



**STUDENTS' ATTITUDE TOWARDS VIRTUAL LEARNING  
TYPES IN PRIVATE SECONDARY SCHOOLS IN EGOR LOCAL  
GOVERNMENT AREA OF EDO STATE: IMPLICATION  
FOR EDUCATIONAL PLANNING**

**Chukujindu Joyce Okafor<sup>i</sup>,  
Evbade Enoma, Nwadishi**

Department of Education,  
Faculty of Arts and Education,  
Benson Idahosa University,  
Benin City, Nigeria

**Abstract:**

This study examined students' attitude towards virtual learning types in private secondary schools in Egor LGA of Edo State. Specifically, the study sought to find out the level of students' positive attitude towards, knowledge of, the student's participation in, and student's perceived level of the impact and effectiveness of virtual learning types provided in private secondary schools. A descriptive survey design was used for the study. The population of this study consists of 3850 senior secondary schools two (SS 2) students of private secondary schools in Egor local government area of Edo state. The sample size was 193 which is 5% of the study population. The simple random sampling technique was adopted. The research instrument for this study is a questionnaire titled Students' Characteristics and the Effectiveness of Virtual Learning Types in Private Secondary Schools' Questionnaire (SCEVLTPSSQ). The data collected was analyzed using the mean, standard deviation, and t-test statistics. The research question was answered using the mean and standard deviation while the corresponding hypothesis was tested using the t-test statistics. The result of the analysis revealed that students' levels of knowledge of Computer managed learning, Computer assisted instruction and Asynchronous online learning are high while the level of knowledge of Synchronous online learning is moderate; Students' level of participation in CML, SOL, AOL, Fixed e-learning and Interactive online learning are moderate; Students' levels of attitude towards CML, CAI, and AOL are high while the level of attitude towards SOL and FEL are moderate; Students' perceived levels of the impact and effectiveness of CML, CAI, SOL, AOL, and FEL are high or very high; and Students' perceived level of impact and effectiveness of IOL is moderate. It was recommended based on findings that administrators should evaluate and improve the effectiveness of existing policies and implement necessary actions in addressing effective virtual learning in the new normal.

<sup>i</sup> Correspondence: email [cokafor@biu.edu.ng](mailto:cokafor@biu.edu.ng)

The study also recommends that training and workshops should be proposed to schools, particularly on discussing interventions to improve their management, pedagogical, and computer skills.

**Keywords:** students' attitude, knowledge, participation, and perception, virtual learning types and implications for educational planning and management

## 1. Introduction

There is a serious challenge facing Sub-Saharan Africa's educational development system. The high level of illiteracy or inadequate provision of instructional facilities and befitting infrastructure and the lack of teaching and learning infrastructure appear to make this development difficult to attain (Bates, 2015). The recent outbreak of coronavirus (COVID-19) has compounded the problem and revealed some loopholes in the educational system. Nigeria shares in this continental problem, especially in its socio-service sectors, which the education sector is a part of. During the pandemic, there was a total closure of schools from primary to tertiary level, thereby making students have little or no access to school. Reports from the Education in Energy Working Group (EIEWG, 2020) and findings of United Nations, (2020) indicated that 46 million Nigerian students were affected by school closures the estimate represents 25% of Nigeria's total population and about 94% of learners in 200 nations were affected by the pandemic around the world, which represents 1.58 billion learners. The issues and challenges associated with the COVID-19 outbreak have necessitated the need for virtual learning as an alternative means of instructional delivery.

During the period of the lockdown, virtual learning became a lifeline for many educational institutions across the world. Virtual learning implies learning from a distance without having classroom contact with teachers. It can be defined as online access to resources, materials, activities, and interactions related to a course. It allows management of contents, planning and mapping of curriculum, administration, and engagement among learners, communication, and collaboration, especially in real-time, and access to audio and video conferencing. Virtual learning is also seen as a term that describes a range of integrated Web-based and App-based applications that provide teachers, learners, parents, and others involved in education with information, tools, and resources to support and enhance educational delivery and management. The applications that form this part of online services include web pages, email, message boards, discussion forums, text, audio and video conferencing, shared diaries, online social areas, assessment management, and tracking tools.

In this study, virtual learning may be categorised into the forms of: Computer-managed learning (CML) refers to a type of computer-based learning that is managed by a computer program or system. In CML, learners typically follow a structured curriculum that is delivered through a computer program, which may also track their progress and provide feedback (Gros, 2019). Computer-assisted instruction (CAI) is another type of

computer-based learning that involves using computers to deliver instructional content or activities to learners. Unlike CML, CAI may not be managed by a computer program or system and can involve a wide range of instructional approaches, such as tutorials, simulations, or games (Clark & Mayer, 2016). Synchronous online learning (SOL) is a type of online learning in which learners and instructors interact in real-time, typically through video conferencing or webinars. SOL allows for immediate feedback and interaction between learners and instructors and can provide a sense of community among learners (Simonson, Smaldino, & Zvacek, 2019).

Asynchronous online learning (AOL), on the other hand, involves learners accessing course materials and completing activities at their own pace and on their own schedule. Fixed e-learning (FEL) is a type of online learning that provides learners with a fixed set of instructional materials and activities, which may be delivered through a learning management system (LMS) (Gros, 2019). Interactive online learning (IOL), on the other hand, provides learners with more interactive and engaging experiences, such as simulations, games, or social learning activities. IOL can be delivered through a variety of platforms, including mobile devices, and can allow for greater flexibility and personalization of the learning experience (Clark & Mayer, 2016). These different types of computer-based and online learning can offer a range of benefits and drawbacks, depending on the specific context and goals of the learning experience. Educators and learners can benefit from understanding the different options available and selecting the most appropriate approach for their needs.

In Nigeria, the COVID-19 pandemic has made this form of learning the panacea to the damage caused by the pandemic in the educational sector. Unfortunately, it is not so because many factors have really hindered the use of this form of learning to ensure that students still achieve their educational goals as enshrined in the Federal Republic of Nigeria (2014) education policy document. Some of the factors may include erratic power supply, poor internet access, cost of service subscriptions, the readiness of the leaders, and lack of technical know-how; the current state of power supply in the country, it becomes difficult to effectively implement virtual learning in schools. Students are forming rigid opinions on whether to accept or not accept virtual learning. Parents are complaining that they are spending too much money on data. As a result of all this, the researcher decided to engage in this study. Although research has been carried out on virtual learning, there is no sufficient information on the attitude, knowledge, participation, and perception of secondary school two students in relation to the various types of virtual learning in private schools in Benin Metropolis, Edo State, this is the gap that this research filled.

The purpose of this study, therefore, is to find out the level of students' attitude, knowledge, participation, and perception towards virtual learning types in private secondary schools two (SS2) in Egor LGA of Edo state.

## 2. Research Questions

This study was guided by the following research questions:

- 1) What is the level of students' attitude towards virtual learning types among students in private secondary schools in Egor Local Government Area of Edo State?
- 2) What is the level of students' knowledge of virtual learning types in private secondary schools in Egor Local Government Area of Edo State?
- 3) What is the level of students' participation in virtual learning types among students in private secondary schools in Egor Local Government Area of Edo State?
- 4) What is the students' perceived level of the impact and effectiveness of virtual learning types provided in private secondary schools in Egor Local Government Area of Edo State?

### 2.1 Hypotheses

The following null hypotheses were formulated and tested at a 0.05 level of significance.

- 1) Students' levels of attitude towards virtual learning types in private secondary schools in Egor Local Government Area of Edo State are not significant.
- 2) Students' levels of knowledge of virtual learning types in private secondary schools in Egor Local Government Area of Edo State are not significant.
- 3) Students' levels of participation in virtual learning platforms in private secondary schools in Egor Local Government Area of Edo State are not significant.
- 4) Students' perceived levels of the impact and effectiveness of virtual learning types in private secondary schools in Egor Local Government Area of Edo State are not significant.

### 2.2 Empirical Review

#### 2.2.1 Students' Attitude towards Virtual Learning

Students' attitudes towards virtual learning types may be traced to psychological unwillingness to engage in online learning. Some students seem to give up when faced with technical difficulties. On the other hand, some students may like to learn virtually when they see their friends also learning rapidly. Some students may want to learn with it because of the game sessions. Many students who have mobile phones may prefer to learn with the app compared to learning from a desktop or laptop in school, which may be difficult to install, and set up compared to mobile phones.

As empirical evidence of these findings, a few studies were examined in more detail. In a survey conducted at a private Midwestern University by Leite (2014), undergraduate students' attitudes toward computers were investigated. The study used a 10-item questionnaire called General Attitudes toward Computers. Results indicated that students had positive attitudes toward computers. There were no significant

differences in attitudes between male and female students or between students taking and not taking a computer-related class.

Singh (2021) conducted a study on secondary school students' attitudes towards online learning during COVID-19. The aim of the study was to study the attitude of secondary school students towards online learning during the COVID-19 Period in relation to their gender and locality. The study used a Survey approach to determine the attitude of 130 students towards online learning. Attitude towards e-learning Scale developed was used to collect the data. The findings of the study concluded that there exists no significant difference in attitude towards online learning with respect to gender. The findings of the study further reveal that locality has a significant effect on students' attitudes towards online learning.

Masry-Herzallah and Stavisky (2021) examined the attitudes of elementary and middle school students and teachers towards online learning during the coronavirus pandemic outbreak. To examine the attitudes of teachers and students towards online learning, questionnaires were administered to 476 students, grades 3–7, and 250 teachers from the Arab and Jewish sectors. The findings revealed that age plays an important role both among teachers and students, where mainly younger children and older teachers encounter difficulties in this transformation. Furthermore, gender and sectoral differences were found both among teachers and students. These findings show that conversion to online learning may widen the existing gaps.

### **2.2.2 Students' Knowledge of Virtual Learning**

In relation to the knowledge of students about virtual learning types. Some may be very conversant with the computer-based since it's already set and running on the computer or the app-based since it looks like their regular apps, and they carry their phone regularly. Most virtual learning apps have a similar user experience to other regular apps, thereby making it easy to learn and understand. Similarly, students who do not have smartphones may find it difficult to learn and understand the technicalities of the virtual learning app or computer-based learning systems.

Lung-Yu & Lee (2016) conducted a study on Computer Literacy and Online Learning Attitude toward GSOE Students in Distance Education Programs. The purpose of the study was to explore graduate students' competencies in computer use and their attitudes toward online learning in asynchronous online courses of distance learning programs in a Graduate School of Education (GSOE) in Taiwan. The research examined the relationship between computer literacy and the online learning attitudes of these students. Data were collected via a survey of 252 GSOE students in Taiwan. Results revealed a significant positive relationship between computer literacy and online learning attitudes among the students. Higher computer literacy was correlated with a higher online learning attitude. However, no statistically significant difference was found in online learning attitudes by gender or by age group.

Rahman, Ariawan & Pratiwi (2020) carried out a study titled Digital Literacy Abilities of Students in Distance Learning. The study aimed to measure the digital

literacy ability of students and then compare the digital literacy ability of students in terms of location. The research used a quantitative approach with a survey method. The study population was elementary school teacher education students in Bandung and Cilacap. Then, the sample from the study was chosen purposively based on their respective affiliations. Data collection techniques used a questionnaire through the Google form while the data analysis used descriptive statistics. The finding of the study showed that the digital literacy abilities of students are in the medium category. Students already have decent mastery in digital media but they do not pay attention to aspects related to the writing code.

Link and Marz (2006) carried out the study titled Computer Literacy and Attitudes Towards e-learning among First Year Medical Students. The study was conducted in an introductory course on computer-based and web-based training (CBT/WBT). Students were asked to fill out a questionnaire online that covered a wide range of relevant attitudes and experiences. While the great majority of students possess sufficient computer skills and acknowledge the advantages of interactive and multimedia-enhanced learning material, a small percentage lacks basic computer skills and/or is very skeptical about e-learning. There is also a consistently significant albeit weak gender difference in available computer infrastructure and Internet access.

### **2.2.3 Students' Participation on Virtual Learning Platforms**

Egielewa, Idogho, Iyalomhe & Cirella (2021) carried out a study titled COVID-19 and Digitized Education: Analysis of Online Learning in Nigerian Higher Education. The study aimed to investigate student perception of Nigerian institutions of higher learning using the new digital culture induced by the COVID-19 pandemic, namely, online learning (i.e. e-learning), which has become commonplace globally and specifically in Nigeria. The study used quantitative survey methods and a sample size of 1134 Nigerian students of the three types of higher institutions in Nigeria: universities, polytechnics, and colleges of higher education based on student state residential location. The respondents completed a questionnaire via Google Forms in June and July 2020. The study found that students are not satisfied with virtual learning embarked upon by many higher institutions throughout the country during the COVID-19 lockdown and would not want online learning to continue after the pandemic due to poor internet infrastructure and lack of electricity. The study concluded that students of higher education in Nigeria have a low acceptance of online learning technology, preferring instead the traditional classroom setting, thus putting them in the "Laggards adopter categorization" of the diffusion innovation theory, i.e., the group that is highly conservative and extremely slow to accept new technological innovations. The study recommends that universities should engage students more interactively not only through texts but also through video (e.g., camera demonstrations), increase their online learning during the pandemic so as not to lag academically, and spend more time on online learning to get the best possible level of instruction until traditional learning resumes.

Ezeah (2014) carried out a study on the analysis of Factors Affecting Learner Participation in Asynchronous Online Discussion Forum in Higher Education Institutions. The study attempts to understand what factor(s) affect learner participation in asynchronous online discussion forums in higher education environments. Primary data was collected using a semi-structured questionnaire which was emailed to 90 academic staff and students of a typical UK university. 31% of questionnaires were returned. Data analysis was carried out using Microsoft Excel software. Descriptive and inferential statistical techniques were used to analyze the quantitative data. Findings indicate that nearly 85% of respondents do not use WOLF platform for engagement with their teachers and peers. Reasons given by student respondents for not using the platform ranged from a lack of awareness to a preference for other media with equivalent capabilities. A recommendation has been made for the redesigning of WOLF to integrate social media functions to enhance acceptability.

Eze, Chinedu-Eze, Okike & Bello (2020) conducted a study titled Factors Influencing the Use of E-learning Facilities by Students in a Private Higher Education Institution (HEI) in a Developing Economy. The study explored factors influencing the use of e-learning by students in private HEIs in Nigeria using Technology-Organisation-Environment (TOE) framework. We use a data collection method encompassing semi-structured interviews with 15 students from L-University drawn purposefully from the Landmark directory and a hybrid thematic analysis to analyse the data. Our findings reveal that technology-related factors (ease of use, speed accessibility, and service delivery), organisation-related factors (training support and diversity), environment-related factors (attitudes of the users) and impact-related factors (learning experience, skill development, academic performance, and degree of engagement) influence the students' adoption of e-learning facilities. We develop an extended TOE framework that integrates the impact context which considers the students' likely expectations if these facilities are fully adopted and implemented. The study also unveils techniques that may accelerate the development of e-learning structures in private HEIs and which could provide the opportunity to assist communities of learners to adopt and use e-learning facilities regularly.

#### **2.2.4 Perception and Virtual Learning**

On the perception of students towards the use of virtual learning types, some may think that it's only families that can afford to buy a laptop or desktop computer for their children that will be able to access the Web-based type. Some may think that computer-based learning is outdated and unnecessary in present-day learning, especially during the COVID-19 lockdown where people were not allowed to go to school. As a result of this, the researcher was therefore poised to analyse these differences among senior secondary two students in Benin Metropolis.

There are little or no studies that specifically address issues relating to the perception and readiness of undergraduate students towards virtual learning in Nigeria. Bączek, Zagańczyk-Bączek, Szpringer, Jaroszyński, and Woźakowska-Kapłon (2020)

investigated students' perception of virtual learning during the COVID-19 pandemic in Poland. The result shows that the majority of the students had never experienced any form of e-learning before the pandemic, hence they identified technical issues as one of their key challenges. This result might stem from the fact the students were not previously exposed to online learning due to inadequate awareness and accessibility to the facilities required. Shetty, Shilpa, Dey, and Kavya (2020) surveyed the perception of undergraduate students towards virtual learning during COVID-19 crisis in India. The result shows that the students have favourable perceptions towards virtual learning for sustaining their academic interests and development during the pandemic. Nevertheless, they perceived many challenges during virtual learning like lack of face-to-face interactions, lack of socialization, distraction by social media, technology-related issues, etc. In contrast, Abbasi, Ayoob, Malik, and Memon (2020) surveyed the perceptions of students towards virtual learning during the lockdown at Liaquat College of Medicine and Dentistry. The result indicated that the majority of the students have negative perceptions towards virtual learning. The study concluded that there is a need for administration and faculty members to take crucial measures to improve virtual learning for better education during the lockdown.

Olayemi, Adamu, and Olayemi (2021) examined the perception and readiness of students towards online learning in Nigeria during COVID-19 pandemic. The study investigated the perception and readiness of students towards online learning in Nigeria during the COVID-19 pandemic. This study employed descriptive survey research design and structured questionnaire was the instrument used for the data collection. A total of one hundred and forty-eight (148) undergraduate students filled out the questionnaire. The collected data was analyzed using tables, frequency counts, charts, and percentages. On the positive side, the study revealed that the majority of the respondents claimed to be conversant with online learning with a high level of readiness. Furthermore, the findings revealed that the majority of the respondents indicated a high level of ICT skills and competencies needed for online learning. On the negative side, fear of the high cost of data, poor internet services, erratic power supply, inaccessibility to online library resources, and limited access to computers were the major perceived challenges to effective online learning. Based on this finding, the study recommended that Nigerian universities must as a matter of necessity improvise means through which knowledge delivery and general learning activities can be achieved seamlessly and at the lowest cost to the students even while they are at home.

Chung, Subramaniam, and Dass (2020) surveyed students' readiness for virtual learning in Malaysia. The result shows the readiness of students to participate in virtual learning is slightly moderate as some of them were not ready for virtual learning due to a lack of learner control, self-directed learning, and virtual communication efficacy. On the challenges universities are facing in the efforts to ensure students finish their courses on time during the coronavirus pandemic, Nganga, Waruru, and Nakweya (2020) noted that virtual learning preparedness varies from one institution to the other. Not all the students and lecturers had been trained on how to participate in virtual learning. Most



students do not have laptops or money to buy internet bundles. Dube (2020) investigated the challenges faced by rural learners in South Africa in the context of COVID-19. The result indicated that the greatest challenge faced with virtual education is internet connection which respondents claim to be very expensive or, in some cases, very limited. Other challenges mentioned are the unavailability of the network, shortage of devices for virtual learning, closure of internet cafés, lack of computer skills, and expensive internet data. From the literature review above, it has been discovered that students have different perceptions of the use of virtual learning, hence the outcome varies. This perception might stem from the fact they have different levels of exposure, knowledge, and encounters.

### **3. Methodology**

A descriptive survey design was used for this study The descriptive survey design was used to collect data on the attitude, knowledge, and perception of secondary school students towards virtual learning types in private schools in Egor Local Government Area of Edo state.

#### **3.1 Population of the Study**

The population of this study consists of 3850 senior secondary schools two (02) students of private secondary schools in Egor Local Government Area of Edo state.

#### **3.2 Sample and Sampling Technique**

The sample size is 172 which is 5% of the study population. The sampling technique adopted for this study is the simple random sampling technique. This technique guarantees that every element of the population has an equal chance of being selected by the researcher.

#### **3.3 Research Instrument**

The research instrument for this study is a questionnaire. The questionnaire was divided into two sections. Section 'A' contains the demographic details, while Section 'B' consists of a statement of questions related to the research questions raised on students' characteristics and the effectiveness of virtual learning types in private secondary schools' questionnaire (SCEVLTPSSQ). The instrument was subjected to face and content validity. To establish the reliability of the Instrument, the researcher administered twenty (30) copies of the Instrument to students who were not part of the study. Cronbach's Alpha statistics were used to determine the reliability value of .820.

#### **3.4 Method of Data Collection**

The instrument was administered to the respondents by the researcher through the help of a trained research assistant to ensure quick response and retrieval of the instrument. The Instrument was personally administered by the researcher while the assistant helped

in the retrieval of the Instrument out of 192 questionnaires 174 were retrieved which is 90.6%

### 3.5 Method of Data Analysis

The data when collected was analyzed using the mean, and standard deviation. The decision rule to be adopted in making judgment on the research question was based on any calculated means. Calculated means which is equal to or greater than 2.50 were declared as very high extent, while a calculated mean that is less than 2.50 was declared as low.

## 4. Presentation of Results

**Research Question 1:** What is the level of students' attitude towards virtual learning types among students in private secondary schools in Egor Local Government Area of Edo State?

The summary of the descriptive statistics of students' levels of positive attitude towards virtual learning types among students in private secondary schools in Egor Local Government Area of Edo State is shown in Table 1.

**Table 1:** Mean Rating on Five Point Scale and Standard Deviation of the Levels of Students' Attitude towards Online Learning Types among Private Secondary Schools

S/N	Item Statements	N	$\bar{x}$	SD	Decision
1	Computer managed learning (CML)	174	3.72	0.71	High
2	Computer assisted instruction (CAI)	174	3.68	0.58	High
3	Synchronous online learning (SOL)	174	3.33	1.37	Moderate
4	Asynchronous online learning (AOL)	174	4.21	1.22	High
5	Fixed e-learning (FEL)	174	2.92	0.99	Moderate
6	Interactive online learning (IOL)	174	2.31	1.17	Low

Table 1 shows that students' levels of attitude towards CML, CAI, and AOL are high with mean values of 3.72, 3.68, and 4.21 respectively. The table also shows that students' level of positive attitude towards SOL and FEL are moderate with a mean value of 3.33 and 2.92 respectively, while students' level of positive attitude towards IOL is low with a mean value of 2.31.

**Research Question 2:** What is the level of students' knowledge of virtual learning types in private secondary schools in Egor Local Government Area of Edo State?

The summary of the descriptive statistics of students' level of knowledge of virtual learning types among students in private secondary schools in Egor Local Government Area of Edo State is shown in Table 2.

**Table 2:** Mean Rating on Five Point Scale and Standard Deviation of Students' Level of Knowledge of Online Learning Types among Private Secondary Schools

S/N	Item Statements	N	$\bar{x}$	SD	Decision
1	Computer managed learning (CML)	174	3.79	0.71	High
2	Computer assisted instruction (CAI)	174	4.16	1.33	High
3	Synchronous online learning (SOL)	174	3.43	1.14	Moderate
4	Asynchronous online learning (AOL)	174	4.33	0.95	High
5	Fixed e-learning (FEL)	174	2.46	1.33	Low
6	Interactive online learning (IOL)	174	2.45	0.88	Low

Table 2 shows that students' level of knowledge of CML, CAI, and AOL are high with mean values of 3.79, 4.16, and 4.33 respectively. The table also shows that students' level of knowledge of SOL is moderate with a mean value of 3.43 while their knowledge of FEL and IOL are low with mean values of 2.46 and 2.45 respectively.

**Research Question 3:** What is the level of students' participation in virtual learning types among students in private secondary schools in Egor Local Government Area of Edo State?

The summary of the descriptive statistics of the levels of students' participation in virtual learning types among students in private secondary schools in Egor Local Government Area of Edo State is shown in Table 3.

**Table 3:** Mean Rating on Five Point Scale and Standard Deviation of the Level of Participation of Students in Online Learning Types among Private Secondary Schools

S/N	Item Statements	N	$\bar{x}$	SD	Decision
1	Computer managed learning (CML)	174	2.99	0.85	Moderate
2	Computer assisted instruction (CAI)	174	2.34	1.09	Low
3	Synchronous online learning (SOL)	174	2.95	0.94	Moderate
4	Asynchronous online learning (AOL)	174	4.23	1.03	High
5	Fixed e-learning (FEL)	174	2.86	0.95	Moderate
6	Interactive online learning (IOL)	174	2.50	1.03	Moderate

Table 3 shows that students' level of participation in AOL is high with a mean value of 4.23 while students' level of participation in CML, SOL, FEL, and IOL are moderate with mean values of 2.99, 2.95, 2.86, and 2.50 respectively. The table also shows that students' level of participation in CAI is low with a mean value of 2.34.

**Research Question 4:** What is the students' perceived level of the impact and effectiveness of virtual learning types provided in private secondary schools in Egor Local Government Area of Edo State?

The summary of the descriptive statistics of students' perceived level of the impact and effectiveness of virtual learning types provided in private secondary schools in Egor Local Government Area of Edo State is shown in Table 4.

**Table 4:** Mean Rating on Five Point Scale and Standard Deviation of Students' Perceived Level of Impact and Effectiveness of Virtual Learning Types Provided in Private Secondary Schools

S/N	Item Statements	N	$\bar{x}$	SD	Decision
1	Computer managed learning (CML)	174	4.57	0.55	Very high
2	Computer assisted instruction (CAI)	174	3.82	0.85	High
3	Synchronous online learning (SOL)	174	4.57	0.89	Very high
4	Asynchronous online learning (AOL)	174	4.08	1.50	High
5	Fixed e-learning (FEL)	174	4.07	0.41	High
6	Interactive online learning (IOL)	174	2.77	1.17	Moderate

Table 4 shows that students' perceived levels of the impact and effectiveness of CML and SOL are very high with a mean value of 4.57. The table also shows that students' perceived levels of the impact and effectiveness of CAL, AOL, and FEL are high with mean values of 3.82, 4.08, and 4.07 respectively while students' perceived level of the impact and effectiveness of IOL is moderate with a mean value of 2.77.

#### 4.1 The Summary of the Test of Hypotheses

This section is the summary of the test of the hypotheses formulated for the study. These are as follows.

**Hypothesis 1:** Students' levels of positive attitude towards virtual learning types in private secondary schools in Egor Local Government Area of Edo State are not significant.

The summary of the one-sample t-test of the students' attitudinal levels towards virtual learning types in private secondary schools in Egor Local Government Area of Edo State is not significant and is presented in Table 7.

**Table 7:** Summary of the One Sample t-test of the Students' Levels of Positive Attitude towards Virtual Learning Platforms in Private Secondary Schools

S/N	Item Statements	N	Mean Diff	SEM	t	df	P	Decision
1	Computer managed learning (CML)	174	2.72	0.05	50.53	173	.001	Sig
2	Computer assisted instruction (CAI)	174	2.68	0.04	60.95	173	.001	Sig
3	Synchronous online learning (SOL)	174	2.33	0.10	22.43	173	.001	Sig
4	Asynchronous online learning (AOL)	174	3.21	0.09	34.71	173	.001	Sig
5	Fixed e-learning (FEL)	174	1.92	0.08	25.58	173	.001	Sig
6	Interactive online learning (IOL)	174	1.31	0.09	14.77	173	.001	Sig

**Key:** Positive attitude – convenience and passion.

Table 7 showed that students' level of positive attitude towards CML, CAI, SOL, AOL, and FEL are significant at .001, ( $t = 50.53, 60.95, 22.43, 34.71,$  and  $25.58$  respectively, and  $p$ -values  $< .05$ ). Students' level of participation in IOL is moderate, and Table 9 shows that it is significant at .001. ( $t = 14.77, p$ -value  $< 0.05$ ).

**Hypothesis 2:** Students' levels of knowledge of virtual learning types in private secondary schools in Egor Local Government Area of Edo State are not significant.

The summary of the one-sample t-test of the students' levels of knowledge of virtual learning types in private secondary schools in Egor Local Government Area of Edo State is presented in Table 8.

**Table 8:** Summary of the One Sample t-test of the Students' Levels of Knowledge of Virtual Learning Types in Private Secondary Schools

S/N	Item Statements	N	Mean Diff	SEM	T	Df	P	Decision
1	Computer managed learning (CML)	174	2.79	0.05	51.83	173	.001	Sig
2	Computer assisted instruction (CAI)	174	3.16	-0.10	31.34	173	.001	Sig
3	Synchronous online learning (SOL)	174	2.43	0.09	28.12	173	.001	Sig
4	Asynchronous online learning (AOL)	174	3.33	0,07	46.24	173	.001	Sig
5	Fixed e-learning (FEL)	174	1.46	0.10	14.48	173	.001	Sig
6	Interactive online learning (IOL)	174	1.45	0.07	21.74	173	.001	Sig

Table 8 shows that students' level of knowledge of CML, CAI SOL, and AOL are significant at .001 p-value (t values = 51.83, 31.34, 28.12, and 46.24 respectively, and p-values < .05). The table also shows that though students' level of knowledge of FEL and IOL are low, are significant at .001 p-value. (t=14.48 and 21.74 respectively with p-values <0.05).

**Hypothesis 3:** Students' levels of participation in virtual learning platforms in private secondary schools in Egor Local Government Area of Edo State are not significant.

The summary of the one-sample t-test of the students' levels of participation in virtual learning platforms in private secondary schools in Egor Local Government Area of Edo State is presented in Table 9.

**Table 9:** Summary of the One Sample t-test of the Students' Levels of Participation in Virtual Learning Platforms in Private Secondary Schools

S/N	Item Statements	N	Mean Diff	SEM	t	df	P	Decision
1	Computer managed learning (CML)	174	1.99	0.06	30.88	173	.001	Sig
2	Computer assisted instruction (CAI)	174	1.32	0.08	15.95	173	.001	Sig
3	Synchronous online learning (SOL)	174	1.95	0.07	27.36	173	.001	Sig
4	Asynchronous online learning (AOL)	174	3.23	0.08	41.37	173	.001	Sig
5	Fixed e-learning (FEL)	174	1.86	0.07	25.83	173	.001	Sig
6	Interactive online learning (IOL)	174	1.50	0.08	19.21	173	.001	Sig

Table 9 showed that students' level of participation in CML, SOL, AOL, FEL, and IOL are significant at .001 p -level, (t = 30.88, 27.36, 41.37, 25.83 and 19.21 respectively; p- values < .05). Though students' level of participation in CAI is low, table 8 shows that it is significant at .001. (t =15.95, p- values <0.05).

**Hypothesis 4:** Students' perceived levels of the impact and effectiveness of virtual learning types in private secondary schools in Egor Local Government Area of Edo State are not significant.

The summary of the one-sample t-test of the students' perceived levels of the impact and effectiveness of virtual learning types in private secondary schools in Egor Local Government Area of Edo State is presented in Table 10.

**Table 10:** Summary of the One Sample t-test of the Students' Perceived Levels of the Impact and Effectiveness of Virtual Learning Types in Private Secondary Schools

S/N	Item Statements	N	Mean Diff	SEM	t	Df	P	Decision
1	Computer managed learning (CML)	174	3.57	0.04	85.62	173	.001	Sig
2	Computer assisted instruction (CAI)	174	2.82	0.06	43.76	173	.001	Sig
3	Synchronous online learning (SOL)	174	3.57	0.07	52.91	173	.001	Sig
4	Asynchronous online learning (AOL)	174	3.08	0.11	27.09	173	.001	Sig
5	Fixed e-learning (FEL)	174	3.07	0.03	98.77	173	.001	Sig
6	Interactive online learning (IOL)	174	1.77	0.09	19.96	173	.001	Sig

Table 10 showed that students' perceived level of the impact and effectiveness of CML, CAI, SOL, AOL, and FEL is significant at .001 p- level, (t = 85.62, 43.76, 52.91, 27.09, and 98.77 respectively, and p- values < .05). Students' perceived level of impart and effectiveness of IOL is moderate, table 10 shows that it is significant at .001. (t =19.96, p-value <0.05).

#### 4.2 Summary of Major Findings

- 1) Students' level of positive attitude towards CML, CAI, and AOL is high while the level of positive attitude towards SOL and FEL are moderate but all five are significant at .001, (t = 50.53, 60.95, 34.71, 22.43 and 25.58 respectively; p-values < .05). Though students' level of positive attitude towards IOL is low, findings showed that it is significant at .001 p-value. (t =14.77; p-value <0.05)
- 2) Students' levels of knowledge of CML, CAI, and AOL are high while the level of knowledge of SOL is moderate and all four are significant at .001 p-value (t values = 51.83, 31.34, 28.12, and 46.24 respectively; p- values < .05). The findings also showed that though the level of students' knowledge of FEL and IOL are low, nevertheless are significant at .001 p-value. (t =14.48 and 21.74 respectively, p-values <0.05).
- 3) Students' level of participation in CML, SOL, AOL, FEL, and IOL are moderate and are significant at .001, (t = 30.88, 27.36, 41.37, 25.83, and 19.21 respectively, p-values < .05). Though students' level of participation in CAI is low, the findings showed that it is significant at .001. (t =15.95; p-values <0.05)
- 4) Students' perceived levels of the impact and effectiveness of CML, CAI, SOL, AOL, and FEL are high or very high and are significant at .001 p-level, (t = 85.62, 43.76, 52.91, 27.09, and 98.77 respectively; p-values < .05). Students' perceived level

of impart and effectiveness of IOL is moderate and findings showed that it is significant at .001. ( $t=19.96$ ,  $p\text{-value} < 0.05$ ).

## 5. Discussion of Results

The findings to Research Question 1 and the test of the corresponding hypothesis showed that Students' level of attitude towards CML, CAI, and AOL are high while towards SOL and FEL are moderate but all five are significant at .001, ( $t = 50.53, 60.95, 34.71, 22.43$  and  $25.58$  respectively and  $p\text{-values} < .05$ ). Though students' level of positive attitude towards IOL is low, findings showed that it is significant at .001  $p\text{-value}$ . ( $t=14.77$ ,  $p\text{-value} < 0.05$ ). This implies that students have positive attitudes towards virtual learning types in private secondary schools in Egor Local Government Area of Edo State. This could be because most of the students agreed to have a positive attitude towards Computer-Managed Learning, Computer-Assisted Instructions, and Asynchronous online learning and a moderate attitude towards Synchronous Online Learning and Fixed E-Learning, but a low level of attitude towards Interactive Online Learning.

These findings agree with the findings of Singh (2021) in a study on secondary school students' attitude towards online learning during COVID-19. The aim of the study was to study the attitude of secondary school students towards online learning during the COVID-19 Period in relation to their gender and locality. The findings of the study conclude that there exists no significant difference in attitude towards online learning with respect to gender. The findings of the study further reveal that locality has a significant effect on students' attitude towards online learning. The study also agrees with Bhuvanewari, and Padmanaban (2021) who examined the attitude of senior secondary students towards e-learning. The result revealed that Students' personal variables such as gender, subject specialization, parents' education, parents' monthly income, and school management differed significantly among themselves. Suitable suggestions are given to improve students' attitude towards the e-learning paradigm.

On the other hand, these findings are not supported by the findings of Leite (2014), who carried a study on undergraduate students' attitudes toward computers were investigated. There were no significant differences in attitudes between male and female students or between students taking and not taking a computer-related class. Comparison of data from freshman, sophomore, junior, and senior students also did not reveal any significant differences. Among the positive aspects, learners listed the greater flexibility and learner convenience due to time-shifting and associated advantages of time management.

The findings to Research Question 2 and the test of the corresponding hypothesis showed that students' levels of knowledge of CML, CAI, and AOL are high while the level of knowledge of SOL is moderate and all four are significant at .001  $p\text{-value}$  ( $t$  values =  $51.83, 31.34, 28.12$  and  $46.24$  respectively;  $p\text{-values} < .05$ ). The findings also showed that though the level of students' knowledge of FEL and IOL are low, are significant at .001  $p\text{-value}$  ( $t=14.48$  and  $21.74$  respectively;  $p\text{-values} < 0.05$ ). This implies that students have a

high knowledge of virtual learning types in private secondary schools in Egor Local Government Area of Edo State. This could be because the majority of the students agreed to have a high level of knowledge of Computer-Managed Learning, Computer-Assisted Instructions, and Asynchronous Online Learning and a low level of knowledge of Fixed E-Learning and Interactive Online Learning.

These findings agree with the findings of Lung-Yu & Lee (2016) conducted a study on Computer Literacy and Online Learning Attitude toward GSOE Students in Distance Education Programs. The purpose of this study was to explore graduate students' competencies in computer use and their attitudes toward online learning in asynchronous online courses of distance learning programs in a Graduate School of Education (GSOE) in Taiwan. Results revealed a significant positive relationship between computer literacy and online learning attitude among the students. Higher computer literacy was correlated with a higher online learning attitude. However, no statistically significant difference was found in online learning attitude by gender or by age group. Suggestions and managerial implications were discussed in the study and would provide a contribution both to the body of knowledge in the field of education management.

On the other hand, these findings are not supported by the findings of Rahman, Ariawan & Pratiwi (2020) in their study titled Digital Literacy Abilities of Students in Distance Learning. This study aims to measure the digital literacy ability of students and then compare the digital literacy ability of students in terms of location. The results of the study indicate that the digital literacy abilities of students are in the medium category. Students already have a decent mastery of digital media but they do not pay attention to aspects related to the writing code of ethics such as including valid references and very rarely access the journal as a source of literature. In terms of hardware usage aspects, students have shown better development because they can use applications that support distance learning activities. Thus, the researcher concludes that in terms of location, all prospective teachers have a medium category for digital literacy ability.

The findings to Research Question 3 and the test of the corresponding hypothesis showed that students' level of participation in CML, SOL, AOL, FEL, and IOL are moderate and are significant at .001, ( $t = 30.88, 27.36, 41.37, 25.83, \text{ and } 19.21$  respectively and  $p\text{-values} < .05$ ). Though students' level of participation in CAI is low, the findings showed that it is significant at .001. ( $t = 15.95, p\text{-values} < 0.05$ ). This implies that students participate more in virtual learning types in private secondary schools in Egor Local Government Area of Edo State. This could be due to the fact that the majority of the students agreed to participate more with Computer-Managed Learning, Synchronous Online Learning, Asynchronous Online Learning, Fixed E-Learning and Interactive Online Learning, and a low level of knowledge of Computer-Assisted Instructions.

These findings agree with the findings of Eze, Chinedu-Eze, Okike & Bello (2020) who conducted a study titled The Factors influencing the Use of E-learning Facilities by Students in a Private Higher Education Institution (HEI) in a Developing Economy. This study, therefore, explores factors influencing the use of e-learning by students in private HEIs in Nigeria using Technology-Organisation-Environment (TOE) framework. The



findings reveal that technology-related factors (ease of use, speed accessibility and service delivery), organisation-related factors (training support and diversity), environment-related factors (attitudes of the users) and impact-related factors (learning experience, skill development, academic performance, and degree of engagement) influence the students' adoption of e-learning facilities. We develop an extended TOE framework that integrates the impact context which considers the students' likely expectations if these facilities are fully adopted and implemented. The study also unveils techniques that may accelerate the development of e-learning structures in private HEIs and which could provide the opportunity to assist communities of learners to adopt and use e-learning facilities regularly.

On the other hand, these findings are not supported by the findings of Egielewa, Idogho, Iyalomhe & Cirella (2021) who carried out a study titled COVID-19 and Digitized Education: Analysis of Online Learning in Nigerian Higher Education. This study aims to investigate student perception of Nigerian institutions of higher learning using the new digital culture induced by the COVID-19 pandemic, namely, online learning (i.e., e-learning), which has become commonplace globally and specifically in Nigeria. The study found that students are not satisfied with virtual learning embarked upon by many higher institutions throughout the country during the COVID-19 lockdown and would not want online learning to continue after the pandemic due to poor internet infrastructure and lack of electricity. The study concluded that students of higher education in Nigeria have a low acceptance of online learning technology, preferring instead the traditional classroom setting, thus putting them in the "Laggards adopter categorization" of the diffusion innovation theory, i.e., the group that is highly conservative and extremely slow to accept new technological innovations. The study recommends that universities should engage students more interactively not only through texts but also through video (e.g., camera demonstrations), increase their online learning during the pandemic so as not to lag academically, and spend more time on online learning to get the best possible level of instruction until traditional learning resumes.

The findings to Research Question 4 and the test of the corresponding hypothesis showed that students' perceived levels of the impact and effectiveness of CML, CAI, SOL, AOL, and FEL are high or very high and are significant at .001 p- level, ( $t = 85.62, 43.76, 52.91, 27.09$  and  $98.77$  respectively and  $p$ - values  $< .05$ ). Students' perceived level of impact and effectiveness of IOL is moderate and findings showed that it is significant at .001. ( $t = 19.96$ ,  $p$ - value  $< 0.05$ ). This implies that students believe that virtual learning types are impactful and effective in private secondary schools in Egor Local Government Area of Edo State. This could be due to the fact that the majority of the students agreed that Computer-Managed Learning, Computer-Assisted Instructions, Asynchronous Online Learning, Synchronous Online Learning, and Fixed E-Learning are impactful and effective, but a low level of impact and effectiveness from Interactive Online Learning.

These findings agree with the findings of Roh (2017) who investigated the direct and indirect effects of learners' age, gender, technical training, computer and Web

competencies, perceived usefulness of the Web, and perceived needs for the Web on their Web use. Results revealed that there was a negative total effect of the age of participants on the amount of time spent using the Web. Also, their perceived needs for Web use, the technical training they had received, the perceived usefulness of the Web, and their computer and Web competencies had positive direct effects on their Web use. In particular, young participants spent more time using the Web and showed slightly more positive perceptions of the usefulness of the Web than more mature participants did. The results also showed that there were gender differences in the participants' computer and Web competencies in which the male participants showed a higher level of competency in Web use. Overall, the findings of this study suggest that basic skills and knowledge of Web use should be provided formally or informally to learners in order to facilitate Web use for participants of Web-based instruction. It is also recommended that communication channels be provided for participants of Web-based instruction to facilitate their Web use.

On the other hand, these findings are not supported by the findings of Olayemi, Adamu, and Olayemi (2021) who examined the perception and readiness of students towards online learning in Nigeria during COVID-19 pandemic. The study investigated the perception and readiness of students towards online learning in Nigeria during the COVID-19 pandemic. The findings revealed that the majority of the respondents indicated a high level of ICT skills and competencies needed for online learning. On the negative side, fear of the high cost of data, poor internet services, erratic power supply, inaccessibility to online library resources, and limited access to computers were the major perceived challenges to effective online learning. Based on this finding, the study recommended that Nigerian universities must as a matter of necessity improvise means through which knowledge delivery and general learning activities can be achieved seamlessly and at the lowest cost to the students even while they are at home.

## 6. Conclusion

Based on the findings of the study, the author concluded that: the attitude of students towards virtual learning types in the new normal is multi-dimensional. In 2020, virtual learning became an essential education tool during the coronavirus pandemic. Kids of all ages successfully used and accessed virtual learning classrooms throughout the year. Even though we're recovering from the pandemic, the availability and benefits of online programs are here to stay. In relation to the knowledge of students about virtual learning types. Some may be very conversant with the computer-based since it's already set and running on the computer or the app-based since it looks like their regular apps, and they carry their phone regularly. Most virtual learning apps have a similar user experience to other regular apps, thereby making it easy to learn and understand. Similarly, students who do not have smartphones may find it difficult to learn and understand the technicalities of the virtual learning app or computer-based learning systems. Students who have prior knowledge of computers may find it easy to use the computer-based or

Web-based type as compared to students without a single piece of knowledge or training about computers. Although, some students' attitudes toward virtual learning types may be traced to a psychological unwillingness to engage in online learning. Some students seem to give up when faced with technical difficulties, and then just pull out. On the other hand, some students may like to learn virtually when they see their friends also learning rapidly.

### **6.1 Recommendations**

Thus, in the light of foregoing findings, conclusions, and implications for educational planning, the following recommendations are offered:

- 1) The government should bring out policies backing the introduction of using virtual platforms as part of the means of teaching and learning.
- 2) The administrators of education should evaluate and improve the effectiveness of existing policies and implement necessary actions in addressing effective virtual learning in the new normal.
- 3) Training and workshops should be organized for both teachers and pupils to discuss interventions to improve their management, pedagogical, and computer skills.

### **6.2 Implication for Educational Planning**

Virtual learning types are now the new normal. It then implies that educational planners especially in the developing world should cooperate with virtual learning systems in their curriculum for all levels of education. This is to avoid the ugly experience most of these developing worlds had during the Covid 19 that led to the closure of all schools for almost one academic year. Planners of education must make provision for the resources both human and materials for the effective use of virtual platforms in teaching and learning. For this to be successful, planners of education must involve all stakeholders in the education industry in the planning process. Furthermore, the present curriculum should be overhauled, and various virtual learning platforms be used alongside face-to-face contact teaching and learning. Finally, educational planners should make provision for intensive training of human resources in the use of these e-learning platforms.

### **Conflict of Interest Statement**

The authors declare no conflicts of interest.

### **About the Authors**

**Dr. Mrs Chukujindu Joyce Okafor** is presently a lecturer and Head of Department of Education, Benson Idahosa University, Benin City, Nigeria. She has a Doctorate Degree in Educational Planning and a master degree in Educational Management.

**Evbade Enoma, Nwadishi** holds a strong academic background with a focus on linguistics and education. Master of Arts in Applied Linguistics and TESOL from the University of Portsmouth, Postgraduate Diploma in Education from Benson Idahosa

University, Nigeria, and Bachelor of Arts (Honors) in Linguistics from the University of Benin, Nigeria.

## References

- Abbasi, S., Ayoob, T., Malik, A., & Memon, S. I. (2020) Perceptions of students regarding e- learning during COVID-19 at a private medical college. *Pak J Med Sci.* 236, S57-S61.
- Bączek, M., Zagańczyk-Bączek, M., Szpringer, M., Jaroszyński, A., & Wożakowska-Kapłon, B. (2020). Students' perception of online learning during the COVID-19 pandemic: a survey study of Polish medical students. *Research Square*, 1-14.
- Bates, A., W. (2015). Teaching in a digital age. Tony Bates Associate Ltd. P. 201.
- Bhuvanewari, A. S. and Padmanaban T. (2012). Attitude of senior secondary students towards e-learning, *Elixir Educational Technology* 51, pp. 10886-10888.
- Chung, E., Subramaniam, G., & Dass, L. C. (2020). Online learning readiness among university students in Malaysia amidst COVID-19. *Asian Journal of University Education*, 16(2), 45-58.
- Dube, B. (2020). Rural online learning in the context of COVID-19 in South Africa: Evoking an inclusive education approach. *Multidisciplinary Journal of Educational Research*, 10(2), 135-157.
- EiEWG (2020). Nigeria Education Sector COVID-19 Response Strategy in North East. 18
- Ho, L. A. and Kuo, T. H. (2017). How can one amplify the effect of e-learning? An examination of high-tech employees' computer attitude and flow experience. *Computers in Human Behavior*, 26.
- Leite, P. T. (2014). *College students' attitude toward computers*. Division of Business Technology, Butler County Community College. (ERIC Document reproduction service no. ED371684).
- Masry-Herzallah A., Da'as R. (2021). Cultural values, school innovative climate and organizational affective commitment: a study of Israeli teachers. *Int J Educat Manage.* <https://doi.org/10.1108/IJEM-06-2020-0302>
- Murray, L. M. (2017). Autonomy and language learning in a stimulated environment. *System*, 27: 295-308.
- Nganga, G., Waruru, M., & Nakweya, G. (2020). Universities face multiple challenges in wake of COVID-19 closures. *University world news.* <https://www.universityworldnews.com/post.php?story=20200407162549396>
- Olayemi, O. M., Adamu, H., & Olayemi, K. J. (2021). Perception and readiness of students towards online learning in Nigeria during Covid-19 pandemic. *Perception*, 3(1), 4-21.
- Selim, H. M. (2017). Critical success factors for e-learning acceptance: Confirmatory factor models. *Computers & Education.* 49

- Shetty, S., Shilpa, C., Dey, D., & Kavya, S. (2020). Academic crisis during COVID-19: Online classes, a panacea for imminent doctors. *Indian J Otolaryngol Head Neck Surg.* <https://doi.org/10.1007/s12070-020-02224-x>
- Smart, K. L., & Cappel, J. J. (2016). Students' perceptions of online learning: A comparative study. *Journal of Information Technology Education*, 5, 201-219.
- Tarone, E., & Yule, G. (2019). *Focus on the language learner*. Oxford: Oxford University Press.
- Tedd, M. (2018). Thirty-two trends affecting virtual education: An informed foundation for strategic planning. *Online Journal of Distance Learning Administration* 6, (3), 13.19. Retrieved on 23rd May, 2010 from <http://www.surf.ni/wtr/en/>
- Ukoha, U. A. (2019). Emerging technologies in electricity/electronics with implications for training in the practical component of Nigerian certificate in education (Technical) curriculum. In B.G. Nworgu (ed). *Optimization of Service Delivery in The Education Sector: Issues & Strategies*. Pp 158 – 170. Nsukka: University Trust Publishers.
- Ukoha, U. A. (2019). Stakeholders' perception of the Nigeria certificate in education (technical) curriculum in meeting the occupational expectations in South-South, Nigeria. *Annals of Technology Education Practitioners Association of Nigeria*, 2(1), 30-37.
- United Nations (2020). Policy Brief: Education during COVID-19 and Beyond. Retrieved from [https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg\\_policy\\_brief\\_covid-19\\_and\\_education\\_august\\_2020.pdf](https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg_policy_brief_covid-19_and_education_august_2020.pdf)
- Visser, J. (2018). Changing learning environments: The real and not so real of reality and virtuality. Retrieved on 20th April 2011 from <http://www.unesco.org/education/educprog/lwf/dl/virtual.pdf>.
- Web Institute for Teachers – WIT (2017). Interactivity through virtual learning: How do you create a virtual learning model? Retrieved on 20th 2011 from <http://webinstituteforteachers.org/2000/curriculum/homeroommodules/interactive/virtual2.htm>
- World Bank (2002). *Virtual learning in higher education in Nigeria*. Retrieved on 13<sup>th</sup> April 2010 from [http://www.utasedu.au/universitycouncil/plans\\_structure/ict.pdf](http://www.utasedu.au/universitycouncil/plans_structure/ict.pdf).
- Yang, Y., and Lin, N. C. (2017). Internet perceptions, online participation, and language learning in Moodle forums: A case study on nursing students in Taiwan. *Procedia Social and Behavioral Sciences*, 2.

Creative Commons licensing terms

Author(s) will retain the copyright of their published articles agreeing that a Creative Commons Attribution 4.0 International License (CC BY 4.0) terms will be applied to their work. Under the terms of this license, no permission is required from the author(s) or publisher for members of the community to copy, distribute, transmit or adapt the article content, providing a proper, prominent and unambiguous attribution to the authors in a manner that makes clear that the materials are being reused under permission of a Creative Commons License. Views, opinions and conclusions expressed in this research article are views, opinions and conclusions of the author(s). Open Access Publishing Group and European Journal of Education Studies shall not be responsible or answerable for any loss, damage or liability caused in relation to/arising out of conflicts of interest, copyright violations and inappropriate or inaccurate use of any kind content related or integrated into the research work. All the published works are meeting the Open Access Publishing requirements and can be freely accessed, shared, modified, distributed and used in educational, commercial and non-commercial purposes under a [Creative Commons Attribution 4.0 International License \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).