2019), Anushiem, (2017), Ekwesianya, (2022), technology has radically and positively impacted on education and training globally by transforming teaching and learning. The whole process of education, particularly the way teachers and learners gain access to knowledge and information in this 21st century, has been greatly affected by technology; especially ICT Anushiem, (2023), Azubuike, (2024), Okeke, Okaforcha and Ekwesianya, (2019).

Accordingly, Enwezor and Chukwunonye, (2022), Ucheagwu-Okoye, (2025), opined that both teachers and students achieve better curriculum outcome with the use of information and communication technologies (ICT). According to Ugwaka, & Igbokwe (2020), Okaforcha & Okeke, (2025), the relatively new technologies are what are referred to as e-learning technologies. This is in support of Okaforcha & Iloka, (2025), Nwankwo & Okoye, (2022), Osegbue, (2022), who opined that the integration of ICT into the teaching and learning process has introduced a new system of learning which is globally referred to as e-learning. The FRN (2014) encouraged the development of e-learning by stating that the government will provide basic infrastructures and facilities for ICT and learning. E-learning means electronic learning. E-learning, can be described as a "virtual classroom". Edigbo (2014) described e-learning as a type of learning conducted digitally via electronic media, typically involving the internet with a group of students assembled in a common virtual classroom to meet an instructor on-line (that is, in cyber space). The participants enroll by sending an e-mail to the instructor. The instructor sends out learning materials by electronic means to each participant.

E-learning is carried out through the use of a wide variety of resources such as computer, printer, scanner, internets, e-pen, e-portfolio, e-mail, e-book, e-reader, e-board, CD-ROM, diskettes, slides, Wi-Fi, Xender, digital camera, digital microscopes, flash drives, digital tapes, digital spreadsheets, digital beam balance, digital watch, digital glove, digital calculator, digital recorder and digital archives. Others are; digital television, projectors, e.g., multimedia projectors (MMP), teleconferencing devices, videoconferencing systems and artificial intelligent devices, example robots to

mention but a few. According to Enwezor, & Chukwunonye, (2021), Ugwaka & Igbokwe (2023), there is need for availability of these mentioned e-learning resources in curriculum delivery.

Availability of e-learning resources, according to Onyekwelu,(2024), & Ofozob & Ofozoba, (2023), Abonyi, (2023), means that the material resources to be used by the teacher for the attainment of the instructional objectives are there to be used by the teacher; and to be handled, interacted with or manipulated by the learners to enlist their active participation in curriculum delivery. According to Abonyi, (2022), Onyekwelu, (2024), Obumse & Chinwe, (2021), availability is the condition of being obtainable at a particular point in time. In this study, availability is the extent to which e-learning resources such as computer, scanner, printer, digital disks, among others are seen, gotten, found, obtained to be used by the teacher in teaching Agricultural science. The availability of e-learning resources, according to Onyekwelu, & Adinna, (2022), Anthony, (2019), Anushiem andAnushiem, (2023), cannot guarantee teaching-learning effectiveness without accessibility of the resources.

Accessibility of e-learning resources means to reach, touch, feel, collect or get the e-learning resources such as computer, e-book, e-reader, e-pen, among others for curriculum delivery. Contextually, accessibility means laying hands on available e-learning resources so as to use them for teaching Agricultural science. The Oxford Advanced Learners Dictionary defined accessibility as that which can be seen, reached, entered, and used, among others. Where the e-learning resources are accessible, there is need for utilization in other to accomplish the objectives of instruction.

Utilization of e-learning resources is the act of using e-learning resources in instructional communications. Utilization in the words of Hann (2017) is the extent to which a given group uses a particular thing within a specified period. Utilization in relation to this study is making use of available e-learning materials such as computer, laptop computer, palmtop computer, pocket computer, cellular phones, internet, e-mail, films, slides, robots, smart boards, hypertext and hypermedia among others in implementing Agricultural science curriculum.

E-learning technologies have the potential to transform how and when learners learn. E-learning is accessed and delivered electronically with multimedia products. Institutions, according to Osegbue, (2019), Okeke, Okaforcha & Ekwesianya, (2019) & Okoye, (2021), are now witnessing a paradigm shift from teacher-centred to learner-centred learning with the development of e-learning technology.The use of e-learning technologies reinforces the various teaching methods such as

demonstration and discovery. According to United Nations Educational, Scientific and Cultural Organization (UNESCO, 2012), meaningful teaching and learning in Agricultural science must include diversification of concepts and methods promoting experimentation, innovation, the diffusion and storing of information. This diversification and innovation can be achieved with the effective use of e-learning resources
(Okaforcha & Okeke, 2019, Ojimba, 2020 & Iloka & Nwakoby, 2025).

Statement of the Problem

E-learning as a matter of fact is fast becoming popular in Agricultural science education instructional delivery method, especially in secondary and tertiary institutions in Europe, America, and other developed and technologically advanced countries. In Nigeria, its usage as instructional method of teaching and learning in Agricultural science education in secondary schools needs to be emphasized in line with what is obtained in other parts of the world. Pedagogic application of e-learning involves effective learning with the use of computer, printer, scanner, e-board, e-books, e-readers, CD-ROM, flash drives, modem, memory cards, camera, television, robots, hypertext and hypermedia, among others. Technologies such as e-learning necessitate and facilitate learning. E-learning is important in teaching Agricultural science as it helps in accessing high quality/up to date Agricultural science knowledge and modern equipment, enhancing competency of Agricultural science teachers and students, facilitating creativity/development of intellectual's collaboration and developing ICT skills as well as helps students and teachers develop advanced skills. However, there seem to be dearth of e-learning tools and technologies that are required for teaching and learning as well as poor utilization of the available ones. In addition, many teachers and students seem not to have the required skills and competency for utilization of e-learning resources. As a result, there seem to be dissatisfaction and challenge among teachers in the use of e-learning resources for curriculum delivery. Researchers reported that efforts have been made to solve this problem such as organizing seminars, workshops, conferences and in-service training yet the problem persists. This unfortunate situation is obviously a worrisome issue which necessitated the need to determine the extent of availability, accessibility and utilization, of e-learning resources in teaching Agricultural science. This will fill the missing gap and streamline the use of e-learning technologies in curriculum delivery. It is against this background that the researcher had the curiosity to investigate the availability, accessibility and utilization of e-learning technologies in secondary schools in teaching Agricultural science in Anambra State.

Research Questions

The following research questions were raised to guide the study:

1. What are the e-learning resources available for the teaching of Agricultural science in secondary schools in Anambra State?
2. To what extent are the available e-learning resources accessible for teaching Agricultural science in secondary schools in Anambra State?
3. To what extent are the available e-learning resources utilized in teaching Agricultural science in secondary schools in Anambra State?

Hypotheses

The following null hypotheses will be tested at 0.05 level of significance:

1. There will be no significant difference between public and private secondary schools on the extent of availability of e-learning resources for teaching Agricultural science.
2. There will be no significant difference between public and private secondary schools on the extent of accessibility of e-learning resources for teaching Agricultural science.
3. There will be no significant difference between public and private secondary schools on the extent of utilization of e-learning resources for teaching Agricultural science.

Methods

The descriptive survey research design was adopted for the study. This study was carried out in Onitsha North and South Education Zone of Anambra State. The population of the study was made up of all the 431 Agricultural science teachers in public (262) and private (169) secondary schools in Onitsha North and South Education Zones in Anambra State. There was no sample for the study as the population is of manageable size. Checklist and Questionnaire was used for data collection. The checklist list on Availability of E-learning Resources for Teaching Agricultural science (CAERTB). The items were structured on a two-point rating scale of Available (A) and Not Available (NA). Section B was titled "Questionnaire on Extent of Accessibility of E-learning Resources for Teaching Agricultural science" (QEARTB) while section C was title "Questionnaire on Extent of Utilization of E-learning Resources for Teaching Agricultural science (QEUERTB). Both sections B and C have 4-point rating scale with response options as follows: Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE). The instruments were face validated by four experts. Cronbach Alpha was considered appropriate in order to determine the internal consistency of the instrument. The co-efficient of reliability for the instrument was 0.87. Copies of the questionnaire were administered directly to the respondents by the researcher together with six research assistants who were secondary school Agricultural science teachers. For research question 1 which centered on "Availability" of e-learning resources, the data collected was analyzed using frequency counts. For research questions 2, 3, 4, 5 and 6 which hinged on extent of accessibility and extent

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of utilization of e-learning resources, mean and standard deviation were used. The cut-off point for accepting degree of extent was 2. 50 and above for High Extent (HE) and below 2.50 for Low Extent (LE). In testing hypothesis I (Availability/checklist), the chi-square (χ^2) was used. For testing hypotheses 2 and 3, the t-test was used.

Results

Research Question 1: What are the E-learning resources available for the teaching of Agricultural science in secondary schools in Anambra State?

Table 1: Frequency Count and Percentage Rating of E-learning Resources Available for the Teaching of Agricultural science in Secondary Schools in Anambra State (N = 431)

S/N	Items	Avail (%)	Not Avail (%)	Decision
1	Computer	371	60	Available
2	Printers	297	139	Available
3	Scanner	307	124	Available
4	Modem	322	109	Available
5	Flash drive	389	42	Available
6	Memory Card	356	75	Available
7	Video clips	391	40	Available
8	Audio clips	130	301	Not Available
9	Video conferencing systems	87	344	Not Available
10	Teleconferencing devices	89	342	Not Available
11	Personal Digital Assistants (PDAs)	39	392	Not Available
12	Hard disk drives	259	172	Available
13	Android Phones	407	24	Available
14	Virtual Classroom	110	321	Not Available
15	Virtual Library	119	312	Not Available
16	Virtual Laboratory	111	320	Not Available
17	Digital Symbol Table (DST)	31	401	Not Available
18	Digital Spread Sheets (DSS)	114	317	Not Available
19	Digital Camera	112	319	Not Available
20	Digital Microscope	315	116	Available
21	Voice-over internet	78	353	Not Available
22	Software Packages	310	121	Available
23	Internet	317	114	Available
24	E-mail	320	111	Available
25	E-books	345	86	Available
26	E-readers	34	397	Not Available
27	E-white board	20	411	Not Available
28	Projectors	143	288	Not Available
29	Wi-Fi	268	163	Available
30	Bluetooth	251	180	Available
31	Youtube	112	319	Not Available
32	Podcasting	77	354	Not Available

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From the findings of Table 1 above, items 1, 2, 3, 4, 5, 6, 7, 12, 13, 20, 22, 23, 24, 29 and 30 revealed that the respondents agreed that the above listed e-learning resources are available in their schools for teaching Agricultural science while items 8, 9, 10, 11, 14, 15, 16, 17, 18, 19, 21, 26, 27, 28, 31, and 32 revealed that the E-learning resources were available in their various schools for teaching Agricultural science but not sufficient. From the above analysis in Table 1, it is clearly stated that the E-learning teaching resources are available in schools as high number of the respondents indicated that there are Agricultural science teaching resources available in their school but not sufficient enough.

Research Question 2: To what extent are the available E-learning resources accessible for teaching Agricultural science in secondary schools in Anambra State?

Table 2: Mean Rating and Standard Deviation of Responses on Accessibility of E-learning Resources for Teaching Agricultural science in Secondary Schools in Anambra State (N = 431)

S/N	Items	Mean (x)	SD	Decision
1	Computer	3.46	1.08	Accessible
2	Printers	2.64	1.13	Accessible
3	Scanner	3.22	1.08	Accessible
4	Modem	3.15	1.12	Accessible
5	Flash drive	3.34	1.16	Accessible
6	Memory Card	2.56	1.20	Accessible
7	Video clips	2.74	1.21	Accessible
8	Audio clips	0.95	1.34	Not Accessible
9	Video conferencing systems	2.36	1.22	Not Accessible
10	Teleconferencing devices	2.42	1.20	Not Accessible
11	Personal Digital Assistants (PDAs)	0.94	1.31	Not Accessible
12	Hard disk drives	2.86	1.24	Accessible
13	Android phones	2.56	1.26	Accessible
14	Virtual classroom	2.42	1.20	Not Accessible
15	Virtual Library	2.23	1.28	Not Accessible
16	Virtual Laboratory	2.02	1.15	Not Accessible
17	Digital Symbol Table (DST)	1.57	1.26	Not Accessible
18	Digital Spread Sheets (DSS)	1.96	1.32	Not Accessible
19	Digital Camera	1.82	1.33	Not Accessible
20	Digital Microscope	2.07	1.26	Not Accessible
21	Voice-over internet	1.75	1.28	Not Accessible
22	Software packages	2.38	1.20	Not Accessible
23	Internet	1.16	1.28	Not Accessible
24	E-mail	2.16	1.24	Not Accessible
25	E-books	1.42	1.28	Not Accessible

26	E-readers	1.36	1.32	Not Accessible
27	E-white board	1.54	1.36	Not Accessible
28	Projectors	3.21	1.16	Accessible
29	Wi-Fi	3.26	1.14	Accessible
30	Bluetooth	3.44	1.16	Accessible
31	Youtube	1.01	1.34	Not Accessible
32	Podcasting	0.86	1.38	Not Accessible

Table 2 result shows that under the heading of accessibility of E-learning resources, out of 32 items, only 12 items of the E-learning resources are accessed for teaching Agricultural science (1, 2, 3, 4, 5, 6, 7, 12, 13, 28, 29 and 30) with standard deviations of 1.08, 1.13, 1.08, 1.12, 1.16, 1.20, 1.21, 1.24, 1.26, 1.16, 1.14, and 1.16 respectively. The rest 20 items of E-learning resources are not accessed for Agricultural science instruction (8, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 31 and 32) with standard deviations of 1.34, 1.22, 1.20, 1.31, 1.20, 1.28, 1.15, 1.26, 1.32, 1.33, 1.26, 1.28, 1.20, 1.28, 1.24, 1.28, 1.32, 1.36, 1.34 and 1.38. From the above analysis in Table 2, it is clearly stated that not all the available E-learning teaching resources are accessible for teaching Agricultural science in schools as higher percent of the respondents indicated that most of the available E-learning teaching resources for Agricultural science are not accessible in their schools.

Research Question 3: To what extent are the available E-learning resources utilized for teaching Agricultural science in secondary schools in Anambra State?

Table 3: Mean Rating and Standard Deviation of Responses on Utilization of E-learning Resources for Teaching Agricultural science in Secondary Schools in Anambra State (N = 431)

S/N	Items	Mean (x)	SD	Decision
1	Computer	3.56	0.84	Utilized
2	Printers	3.48	0.96	Utilized
3	Scanner	3.18	0.92	Utilized
4	Modem	2.98	1.12	Utilized
5	Flash drive	3.06	1.01	Utilized
6	Memory Card	2.65	1.22	Utilized
7	Video clips	0.86	1.38	Not Utilized
8	Audio clips	1.02	1.39	Not Utilized
9	Video conferencing systems	1.66	1.28	Not Utilized
10	Teleconferencing devices	1.42	1.28	Not Utilized
11	Personal Digital Assistants (PDAs)	2.38	1.20	Not Utilized
12	Hard disk drives	2.85	1.22	Utilized
13	Android phones	2.16	1.24	Not Utilized
14	Virtual classroom	2.32	1.26	Not Utilized

15	Virtual Library	1.28	1.27	Not Utilized
16	Virtual Laboratory	1.36	1.32	Not Utilized
17	Digital Symbol Table (DST)	2.17	1.34	Not Utilized
18	Digital Spread Sheets (DSS)	1.15	1.31	Not Utilized
19	Digital Camera	1.18	1.32	Not Utilized
20	Digital Microscope	2.07	1.36	Not Utilized
21	Voice-over internet	1.01	1.34	Not Utilized
22	Software packages	2.28	1.38	Not Utilized
23	Internet	0.86	1.38	Not Utilized
24	E-mail	0.64	1.36	Not Utilized
25	E-books	1.02	1.39	Not Utilized
26	E-readers	0.98	1.38	Not Utilized
27	E-white board	2.29	1.20	Not Utilized
28	Projectors	3.36	1.12	Utilized
29	Wi-Fi	3.26	1.14	Utilized
30	Bluetooth	3.21	1.16	Utilized
31	Youtube	1.76	1.28	Not Utilized
32	Podcasting	2.07	1.26	Not Utilized

Table 3 result shows that under the heading of utilization of E-learning resources, out of 32 items, only 10 items of the E-learning resources are utilized for teaching Agricultural science (1, 2, 3, 4, 5, 6, 12, 28, 29 and 30) with standard deviations of 0.84, 0.96, 0.92, 1.12, 1.01, 1.22, 1.22, 1.12, 1.14, and 1.16 respectively. The rest 22 items of E-learning resources are not utilized for Agricultural science instruction (7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 31 and 32) with standard deviations of 1.38, 1.39, 1.28, 1.28, 1.20, 1.24, 1.26, 1.27, 1.32, 1.34, 1.31, 1.32, 1.36, 1.34, 1.38, 1.38, 1.36, 1.39, m1.38, 1.20, 1.12, 1.14, 1.16, 1.28, and 1.26 respectively. From the above analysis in Table 3, it is clearly stated that not all the available E-learning teaching resources are utilized for teaching Agricultural science in schools as higher percent of the respondents indicated that most of the available E-learning teaching resources for teaching Agricultural science are not utilized in their schools.

Hypothesis 1: There will be no significant difference between public and private secondary schools on the extent of availability of e-learning resources for teaching Agricultural science.

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Table 4: Chi-Square Analysis of the Mean Rating of Respondents on the Significant Difference between Public and Private Secondary Schools on the Extent of Availability of E-Learning Resources for Teaching Agricultural science

Factor	School Type	N	Mean	SD	X^2	Df	P-value	Decision
Agricultural science	Public	246	44.27	6.44	.65	429	.000	Not Sig
	Private	185	26.27	7.46				

Data presented in Table 4 shows the difference between public and private secondary schools on the extent of availability of e-learning resources for teaching Agricultural science. The result of the chi-square analysis from Table 4 shows that the X^2 value is .485 and the P-value is .642. Since the P-value is greater than .001 level of significance at df of 2 and 429, ($x^2(429) = 0.65$, $p>0.000$). It shows that there is no significance difference between public and private secondary schools on the extent of availability of e-learning resources for teaching Agricultural science. The null hypothesis is therefore accepted.

Hypothesis 2: There will be no significant difference between public and private secondary schools on the extent of accessibility of e-learning resources for teaching Agricultural science.

Table 5: Independent t-test of the Mean Ratings of Respondents on the on the Significant Difference between Public and Private Secondary Schools on the Extent of Accessibility of E-Learning Resources for Teaching Agricultural science

School Type	N	Mean	SD	Df	t	P-value	Decision
Public	246	36.12	5.31	429	2.32	.024	Sig
Private	185	28.30	6.72				

The focus of Hypothesis 2 was to determine if there was significant difference in the mean ratings of respondents between public and private secondary schools on the extent of accessibility of e-learning resources for teaching Agricultural science. Data in Table 5 reveal that p-value of 0.24 calculated at 0.05 level of significance and at 2 and 429 degree of freedom is less than .05. Since the p-value of 0.024 is less than the alpha level value of .05, the null hypothesis was rejected. Hence, there is a significant difference between public and private secondary schools on the extent of accessibility of e-learning resources for teaching Agricultural science.

Hypothesis 3: There will be no significant difference between public and private secondary schools on the extent of utilization

of e-learning resources for teaching Agricultural science.

Table 6: Independent t-test of the Mean Ratings of Respondents on the on the Significant Difference between Public and Private Secondary Schools on the Extent of Utilization of E-Learning Resources for Teaching Agricultural science

School Type	N	Mean	SD	df	t	P-value	Decision
Public	246	43.12	6.33	429	2.01	.001	Sig
Private	185	26.71	7.17				

The focus of Hypothesis 3 was to determine if there was significant difference in the mean ratings of respondents between public and private secondary schools on the extent of utilization of e-learning resources for teaching Agricultural science. Data in Table 6 reveal that p-value of 0.001 calculated at 0.05 level of significance and at 2 and 429 degree of freedom is less than .05. Since the p-value of 0.001 is less than the alpha level value of .05, the null hypothesis was rejected. Hence, there is a significant difference between public and private secondary schools on the extent of utilization of e-learning resources for teaching Agricultural science.

Discussion of the Findings

E-Learning Resources Available for the Teaching of Agricultural science in Secondary Schools in Anambra State

Findings from the study revealed that most of the e-leaning resources for teaching Agricultural science in senior secondary schools in Anambra State are not available. This shoes that the school administrators are yet to provide the required e-learning resources for teaching and learning. This finding is in agreement with the observations of Nwabachili, Iloka & Ucheagwu-Okoye, (2022), Abonyi, (2020), whose findings revealed that instructional resources for teaching are not available for use. The finding is also in consonance with the findings of Nwankwo, (2022), Obumse, (2022), Nonyem & Chimaa, (2020), whose studies revealed that there were no adequate resources available for teaching school subjects. Similarly, Iloka, (2025), Ethelmary, Nwankwo & Aroh, (2019), Ezeaku (2019), noted that effective teaching and learning depends on the availability of suitable adequate resources such as books, library materials and host of other visual and audio teaching aids and classrooms.

The finding from hypothesis 1 also reveals that there is no significance difference between public and private secondary schools on the extent of availability of e-learning resources for teaching Agricultural science. The null hypothesis is therefore accepted. Based on these findings, it would

imply that the availability of instructional materials in schools in Anambra state of Nigeria is still an issue of concern. It could be also deduced that the availability of e-learning resources cut across all subjects offered in Nigerian schools, not just Agricultural science.

E-Learning Resources Accessible for the Teaching of Agricultural science in Secondary Schools in Anambra State

Findings from the study revealed that e-learning resources available for teaching and learning of Agricultural science in secondary schools in Anambra state are not accessible. The respondents asserted that there are no enough teaching resources available in their schools for teaching Agricultural science. E-learning resources are not easily accessible by the teachers during the teaching and learning processes of Agricultural science. The finding is in line with the findings of Okaforcha & Okeke, (2020) & Nwankwo, & Ezeibe, (2021), whose study revealed that the e-learning resources are not accessed by teachers for teaching and learning Agricultural science. In agreement, Enwezor, (2021), Okeke, (2022), Okeke & Okaforcha, (2025), revealed in their study that the staff encountered some challenges while accessing and utilizing the information during the period that include time constraint, insufficient information richness of the alternative source compared to the internet, poor personal communication, inadequate information for preparing lecture note and inadequate information for research.

The findings in hypothesis 2 in Table 8 revealed that there is a significant difference between public and private secondary schools on the extent of accessibility of e-learning resources for teaching Agricultural science. Based on these findings, it would imply that the accessibility of instructional materials in schools in Anambra state of Nigeria is still an issue of concern. It could be also deduced that the accessibility of e-learning resources cut across all subjects offered in Nigerian schools, not just Agricultural science.

E-Learning Resources Utilized for the Teaching of Agricultural science in Secondary Schools in Anambra State

Findings from the study revealed that most of the available e-learning resources are not utilized for teaching and learning Agricultural science in secondary schools in Anambra state of Nigeria. The instructional materials available are underutilized by Agricultural science teachers in secondary schools in Anambra state. The finding is in agreement with the findings of Nwakoby, (2025), Nwakoby & Iloka, (2025) & Enwezor & Obi, (2022). who revealed in their study that 80% of the respondents indicated that they could not use or operate computers and online resources for learning. This finding was supported by the findings of Nwanna (2012) who revealed that virtually all the learning resources were not available and as well not in use for teaching and learning

purposes. Again, the findings of Ekwesianya, Okaforcha & Okeke, (2020), Enwezor, (2021) & Ojimba, (2024), revealed that ICT learning resources are not available and at the same time not in use for teaching purposes in schools.

The findings in hypothesis 3 in Table 6 revealed that there is a significant difference between public and private secondary schools on the extent of utilization of e-learning resources for teaching Agricultural science. Based on these findings, it would imply that the utilization of instructional materials in schools in Anambra state of Nigeria is still an issue of concern. It could be also deduced that the utilization of e-learning resources cut across all subjects offered in Nigerian schools, not just Agricultural science.

Conclusion

This study has examined the availability, accessibility and utilization of e-learning resources in teaching Agricultural science in secondary schools in Anambra State, Nigeria. Based on the research findings of this study, it is concluded that some of the required e-learning resources to carryout effective teaching and learning of Agricultural science are fairly available while others are not. These fairly available e-learning resources are not regularly utilized by Agricultural science teachers. Based on the results of this study, the researcher concluded that the issue of availability, accessibility and utilization of e-learning resources for Agricultural science instruction in Anambra state has not been properly addressed. The needed improvement in the quality of teaching and learning in our public and private schools can be achieved greatly if teaching strategy is enhanced through the utilization of e-learning resources. Therefore, to achieve the goals of Agricultural science education, all stakeholders (Government, Principals, teachers and students) should device very good strategies to ensure adequate provision, accessibility and utilization of e-learning for Agricultural science instruction in our schools.

Recommendations

The following recommendations were made among others:

1. Adequate e-learning resources should be provided for effective teaching and studying processes.
2. Instructional material is one of the major determinants of effective teaching and learning of Agricultural science in secondary schools which cannot be separated from teaching resources, it is therefore imperative to ensure they are made readily available during Agricultural science lessons by both the school head and the government as the case may be.
3. Teachers should be encouraged to access the available e-learning resources for effective teaching and studying processes.

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