

Constraints to Effective Utilization of Electronic Learning in Computer Studies in Junior Secondary Schools in Nsukka Urban, Enugu State, Nigeria

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Abstract

This study investigated the constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka Urban, Enugu State, Nigeria. The study adopted a descriptive survey research design. The population consist 1,486 respondents. Sample and sampling technique was in stages; first stage: cluster sampling was used to select nine (9) public secondary schools in Nsukka urban; second stage: purposive sampling technique was used to select junior secondary school students that offered computer studies in Nsukka urban; third stage: systematic sampling technique was used to select the sample size of 149 respondents; fourth stage: stratified random sampling technique was used to generate the sample size of respondents per school, as well as the sample size of JS I and JS II students in each school. The instrument for data collection was a structured questionnaire that contained 25 items. The instrument was subjected to face validation by three experts in the Department of Computer and Robotics Education, University of Nigeria, Nsukka. The reliability of the instrument was established using Cronbach Alpha reliability method which yielded reliability index of 0.63, indicating high reliability. The data for the study was collected by the researcher with the help of three research assistants. The data collected for the study was analysed using mean to answer each of the three research questions, and standard deviation was used to determine the closeness or otherwise of opinions of the respondents from the group mean, while the null hypotheses were tested using an independent sample t-test at 0.05 level of significance. Based on the data analysed, the result revealed lack of students' personal digital devices owing to income disparities, unsteady power supply, inadequate ICT infrastructure, among others were constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka Urban, Enugu State, Nigeria. Thus, recommendations were made among others that students should be provided with digital technologies and taught on how to use them. The school management should provide facilities needed for effective utilization of electronic learning, and proper management and handling of school's infrastructural facilities.

Keywords: Electronic Learning; Computer Studies; Constraints; Utilization; Nsukka Urban.

Introduction

Technology has brought about globalization, modernization as well as improvement in educational sector. It has ensured that distance is no longer a barrier as far as learning is concerned. This implies that one's location cannot be a hindrance towards access to quality education. One of the educational technologies that ensure high-quality learning in the 21st century, not minding one's location, is electronic learning.

Electronic Learning (e-Learning) refers to the use of electronic technologies

such as computers, the internet, and digital resources, to facilitate and enhance the learning process. According to Bouchrika (2025), e-Learning is the delivery of education and training through digital means, involving technologies such as computers, the internet, and multimedia tools to facilitate learning. It encompasses various forms of online education, including web-based courses, virtual classrooms, interactive multimedia modules, and digital educational materials, that allow learners to access and engage in educational content electronically (UNESCO, 2019). According

to Eze, Eze and Bello (2018), e-learning is concerned with all-inclusive integration of modern telecommunication equipment, and Information and Communication Technology (ICT) resources into the education system for quality teaching, learning and research. In this context, e-learning is described as the act of sending and receiving educational instructions for knowledge accumulation and skill development via electronic media.

There are two types of e-learning: computer-based e-learning and internet-based e-learning (Hodges, Moore, Lockee, Trust & Bond, 2020). Computer-based e-learning is any type of application that makes use of computing technology to deliver educational materials. On the other hand, Internet-based e-learning is an instruction that is delivered to individuals or group of learners electronically through various multimedia and Internet tools, platforms and applications (Maddison, Doi, Lucky & Kumaran, 2017). According to Abu and Balasubramani (2019), E-learning infrastructure is required for delivering learning materials over the web and this is done by using Learning Management Systems (LMS). LMS is a web-based platform that helps to create, manage, and deliver courses electronically (Eneovo and Olelewe, 2019). Other similar e-learning platforms include: Blackboard, Moodle, Canvas, D2L Brightspace, Coursera, edX, Udemy, Skillshare, Codecademy, LinkedIn learning, Duolingo, Pluralsight, among others (Vershitskaya, 2020). E-learning is either synchronous or asynchronous (Affouneh, Salha and Khlaif, 2020).

According to Kayed (2013), synchronous e-learning enable learners participate in any learning activity at the same time from any place in the world. Real-time synchronous e-learning involves online chats and video-conferencing, as these tools allow training participants and instructors to ask and answer questions instantly while being able to communicate with the other participants. This kind of community-oriented e-learning has been

made possible with the rapid development of online learning technologies. Synchronous e-learning is currently one of the most popular and quickest-growing types of e-learning. Synchronous e-learning is considered highly advantageous as it eliminates many of the common disadvantages of e-learning, such as social isolation and poor teacher-to-student and student-to-student relationships (Ahakiri, 2022). In the case of asynchronous online learning, students study independently at different times and locations without real-time communication taking place. Students can set their own timeframes for learning and are not required to learn at specific time intervals with other students. Thus, e-learning, either synchronous or asynchronous is of great importance in teaching and learning processes.

The importance of e-learning is that e-learning brings learners, teachers, experts, practitioners, and other interest groups together for the sole purpose of information sharing. According to Guri-Rosenblit, (2018), e-learning has been introduced to empower learners to get basic schooling and enhance skills. With e-learning, students can obtain a degree certificate without actually being physically present in a school. For teachers, e-learning is of great source, wherein the teachers can teach from anywhere in their preferred time. E-learning comes with other numerous benefits capable of contributing to the achievement of quality education. Some of the benefits of e-learning include: e-learning ensures continuous learning outside the school environment, quick delivery of lessons (Haleem, Javaid, Qadri, & Suman, (2022); Cambridge Home School Online, (2024)). This implies that e-learning provides expeditious and exclusive delivery of lessons (Digital Class, 2024). E-learning allow students to be updated with the current trends; easy access to important educational information; ensures high quality research; flexible and personalized learning environments that can be accessed anytime and anywhere, transcending the limitations

of physical boundaries, and allowing learners to access educational materials at their own pace and convenience (Aldowah, Ghazal, & Umar, 2018). Students collaborate among themselves to find solutions to real-life issues as they have wider accessibility to readily available information online. E-learning is used to deliver a wide range of subjects including computer studies.

Computer studies, therefore is a subject organized to enable the learner understand the function, uses and limitations of the computer and to provide an opportunity for the study of the modern methods of information processing. Computer studies according to Edhuze in Ugwu and Onah (2020) involved teaching and inculcating in the learner the basic skills required to independently manipulate the computer to achieve educational goals. The authors further stated that, computer studies are aimed at making students acquire skills required in this digital world of competitiveness. In the context of this study, computer studies are subject taught at the primary and junior secondary school for skill acquisition about computer. Computer studies are important because it is almost certain that computer literacy will have as much impact on career opportunities in the fast-growing information age (Adamu and Bello in Ayuba, Muhammad and Bitiyong, 2022). It is expected that by the end of secondary education, every child must have acquired reasonable competence in software such as word processing, spreadsheet, database analyzing programs that allow learners interact with the computer the way they desire (National Policy on Computer Studies in Onah, 2018). Such acquired skills must be in tandem with the student's gender.

Gender is socially constructed differences between male and female. Myers in Ogbuanya, Okeke and Hassan (2021) explained gender as the characteristics, whether biological or socially influenced, by which people define male or female. Jaffer and Shafiq (2017) referred to gender as the culturally and socially constructed

dimension of one's biological sex. Gender differences affect learning outcomes, engagement, interest, perception, preference, need, and success in e-learning settings. Male and female learners may exhibit different preferences for learning tools and environments, which can shape their success in technology-mediated contexts. Thus, there is no doubt that electronic learning in computer studies in junior secondary schools has various constraints.

Constraints are limiting factors or conditions that restrict the range of available choices, actions, or outcomes in a particular context. It is any condition that makes it difficult for an individual, program, institution or anything to progress or achieve stated objectives. Thus, in this study, constraints are challenges, limitations, obstacles, barriers, hindrances, setbacks, as well as difficulties encountered teaching computer studies in junior secondary schools using e-learning technologies. These setbacks create poor learning environments that hinder students' effective use of e-learning tools and platforms in their day-to-day learning practices. In view of this, the researcher sought to determine the constraints to effective utilization of electronic learning in teaching and learning computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria.

Statement of the Problem

In recent years, there has been a growing interest in the integration of electronic learning tools in teaching and learning especially during and after the COVID-19 pandemic. During the pandemic, all schools were shutdown temporary (Ating, 2020). It was after a while that some schools in the developed countries started reopening with the intention of engaging in online study. No Nigerian secondary school could reopen because of inadequacies to run online study. That was why the study sought to determine the constraints to effective utilization of e-learning in teaching and learning computer studies in junior

secondary schools in Nsukka urban, Enugu State, Nigeria.

Purpose of the Study

The main purpose of the study was to investigate the constraints influencing effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban in Enugu State, Nigeria. Specifically, this study sought to determine:

1. students-related constraints influencing effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State.
2. infrastructure-related constraints influencing effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State.
3. school-related constraints influencing effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State.

Research Questions

The following research questions were formulated to guide the research study:

1. What are the students-related constraints influencing effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State?
2. What are the infrastructure-related constraints that hinder the effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State?
3. What are the school-related constraints hindering the effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State?

Hypotheses

The following null hypotheses were formulated to guide the study and were tested at 0.05 levels of significance.

H₀₁: There is no statistically significant difference in the mean responses of male and female students on students-

related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State.

H₀₂: There is no statistically significant difference in the mean responses of male and female students on infrastructure-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State.

H₀₃: There is no statistically significant difference in the mean responses of male and female students on school-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State.

Methodology

The study adopted descriptive survey research design. The study was carried out in public junior secondary schools in Nsukka urban, Enugu State. The population for the study is 1,486 respondents from 9 public secondary schools in Nsukka urban. The population consist 692 junior secondary one (JS I) students and 794 junior secondary two (JS II) students respectively. Sample and sampling technique was done in stages. First stage: Cluster sampling technique was adopted. Cluster sampling was used to select nine (9) public secondary schools in Nsukka urban, Enugu State. Second stage: Purposive sampling technique was used to select junior secondary school students that were taught computer studies in Nsukka urban, Enugu state, Nigeria. Third stage: Systematic sampling technique was used to select the sample size. According to Nwana (2008), if the population is a few hundred, a 40% or more samples will do; if many hundred, a 20% sample will do; if a few thousand, a 10% sample will do and if several thousands, a 5% or fewer samples will do. Therefore, 10% of 1486 students is 148.6 respondents. This is approximately 149 respondents. Fourth stage: Stratified random sampling technique was used to generate the sample size of respondents per school; as

well as the sample size of JS I and JS II students in each school.

The instrument for data collection was a structured questionnaire titled, “Constraints to Effective Utilization of Electronic Learning in Computer Studies Questionnaire (CEUELCSQ)” designed by the researcher from literature reviewed. CEUELCSQ is a 25-item questionnaire that has a four-point rating scale with response option of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree and with value point of 4, 3, 2, and 1 respectively. The research instrument was validated by three experts from the department of Computer and Robotics Education, University of Nigeria, Nsukka. The reliability of the instrument was established using Cronbach Alpha reliability method. A total of 15 respondents from other public junior secondary schools outside Nsukka urban but within Nsukka educational zone were used for the trial testing. The reliability test yielded a coefficient of 0.63 that ascertained the internal consistency of the instrument. The researcher together with three (3) other research assistants who were properly briefed, administered the instruments to the respondents; and the consent of the respondents was voluntarily given. The data collected was analyzed using Mean to

answer each of the three research questions; and standard deviation to determine the closeness or otherwise of the opinions of the respondents from group mean. Any item with mean value of 2.50 and above was regarded as “Agreed”, while items with mean values less than 2.50 were “Disagreed” for the research questions. Moreover, the null hypotheses formulated for the study were tested at 0.05 levels of significance using independent sample t-test. Thus, any t-value whose P-value level of significance is less than 0.05, then, the null hypothesis should be rejected otherwise the null hypothesis should be accepted.

Results

Research Question 1: What are the students-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria?

Table 1: Mean and Standard Deviation on the students-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria.

S/N	ITEMS	N	\bar{X}	SD	DECISION
1	Students negative attitude towards computer studies subject	149	2.71	0.89	Agree
2	Poor background of computer students	149	2.69	0.99	Agree
3	Lack of computer literacy of students’ parents or guidance	149	2.96	0.90	Agree
4	Lack of students’ ability to use digital devices and navigate online learning environments	149	2.59	0.90	Agree
5	Lack of students’ personal digital devices as a result of income disparities	149	2.87	0.87	Agree
6	Distractions from Home environments during online learning sessions	149	2.66	0.91	Agree
7	Geographical location of students	149	3.09	0.89	Agree
8	Anxiety as a result of unfamiliarity with new technological tools	149	2.92	0.92	Agree
9	Poor student-to-teacher relationship ratio	149	2.65	0.99	Agree
10	Students’ lack of confidence in utilization of digital technologies	149	2.61	0.98	Agree
11	Inadequate skills to effectively navigate e-learning platforms	149	2.95	0.79	Agree
Cluster mean		149	2.52	0.91	Agree

Key: N = Number of Respondents; \bar{X} = Mean; SD = Standard Deviation.
Source: Researcher's Field Work, 2024

The data presented in Table 1 show that all the items have their mean values above the criterion mean of 2.50. This is considered to be agreed thus indicating that students-related factors are constraints to the effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria. Furthermore, the cluster mean of 2.52 is also an indication that the respondents' opinion proved that all the items were students-related constraints to effective utilization of electronic learning in computer studies in

junior secondary schools in Nsukka urban, Enugu State, Nigeria. The standard deviation of items 1-11 ranged from 0.79 – 0.99 indicated that the respondents were closely related to one another in their opinion from the group mean.

Research Question 2: What are the infrastructure-related constraints to effective utilization of electronic learning in learning computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria?

Table 2: Mean and Standard Deviation on the infrastructure-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria.

S/N	ITEMS	N	\bar{X}	SD	DECISION
12	Unavailability of computer laboratories in junior secondary schools	149	3.02	1.03	Agree
13	Unsteady power supply	149	3.12	0.72	Agree
14	Unavailability of alternative power supply	149	2.96	0.94	Agree
15	Poor computer networks	149	2.89	0.85	Agree
16	Inadequate instructional materials	149	2.93	0.90	Agree
17	Unreliable internet connectivity	149	2.82	0.90	Agree
18	Mismanagement of school's infrastructural facilities	149	2.77	0.97	Agree
19	Inadequate fund to procure ICT facilities	149	2.85	0.95	Agree
20	High cost of data subscription	149	3.10	0.90	Agree
Cluster Details		149	2.94	0.81	Agree

Key: N = Number of Respondents; \bar{X} = Mean; SD = Standard Deviation.
Source: Researcher's Field Work, 2024

The data presented in Table 2 showed that all the items had their mean value above the criterion mean of 2.50. This is considered to be agreed thus indicating that infrastructure-related factors are constraints to the effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria. Furthermore, the cluster mean of 2.94 was also an indication that the respondents' opinion proven that all the items was infrastructure-related constraints to effective utilization of electronic learning in computer

studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria. The standard deviation of items 12-20 ranged from 0.72-1.03 indicated that the respondents were closely related to one another in their opinion from the group mean.

Research question 3: What are the school-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria?

Table 3: Mean and Standard Deviation on the school-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria.

S/N	ITEMS	N	\bar{X}	SD	DECISION
21	Inadequate provisions of funds for e-learning facilities	149	3.26	0.81	Agree

22	Poor utilization of funds	149	3.08	0.78	Agree
23	Inadequate training provided by the school in the use of e-learning	149	3.13	0.96	Agree
24	Unwillingness to provide the necessary technical Support	149	3.20	0.86	Agree
25	Inadequate ICT infrastructure	149	3.30	0.76	Agree
Cluster Details		149	3.19	0.83	Agree

Key: N = Number of Respondents; \bar{X} = Mean; SD = Standard Deviation.

Source: Researcher's Field Work, 2024

The data presented in Table 3 show that all the items had their mean value above the criterion mean of 2.50. This indicated that majority of the respondents used for this study accepted these items on the school-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria. Furthermore, the cluster mean of 3.19 is also an indication that the respondents' opinion proved that all

the items are school-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria. The standard deviation of items 21-25 ranged from 0.76-0.96 indicating that the respondents were closely related to one another in their opinion from the group mean.

Null Hypothesis 1

Table 4: There is no statistically significant difference in the mean responses of male and female students on students-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State.

Gender	N	\bar{X}	SD	F	Sig.	T	df	Sig. (2-tailed)	Remark
Male	73	2.78	0.92	1.19	0.38	-0.03	147	0.36	Not
Female	76	2.78	0.90						Significant

Key: N=Number of Respondents, \bar{X} =Mean, SD=Standard Deviation, Significant at 0.05

Source: Researcher's Field Work, 2024

The result of the analysis in Table 4 shows that Levene's of $F(147) = 1.19, P = 0.38, t(147) = -0.03, P = 0.36$ was non-significant at 0.05 alpha level. This indicates that gender was not statistically significant on the students-related constraints to effective

utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State. Hence, the null hypothesis was accepted.

Null Hypothesis 2

Table 5: There is no statistically significant difference in the mean responses of male and female students on infrastructure-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State.

Gender	N	\bar{X}	SD	F	Sig.	T	df	Sig. (2-tailed)	Remark
Male	73	2.88	0.91	5.95	0.16	-0.95	147	0.25	NS
Female	76	3.01	0.89						

The result of the analysis in table 5 show that Levene's of $F(147) = 5.95, P = 0.16, t(147) = -0.95, P = 0.25$ was not significant at 0.05 alpha level. This indicates that gender was not statistically significant on infrastructure-related constraints to effective

utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State. Hence, the null hypothesis was accepted.

Null Hypothesis 3

Table 6: There is no statistically significant difference in the mean responses of male and female students on school-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State.

Gender	N	\bar{X}	SD	F	Sig.	T	df	Sig. (2-tailed)	Remark
Male	73	3.16	0.85	1.62	0.31	-0.57	147	0.44	NS
Female	76	3.24	0.82						

The result of the analysis in table 6 show that Levene's of $F(147) = 1.62, P = 0.31, t(147) = -0.57, P = 0.44$ was not significant at 0.05 alpha level. This indicates that gender was not statistically significant on school-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State. Hence, the null hypothesis was accepted.

Discussion of the Findings

The data presents the students-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria. The findings revealed that many challenges hinder students' use of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria. The findings were in line with that of Ali, Zainodin and Mahamad, (2024) which revealed that students' inadequate personal digital devices as a result of income disparities; distractions from home environments during online learning sessions; anxiety as a result of unfamiliarity with new technological tools; poor student-to-teacher relationship ratio; students' lack of confidence in utilization of digital technologies, and inadequate skills to effectively navigate e-learning platforms were the students-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria. Further analyses revealed that there was no mean difference between the male and the female respondents. This implies that there was very close association on the opinion of male and female respondents on students-related constraints to effective

utilization of electronic learning in computer studies in junior secondary schools which resulted in non-statistically significant difference.

The data presents infrastructure-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria. The findings revealed that one of the infrastructure-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria is unsteady power supply. Others were; unavailability of computer laboratories in junior secondary schools; mismanagement of facilities; unavailability of alternative power supply; poor computer networks; inadequate instructional materials; unreliable internet connectivity. The findings of the study were in conformity with the findings of Davidson and Ezeh (2023) who stated that unavailability of computer laboratories in junior secondary schools; mismanagement of facilities; unavailability of alternative power supply; poor computer networks; inadequate instructional materials; unreliable internet connectivity among others were infrastructure-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools. Further analyses revealed that the mean difference between the male and the female students was 0.13. This is an indication that there was a very close relationship between the male and the female respondents on infrastructure-related constraints to effective utilization of electronic learning in computer studies in

junior secondary schools that resulted in non-statistically significant difference.

The data presents school-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria. The findings revealed that the school-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools in Nsukka urban, Enugu State, Nigeria were inadequate information communication technology (ICT) infrastructure; inadequate provision of funds for e-learning facilities; poor utilization of funds; inadequate training provided by the school in the use of e-learning; unwillingness to provide the necessary technical support (Assareh and Bidokht, 2011). Further analyses revealed that the mean difference between the male and the female students was 0.08. This is an indication that there was a very close gap between the male and the female respondents on school-related constraints to effective utilization of electronic learning in computer studies in junior secondary schools that resulted in non-statistically significant difference.

Implications of the Findings

The findings of this study had implications for students on effective utilization of electronic learning in learning computer studies. The study will enable students to be aware of the electronic learning tools and platforms available which will enable the students compete favorably with their contemporary in the external world. The study will enhance the level of cooperation between students and promote good communication between students and their teachers. Also, the study will help students to develop positive attitudes toward computer studies as a subject, and help to develop students' personal skills.

Conclusion

In conclusion, electronic learning requires mastery of digital skills, effective communication, active interaction, and respect for others' opinions. By working

together towards a common goal, e-learning promotes teamwork and build stronger relationships among peers. E-learning allow learners to access educational materials at their own pace and convenience, hence providing motivation through active learning. However, this study found out some challenges to effective utilization of electronic learning in computer studies. Such challenges include: inadequate digital infrastructure; erratic electricity supply; inadequate funding; insufficient trained teachers and IT personnel; lack of teachers retraining; and shortage of appropriate digital learning materials. Thus, the findings of the study revealed that electronic technologies should be made available for active learning in junior secondary schools in Nsukka urban, Enugu State.

Recommendations

The following recommendations were made based on the findings of the study and implications:

1. Parents should provide students with personal digital devices to facilitate their day-to-day skills learning in computer appreciation and operations.
2. The school management should provide state-of-the-art ICT facilities needed for effective utilization of electronic learning in Nigerian schools.
3. There is need for proper management and handling of secondary schools infrastructural facilities with a view to achieving continuous e-learning.

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