From brick-and-mortar to online teaching during the COVID-19 pandemic lockdown in Osun state, Nigeria

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Abstract

This study examined the private secondary school students' perception, satisfaction, and attitude towards online teaching. Some information concerning online teaching during the COVID-19 pandemic lockdown in Osun state, Nigeria was provided. The descriptive survey design was adopted for this study. The population comprised all private secondary school students in Osun state, Nigeria. A simple random sampling was used to select 664 students from four private senior secondary schools across the state. A self-developed 21-item instrument with a Cronbach alpha of 0.84 was used to elicit information from the participants. Data were analyzed using chi-square statistic at 0.05 level of significance. The result revealed that most private secondary school students had high perceptions of online teaching as well as a positive attitude towards online teaching. There was a statistically significant relationship between participants' school class ($\chi2 = 11.08$; p < 0.05) and satisfaction level towards online teaching, while there was no significant association between respondents' gender ($\chi2 = 2.38$, p > 0.05), age ($\chi2 = 0.07$, p > 0.05) and satisfaction levels towards online teaching. It was concluded that online teaching should be used to teach private secondary school students in addition to brick-and-mortar teaching.

Key words: online teaching, COVID-19 pandemic, perception, satisfaction, attitude

1. Introduction

The advent of technologies and the internet in teaching has been observed to improve accessibility, quality of delivery, and learning among secondary school students and teachers in Nigeria. Online teaching involves applying electronic devices to deliver educational materials for knowledge advancement while eradicating any form of distance barrier. Online teaching is one of the new normals in today's world due to Coronavirus Disease 19 (COVID-19) pandemic. Online teaching has been in existence in advanced countries (like the United States of America, the United Kingdom, Australia, etc.), but has yet to gain more popularity in Africa, particularly, in Nigeria. Online teaching is becoming a major phenomenon, enhancing learners' knowledge via the use of the internet, interactive television, video, satellite broadcast, and other external devices that made teaching/learning easier and more convenient.

Based on the benefits of online teaching, studies by Allen and Seaman (2010), Eom, Wen, and Ashill (2006), Tan, Chuah, and Ting (2017) have shown a growing trend toward enrolling students in online classes worldwide. The adoption of online teaching by private secondary school teachers to teach their students has been fast gaining popularity in Nigeria, especially at the time of the COVID-19 pandemic lockdown. Mamun and Ullah (2020) stated that since the beginning of April 2020, nearly 90% of the total enrolled students (i.e., 1.5 billion students) from 185 countries were involved in little or no educational activities because of the outbreak of the COVID-19 pandemic. Because of the pandemic, the Nigerian government, like other governments in the world, had no choice but to impose a lockdown to curtail the further spread of the virus. In addition, the virus spread into 58 African countries with over two hundred thousand cases in June 2020. Xinhua (2020) opined that African countries are mostly affected by this virus, and these include South Africa, Egypt, Morocco, and Nigeria.

In the case of Nigeria, by May 2, 2022, there have been 255,766 confirmed cases with 249,914 discharge cases and 3,143 confirmed fatalities (https://covid19.ncdc.gov.ng/). To ensure that the general public could have updated information, pevention, and management strategies about the virus, the NCDC on its website (www.ncdc.gov.ng) and Twitter handle (@NCDCgov) published certain health measures on how to ameliorate further spread of the virus (Mustapha, Adedokun, & Nasir, 2020). During the lockdown, some secondary schools in Nigeria, especially the privately-owned ones, like those in other countries of the world, have metamorphosed from brick-and-mortar to online teaching by uploading and sharing the lesson materials via various online platforms like Zoom, Electronic Mail, Google classroom, and other virtual means.

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2. Literature review

At the peak of the COVID-19 pandemic, which had a significant impact on all aspects of human activities, including the education sector, governments around the world had to implement lockdown as a measure to mitigate the spread of the virus. The suspension of the brick-and-mortar method of teaching made private secondary school teachers in Nigeria to adopt online teaching during the lockdown. In addition, private secondary schools quickly introduced online teaching mainly to cushion the effect of the lack of social presence and interaction between students and teachers (Bali & Liu, 2018). O nline teaching is an alternative method to the usual brick-and-mortar teaching where learning (either online or offline) is facilitated by computers, telecommunication devices, internet networks, and storage capacity. Online teaching provides the students with adaptive, personalized computer-enhanced learning, which involves using mobile technologies, and web-based teaching materials. Olson et al. (2011) opine that online teaching encompasses a broad array of content and instruction methods and that online teaching has come to stay. It involves using 21st-century skills such as technology in solving the problems of teaching during the pandemic lockdown while bridging the gap between physical contact to the delivery of instructional materials. According to Olatunji (2013), institution administrators see online teaching as a significant means of generating more money because institutions can reach out to more students without necessarily employing additional staff and acquiring physical space.

Onine teaching is considered attractive as a new teaching model whose effect will be a positive one on the development of education in developing countries like Nigeria. So, it is imperative to know the perception, attitude, and satisfaction of private secondary school students towards online teaching. Research on examining students' perceptions and their expectations of online teaching has been outpouring (Armstrong, 2011; Biswas, & Roy, 2020). Subsequently, studies by Shrestha et al. (2019), Salloum et al. (2019), Pérez-Pérez, Serrano-Bedia, and García-Piqueres (2020) have shown that students' perceptions are affected by such factors as age, gender, prior knowledge of computer literacy and learning styles of students. They are the dynamic predictors of technology acceptance by students (Khan et al., 2021).

Online teaching is done in such a way that teachers can impart to their students in a way that provides quick delivery of lessons, creating and communicating new training, policies, concepts, and ideas. It is a flexible platform that can reduce any form of distance challenges between teachers and students (Bhagat, Wu, & Chang, 2019). It can be especially useful when there are hindrances to the brick-and-mortar method of teaching. These disruptions could involve war, terrorist attacks, natural disasters, and disease outbreaks, as it is was the case when COVID-19 was active everywhere. A study conducted by Fortune, Spielman, and Pangelinan (2011) investigated 156 students who participated in either an online learning section or face-to-face learning of the Recreation and Tourism course at the Multicultural University in Northern California, USA. They reported that no statistically significant difference in learning preference was found between those who participated in the two different learning modes. Due to the pandemic, various studies (Bali & Liu, 2018; Bernard et al., 2004; Caldwell, 2006; Nakayama, Mutsuura, & Yamamoto, 2014; Zhan, Xu, & Ye, 2011; Coman et al., 2020; Huang, 2020; Richardson, Hollis, Pritchard, M., & Lingat, 2020) have been conducted on online teaching. However, there has been a dearth of research to examine the private secondary school students' perception, satisfaction, and attitude towards online teaching during the COVID-19 pandemic lockdown in Osun state, Nigeria.

Research objectives

The specific objectives of the study are to:

1.   Examine private secondary school students' perception of online teaching;

2.   Investigate the extent to which private secondary school students are satisfied with the online mode of teaching; and

3.   Determine private secondary school students' attitudes towards online teaching.

Research hypothesis

For this study, three null hypotheses were formulated.

H01: There is no significant relationship between private secondary school students' gender, class, and age on the perception of online teaching.

H02: There is no significant relationship between private secondary school students' gender, class, and age on satisfaction with online teaching.

H03: There is no significant relationship between private secondary school students' gender, class, age on attitude toward online teaching

3. Methodology

3.1. Methods

The study adopted a descriptive survey design method. This entails the process of obtaining data from a representative sample of population without any form of manipulation.

3.2. Background information

The instrument was administered to senior school students in private schools across Osun state, Nigeria. This is because most private secondary schools in Nigeria have shifted from brick-and-mortar forms of teaching to online teaching methods as a means of engaging their students academically during the lockdown. Six hundred and sixty-four questionnaires (i.e., 95%) were used for the analysis out of the seven hundred questionnaires distributed, while thirty-six (i.e., 5%) were expunged because they were either not properly completed or not returned. The data collected were analyzed using the Statistical Package for Social Sciences (SPSS) 20 statistical software package. The data were analyzed using descriptive statistics (Table 1), and the hypotheses were analyzed using the chi-square statistics.

3.3. Participants

Population

The population for the study comprised all senior secondary school students in the private secondary schools in Osun state, Nigeria.

Sample and sampling procedure

The sample comprised a total of 664 private secondary school students. The participants were selected using a multi-stage sampling technique. Two out of the three senatorial districts in Osun state were represented. From the two senatorial districts, one Local Government Area (LGA) was selected using a simple random sampling technique. Two private secondary schools were selected from each LGA using purposive sampling based on private secondary schools that conducted online teaching during the lockdown in Osun state, Nigeria. One hundred and sixty-six students were selected from each of the private secondary schools using stratified sampling techniques, considering their gender, class, and age as strata.

3.4. Procedure

Before the questionnaires were administered, the permission to hold it was granted by the school authorities. In the process of administering the questionnaire, the researchers were physically present to attend to any questions students may want to ask. Data were collected in five weeks.

Instrumentation

Initially, a 20-item questionnaire was developed before the content validity of the instrument, which was assessed by experts in Tests and Measurement in the Department of Educational Foundations and Counselling, Faculty of Education, Obafemi Awolowo University, Ile-Ife, Nigeria. In the process of the content validation, some modifications were made to ensure that all the items measured the construct (online teaching). In addition, the experts included an additional item, making the total items to be twenty-one (21). The OTPSS was then piloted outside the location where the actual data was obtained. After that, the final version of the OTPSS was exposed to the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity (BTS) to determine the factorial validation (Kerlinger, 1970) and appropriateness of the instrument. Based on the validation result, it was revealed that the KMO and BTS values were 0.92 and 7551.45, which explained 62.61% of total variance. It was noticed that four factors loaded on the varimax rotated principal component analysis with values between 0.91 and 0.57. Likewise, the Chi-square value of the BTS indicated a significant value of less than 0.05. Furthermore, the OTPSS was subjected to a measure of internal consistency using Cronbach alpha, Split-half, and Guttman, which yielded 0.84, 0.89, and 0.80 reliability coefficient, respectively, indicating that the instrument is reliable. In addition, the Cronbach alpha for the subscales, that is, perception, satisfaction, and attitude, was conducted, accounting for 0.85, 0.73, and 0.78 individually.

The OTPSS contains two sections. The first section comprised demographic information about the respondents such as gender, class, and age, while the second section contains 21-items that were designed to measure students' perception (9 items), satisfaction (6 items), and

attitude (6 items) toward online teaching. In this section, participants responded to a four-point Likert scale type ranging from Strongly Agree (SA), Agree (A), Disagree (D), to Strongly Disagree (SD) for items measuring students' perception and satisfaction as well as Yes and No were used for items that concentrated on students' attitude towards online teaching. In addition, SA, A, D, and SD, were scored 4, 3, 2, and 1 respectively for positive items and inversely scored for a negative item (item 8, i.e., I am not comfortable with the online teaching class). In contrast, Yes and No were scored 2 and 1.

3.5. Results and analysis

The data were analyzed using descriptive statistics (Table 1), and the research questions were analyzed using the chi-square statistic.

TABLE 1. Descriptive statistics of participants

Participants	N		SD
Gender	664	1.64	0.48
Class	644	2.31	0.81
Age	644	2.22	0.69

The descriptive statistics (Table 1) showed participants' gender (= 1.64, SD = 1.48), participants' class (= 2.31, SD = 0.81) and age (= 2.22, SD = 0.69).

Research hypothesis one: There is no significant relationship between private secondary school students' gender, class, age, and the perception of online teaching.

To address the first research hypothesis, items that measured private secondary school students' perception of online teaching were subjected to critical statistical analysis of chi-square. The perception of private secondary school students of online teaching was tested against the demographical variables (gender, class, and age). The level of perception (Table 2) of the participants was categorized into two (high and low) perceptions. The total score for each individual was computed with minimum and maximum values of 9 and 36, respectively. However, the minimum through the mean minus one were categorized as participants with low perception levels (9-23) while the mean through the maximum was grouped as participants with high perception (24 - 36).

TABLE 2. Level of perception of students across demographical variables

	Level of Perception					
Variables	Low	High	Total	df	χ^2	p
Gender						
Female	111 (37.1%)	127 (34.8%)	238 (35.8%)	1	0.39	0.53
Male	188 (62.9%)	238 (65.2%)	426 (64.2%)			
Total	299 (45.0%)	365 (55.0%)	664 (100.0%)			
Class						
SS 1	67 (22.4%)	77 (21.1%)	144 (21.7%)			
SS 2	87 (29.1%)	80 (21.9%)	167 (25.2%)	2	5.73	0.06
SS 3	145 (48.5%)	208 (57.0%)	353 (53.2%)			
Total	299 (45.0%)	365 (55.0%)	664 (100.0%)			
Age						
<14 Years	44 (14.7%)	57 (15.6%)	101 (15.2%)			
14-16 Years	143 (47.8%)	176 (48.2%)	319(48.0%)	2	0.17	0.92
>16 Years	112 (37.5%)	132 (36.2%)	244(36.7%)			
Total	299 (45.0%)	365 (55.0%)	664 (100.0%)			

Note: SS = Senior School. Not significant at p > 0.05

It was shown (Table 2) that female and male participants had 127 (34.8%) and 238 (65.2%) high perceptions while 111 (37.1%) and 188 (62.9%) revealed low perceptions for both females and males. The class of students in Senior Secondary school 1 67 (22.4%), Senior Secondary school 2 87 (29.1%), and Senior Secondary school 3 145 (48.5%) demonstrated a low-level perception of online teaching. Similarly, 77 (21.1%), 80 (21.9%), and 208 (57.0%) of the participants in SS 1, SS 2, and SS 3 respectively exhibited high perception levels. With these figures, it was concluded that SS 3 students had a higher perception of online teaching than students in SS 1 and SS 2 students, respectively. Moreover, students below age 14, 14-16 years and greater than 16 years showed 44 (14.7%), 143 (47.8%), and 112 (37.5%) respectively displayed low perception whereas 57 (15.6%), 176 (48.2%), and 132 (36.2%) high perception towards the online teaching. Generally speaking, the majority (55.0 %) of all the participants displayed high perception leaving only 45.0% with low perception. It was discovered that there was no statistically significant relationship between gender ($\chi2 = 0.39$, p > 0.05), class ($\chi2 = 5.73$, p > 0.05), age ($\chi2 = 0.17$, p > 0.05) and perception of online teaching.

Research hypothesis two: There is no significant relationship between private secondary school students' gender, class, age, and satisfaction with online teaching.

To address the second hypothesis, students' satisfaction (Table 3) with online teaching was grouped into three (i.e., low, moderate, and high). The total score for an individual was computed with a minimum and maximum value of 7 and 22, respectively, with a mean ($\bar{x} = 14$) and standard deviation (SD = 4). A score less than the mean minus one standard deviation was characterized as "low satisfaction" (7 - 9). Similarly, the scores that ranged between the mean minus one standard deviation and the mean plus one standard deviation were categorized as "moderate satisfaction" (10 - 18), and the scores greater than the mean plus one standard deviation were classified into "high satisfaction" (19 - 22). In addition, the frequency count and percentage for each category were obtained and cross-tabulated with the demographic variables.

TABLE 3. Level of students' satisfaction towards online learning

Variable	Low	Moderate	High	Total	df	χ²	P
Gender							
Female	32(31.1%)	170(35.8%)	36(41.9%)	238(35.8%)	2	2.38	0.31
Male	71(68.9%)	305(64.2%)	50(58.1%)	426(64.2%)			
Total	103(15.5%)	475(71.5%)	86(13.0%)	664(100%)			
Class							
SS 1	21(20.4%)	96 (20.2%)	27(31.4%)	144(21.7%)			
SS 2	21(20.4%)	133(28.0%)	13(15.1%)	167(25.2%)	4	11.08	0.03*
SS 3	61(59.2%)	246(51.8%)	46(53.5%)	353(53.2%)			
Total	103(15.5%)	475(71.5%)	86(13.0%)	664(100%)			
Age							
<14 Years	7(6.8%)	78 (16.4%)	16(18.6%)	101(15.2%)	4	8.82	0.07
14-16 Years	57(55.3%)	218(45.9%)	44(13.8%)	319(48.0%)			
>16 Years	39(37.9%)	179(37.7%)	26(30.2%)	244(36.8%)			
Total	103(15.5%)	475(71.5%)	86(13.0%)	664(100%)			

*Significant at *P* < 0.05

It was found (Table 3) that 32 (31.1%) and 71 (68.9%) were female and male private secondary school students who demonstrated low satisfaction levels towards online teaching, 170 (35.8%), and 305 (64.2%) were female and male with moderate satisfaction whereas 36 (41.9%) and 50 (58.1%) were female and male who established a high level of satisfaction towards online teaching. Similarly, students in SS 1, SS 2, and SS 3 obtained 21 (20.4%), 21 (20.4%), and 61 (59.2%) respectively showed low satisfaction while those that displayed moderate satisfaction of 96 (20.2%), 133 (28.0%), and 246 (51.8%) were students in the SS 1, SS 2 and SS 3, respectively. It was shown in Table 3 that 27 (31.4%), 13 (15.1%), and 46 (53.5%) were students in the SS 1, SS 2, and SS 3, respectively, with a high level of satisfaction. The result further showed that 7 (6.8%), 57 (55.3%), and 39 (37.9%) were participants below 14 years, 14-16 years, and above 16 years who revealed low satisfaction with online teaching. Also, participants who demonstrated moderate satisfaction were private secondary school

students below 14 years are 78 (16.4%), 14-16 years 218 (45.9%), and above 16 years are 179 (37.7%). Likewise, 16 (18.6%), 44 (13.8%), and 26 (30.2%) were participants within the age group of below 14 years, 14-16 years, and above 16 years, respectively, who exhibited a high level of satisfaction towards online teaching.

Therefore, there was no statistically significant correlation between participants' gender ($\chi2 = 2.38$, $p > 0.05$), age ($\chi2 = 8.82$, $p > 0.05$) and satisfaction levels towards online teaching. However, there was statistically significant association between participants' class ($\chi2 = 11.08$, $p < 0.05$) and satisfaction levels towards online teaching.

Research hypothesis three: There is no significant relationship between private secondary school students' gender, class, age, and attitude towards online teaching.

The third research hypothesis relating to students' attitudes towards online teaching was analyzed. The total score for an individual was computed with minimum and maximum values of 6 and 12. Furthermore, these scores were grouped into two (negative and positive attitude), minimum through one minus mean was bundled into negative attitude (6 – 8), while the mean through the maximum score was classified into a positive attitude (9 - 12).

TABLE 4. Level of Students' Attitude towards Online Learning

	Attitude					
Variable	Negative	Positive	Total	df	χ^2	*P*
Gender						
Female	87(35.7%)	151(36.0%)	238 (35.8%)	1	0.01	0.94
Male	157(64.3%)	269(64.0%)	426 (64.2%)			
Total	244 (36.7%)	420 (63.3%)	664 (100.0%)			
Class						
SS 1	48 (19.7%)	96 (22.9%)	144 (21.7%)	2	0.92	0.63
SS 2	63 (25.8%)	104 (24.8%)	167 (25.2%)			
SS 3	133 (54.5%)	220 (52.4%)	353 (53.2%)			
Total	244 (36.7%)	420 (63.3%)	664 (100.0%)			
Age						
<14 Years	41 (16.8%)	60 (14.3%)	101 (15.2%)	2	1.89	0.39
14-16 Years	109 (44.7%)	210 (50.0%)	319 (48.0%)			
>16 Years	94 (38.5%)	150 (35.7%)	244 (36.7%)			
Total	244 (36.7%)	420 (63.3%)	664 (100.0%)			

Not significant at *p* > 0.05

The result (Table 4) that 151 (36.0%) and 269 (64.0%) of the female and male participants revealed a positive attitude while 87 (35.7%) and 157 (64.3%) displayed a negative attitude regarding online teaching. It further established that participants in the class of SS 1, SS 2, and SS 3 obtained 96 (22.9%), 104 (24.8%), and 220 (52.4%), respectively, had a positive attitude towards online teaching. Also, 48 (19.7%), 63 (25.8%), and 133 (54.5%) were students in SS 1, SS 2, and SS 3, respectively possess a negative attitude towards online teaching. Similarly, students within the age group below 14 years, 14-16, and above 16 years had 60 (14.3%), 210 (50.0%), and 150 (35.7%) respectively showed a positive attitude towards online teaching whereas 41 (16.8%), 109 (44.7%), and 94 (38.5%) are participants with age below 14 years, 14-16 years and above 16 years who manifested negative attitude as shown in Table 4. It was concluded that there was no statistically significant relationship between the participants' gender ($\chi2 = 0.01$, $p > 0.05$), class ($\chi2 = 0.92$, $p > 0.05$), age ($\chi2 = 1.89$, $p > 0.05$) and attitude towards online teaching.

3.6. Discussion

It was demonstrated from the first result that male participants had a higher perception of online teaching than their female counterparts. The reason for this higher perception could be a result of the fact that male students use the internet more than female students do (at least, in Nigeria). This was suggested in the study conducted by Omoyemiju and Popoola (2020) that the use of the internet is prevalent among male students compared to their female counterparts. They (Omoyemiju & Popoola, 2020) further stated that men are slightly more prone to use the internet than women in terms of severity levels of the internet. Similarly, the tendency for one who is susceptible to internet addiction is higher than that of internet addicted students. Universally, COVID-19 has made online teaching the new norm adopted by teachers to deliver educational materials to their students.

Another finding in this study discovered that private secondary school students in SS 3 were found to have a higher perception of online teaching than students in other classes during the COVID-19 pandemic lockdown. This may be attributed to their age, which also showed from the study that private secondary school students above 16 years had a higher perception than participants within other age groups (i.e., less than 14 years and 14 - 16 years). Studies by Leung and Li (2006), Omoyemiju and Popoola (2020) and Wang and Bagaka (2002) have shown that the majority of the internet users are adolescents and the success of any online teaching is attainable with access to the internet, provided that there is uninterrupted electricity supply.

In addition, the current study revealed that there was a positive relationship between the participants and their perception of online teaching during the COVID-19 pandemic lockdown in Osun state, Nigeria. This finding was supported by Popovici and Mironov (2015); a positive relationship was found between expertise and perception of online teaching, which is good evidence that online teaching has provided learning benefits to students.

Furthermore, the study manifested a statistically significant relationship between participants' class and their satisfaction levels with online teaching during the COVID-19 pandemic lockdown in Osun state, Nigeria. Another study conducted by Tratnik (2017) revealed that there are significant differences in student satisfaction levels between online and face-to-face learning of English as a foreign language. In terms of private secondary school students' attitudes towards online teaching, this study revealed that most participants had a positive attitude towards online learning during the COVID-19 pandemic lockdown. The positive attitude could be a result that teaching and learning can be done remotely letting teachers teach and learners learn in the comfort of their zone using the internet. On the other hand, the study demonstrated that there was no statistically significant relationship between participants' gender, age, and attitude levels towards online teaching.

4. Conclusion and Recommendations

The study confirmed that no significant relationship existed between private secondary school students' demographic variables (gender, age, and school class) and perception of online teaching. It was also revealed that private secondary school students' gender and age had no significant relationship on satisfaction with online learning, while a significant positive relationship existed between private secondary school students' class and satisfaction with online teaching. Furthermore, it was confirmed that no significant relationship existed between the private secondary school students' demographic variables and their attitude towards online teaching.

The fact that the COVID-19 pandemic is subsiding should not be seen as an opportunity to stop making use of online teaching, since it has proven to be acceptable to private secondary school students. Moreover, online teaching should be adopted as a mode of teaching to complement the traditional brick-and-mortar form of teaching, as it has numerous advantages.

Based on the findings of this study, the following recommendations were suggested:

•   Private secondary schools should continue with online teaching and also incorporate it with brick-and-mortar teaching;

•   Nigerian government should provide stable electricity supply because the success of any online teachingcannot be achieved without it;

•   Internet service providers in Nigeria like Mobile Telecommunications Network (MTN), Glo Communication Limited (Globacom), and Emirates Telecommunication Group Company (Etisalat) should strive to increase their network connectivity to improve the quality of online teaching.

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