

Students Experiences with Online Teaching and Learning Pedagogies in Ghana During the COVID-19 Pandemic

Wahab Sualihu*, Mohammed Zakaria, Augustine Bediako

Al-Faruq College of Education Post Office Box 146, Wenchi bono region, Ghana

*Corresponding author: sualihualfaruk@gmail.com

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Abstract The decision by the World Health Organization to declare COVID-19 as a pandemic in 2020 forced all countries to re-organize their systems. Ghana's education ministry did not only close schools, but it also directed teachers to adopt online learning platforms as alternative pedagogy to traditional face-to-face teaching and learning. Using a mixed-method approach, this study explores learners' attitudes and factors that encourage the utilization of online learning among tertiary students in Ghana. Descriptive statistics and the Chi-square analysis were used to explore learners' attitudes and the factors that encourage the utilization of online learning respectively. Data were collected from 170 respondents selected through a multi-stage sampling technique. Empirically, most of the students use- and were aware of online learning. Generally, the results revealed that the students have a positive attitude towards online learning. The Chi-square analysis revealed that the utilization of online learning was higher among students whose parents work in the public and private sectors and are highly educated. Likewise, positive attitudes, high subjective norms, and training drive the use of online learning. Policy-wise, factors that lead to positive attitudes towards online learning should be promoted.

Keywords: COVID-19, Colleges of Education, Ghana, Online learning, Pedagogies

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1. Introduction

On January 30th, 2020, the World Health Organization (WHO) declared COVID-19 a global emergency after the outbreak of the coronavirus disease in China in 2019. The same organization on March 11th, 2020, declared COVID-19 a global pandemic [1]. The global spread of the novel COVID-19 virus has influenced many health systems and the economy around the globe [2]. To contain human-to-human transmission, measures such as wearing face masks, hand washing under running water, and social distancing were recommended by WHO [3], and this resulted in the closure of schools around the world. The closure of educational institutions has caused the largest disruption of education, none of that has ever occurred in history [4]. To ensure the continuity of teaching and learning educational institutions have adopted online teaching and learning pedagogies. While the literature indicates that online learning is highly effective in digitally advanced countries [5,6,7], the contrary is the situation in developing countries [4,8,9] due to a multiplicity of factors [10].

In response to directives from the WHO to prevent community spread of the disease among nations, the

government of Ghana passed an Imposition of Restrictions Act 1012 of 2020. The Act gave Ghana's President the power to impose restrictions on national systems in the interest of public safety, health, and protection. Acting under ACT 1012 restrictions were placed on the movement of citizens, social gatherings were banned while a 21-day partial lockdown was imposed on the country. According to an available report, one sector of the country that suffered greatly was the educational sector [11]. All levels of schooling were suspended for ten months following the directives of the government on the 16th of March 2020. The closure of schools also meant that the human resource base of the country was going to be severely affected as final-year students from the nation's tertiary institutions who were to graduate and occupy staffing positions were halted. Realizing the implications of school closure on national development, tertiary institutions in Ghana adopted online learning methodologies of teaching and learning as an alternative to the traditional face-to-face method of teaching that has existed for centuries.

The adoption of online teaching and learning was born from empirical evidence from the literature from other countries and the relative success stories associated with it. For instance, Aboderin [12]; Mamattah [13], and Allo [14], have conducted some studies on learners' attitudes toward

online learning, while Chang et al. [15]; Solloum et al. [14] and Henaku [16], have researched factors which promote the utilization of online learning and challenges relating to online learning. These referenced studies were conducted in a normal situation where online learning was not a compulsory method for teaching and learning. In these studies, teachers and learners were adequately prepared for the exercise and under different settings. It therefore becomes impossible to generalize the results and apply them in crisis in developing countries where teachers and learners lack the needed pedagogical skills for online teaching and learning. This research explores learners' attitudes and the factors that encourage the utilization of online learning among tertiary students in Ghana during the COVID-19 crisis. The contribution of this present study to the literature on online teaching and learning is in two folds: first, the study adopted the Theory of Planned Behaviour [17] to examine learners' attitudes toward online learning in the era of the COVID-19 pandemic. Second, the Chi-square analysis was employed to analyze the factors that encourage the utilization of online learning among students during the COVID-19 pandemic.

2. Theoretical Underpinning

The theory underlying this study is the Theory of Planned Behaviour (TPB) by Ajzen [17]. This is a socio-psychological theory that argues that the intention of an individual directly influences his/her behavior. Thus, a stronger intention to perform a behavior increases the probability of its performance and vice versa. Further, the intention is affected by the individual's attitude towards the behavior, subjective norms, and perceived behavior control. While attitude is defined as an individual's evaluation that performing a certain behavior would produce positive or negative outcomes, subjective norms show how social pressure compels individuals to act otherwise [17]. In this study, an individual is expected to use online learning if he/she has a positive attitude towards it and he/she is strongly influenced by the expectations of influential and important people such as opinion leaders and family members. Perceived behavior control (PBC) depicts the individual's perception of the ease or difficulty of performing a particular behavior. The PBC depends on the perceived availability of resources and opportunities required to engage in a behavior. For instance, access to fast and affordable internet makes it easier for individuals to adopt online learning.

The TPB has been used extensively to examine the use and adoption of online learning programs [18,19,20]. Despite the successful usage of this theory, a lot of studies have recommended the inclusion of more variables to enhance the predictive validity of the model [19]. External variables such as demographic and socio-economic characteristics are established to influence the use of online learning and improve the predictive power of the model. Based on the argument made above, this study incorporates additional variables such as demographic and socio-economic characteristics of the individual, and training as predictors of use of online learning.

Empirically a lot of studies have been conducted to examine the drivers of the utilization of online learning.

However, most of these previous studies were conducted in a normal situation and context, where online learning was a non-compulsory method of teaching and learning and there was no pandemic. In Malaysia, Almaiah and Man [21] investigated the predictors of the utilization of online learning among students. The results indicated that benefits, compatibility, and perceived satisfaction were predictors of the usage of online learning. In a similar study, Salloum et al. [14] observed that innovativeness, quality, trust, and knowledge sharing promote the adoption of online learning systems among students. Al-Gahtani [22] examines the factors that encourage the adoption of online learning among students. He reported that the drivers of online learning were perceived usefulness, subjective norms, and self-efficacy. In another study at the University of Tabuk, Saudi Arabia, Bellaaj et al. [23] narrated that positive attitude and ease of utilization of online learning promote its usage.

Chang et al. [15] observed that social pressure, experience, and satisfaction with online learning influence its usage. In their study, Abdullah, and Ward [24] established that self-efficacy, subjective norms, and experience with using computers drive the adoption of online learning among students. Alhabeeb and Rowley [25] also noted that student knowledge of computer systems and ICT infrastructures promotes the usage of online learning in universities in Saudi Arabia. In a similar study, Keller and Cernerud [26] reported that male students, students with positive attitudes and previous knowledge of computers were less likely to adopt online learning on campus than other students.

The aforementioned analysis reveals that the results from empirical studies are mixed, a situation which could be attributed to the differences in research design, differences in context, and characteristics of the study area. Moreover, comparatively fewer studies have explored the determinants of the use of e-learning during pandemics. The current study contributes to the literature by exploring the perceptions, attitudes, challenges, and factors that drive the utilization of e-learning during pandemics.

3. Methodology

3.1. Research Design, Study Area, Sampling, and Data Collection

The mixed method approach was adopted. This method allowed the researchers to use both quantitative and qualitative approaches to collect and analyse the data [27]. The approach also made it possible to explore the research questions from different perspectives which led to a broader understanding of the issues associated with online learning. Final-year students from five Teacher-training institutions herein referred to as Colleges of Education (CoE) were selected for the study. They are the Tumu CoE located in the Upper West Region; Al-faruq CoE in the Brong Region; Gambaga CoE in the Northeast Region; Dambai CoE in the Oti Region and St Vincent CoE in the Northern Region of Ghana. These colleges were selected due to their geographical location which covers more than half of the total land area of Ghana as well as spanning across the socio-spatial characteristics of the country. Again, these

CoEs were selected because they train pre-service teachers and therefore it was imperative to explore the attitudes and the factors that encourage the utilization of online learning by student-teachers, who are expected to guide students in the future to adopt similar methodologies.

The study selected students from levels 200 to 400 since level 100 students had not yet reported to school. The multi-stage sampling procedure was employed in this study. Stage one involved the selection of the CoE as explained previously. In the second stage, using probability proportion by size sampling technique, 20-40 students were selected from the CoE giving a total of 170 students. Table 3.1 shows a detailed description of the sampling.

Table 3.1. Detail description of sampling for the study

Name of CoE	Number of students selected
Tumu	30
Al-faruq	90
Gambaga	15
Dambai	15
St Vincent CoE	20
Total	170

The Yamane's [28] sample selection formula was used to estimate the sample size. Assuming a sampling error of 10 percent (i.e. $e=0.10$); 90% confidence interval and a population (N) of 20,039, the sample size (n) obtained was 100. However, the sample size was increased to 170 to support the argument made by Cohen [29] that a larger sample size increases the reliability and decreases the degree of error, which results in a truly representative sample of the population.

After the random selection of respondents, data was collected using structured questionnaires and in-depth interviews. The structured questionnaires were self-administered to students in the CoE. The questionnaire was structured in three parts to help elicit responses on the respondents' socio-demographic data, their e-learning usage, attitude, awareness, and the challenges they faced in using the online learning system during the COVID-19 pandemic. Each respondent was asked to respond to a series of questions using a Likert scale ranging from 1 to 5, where 1= Strongly Disagree, 2=Disagree, 3= Neutral, 4=Agree, and 5 = Strongly Agree. In addition, in-depth interviews were conducted with 25 students who volunteered to be interviewed as follow-up to participating in the survey students to solicit their experiences and the challenges they faced in using online learning systems during the COVID-19 pandemic.

3.2. Estimation Technique

Descriptive statistics including frequencies and percentages were used to analyze the data. Content analysis of the information from the interview schedules was carried out and presented thematically in line with the study objective. The Chi-square test was used to examine the factors that encourage the use of online learning. This method is appropriate because the dependent variable, the use of online learning is binary (i.e. 1= if the respondent used the e-learning facilities of the CoE and 0 = otherwise) and the independent variables are nominal [30]. The

Pearson Chi-square test model is expressed in equation 3.1 as below:

$$\chi^2 = \sum_{i=1}^w \sum_{j=1}^v \frac{(OB_{ij} - EX_{ij})^2}{E_{ij}} \quad (3.1)$$

χ^2 represents the Chi-square test of independence, OB_{ij} is the value of the two nominal variables that are observed and EX_{ij} is the expected value of two nominal variables. The degree of freedom is presented as $df=(w-1)(v-1)$, where w is the total number of rows and v is the total number of columns.

Hence, $EX_{i,j}$ is computed as:

$$EX_{i,j} = \frac{\sum_{k=1}^v OB_{i,j} \sum_{k=1}^w OB_{k,j}}{N} \quad (3.2)$$

Where $E_{i,j}$ represent the expected value, $\sum_{k=1}^v OB_{i,j}$ the sum of the i^{th} column, $\sum_{k=1}^w OB_{k,j}$ the sum of the k^{th} row and N total number. The null hypothesis for the Chi-square test is, that there is no association between the dependent and independent variables. Thus, the null hypothesis is rejected and the alternative is accepted if the critical Chi-square value is less than the calculated Chi-square at a pre-determined probability level, preferably 10%. This suggests that the independent variables (i.e. respondents' demographic characteristics, attitude, subjective norm, and access to training) have an association with the outcome variable which is the utilization of online learning. The variables adopted for the analysis were based on previous empirical research [25,26,31]. Table 3.2 below presents the definition and measurement of the variables used in the analysis.

4. Results and Discussions

4.1. Socio-demographic Characteristics of the Respondents

Table 4.1 presents the socio-demographic characteristics of the sampled respondents. Based on the results, most (97.65%) of the respondents were within the age range of 19-29 years. About 1.18% of the students were between the ages of 30-39 years and 40-49 years. This suggests that the students are in their youthful age. The majority (57.06%) of the sampled students were males and 42.94% were females. Most (59.41%) of the sampled students were Christian, followed by 36.47% of the students who were Muslims. About 1.18% and 2.94% of the students practice traditional religion and have no religion respectively.

The study also revealed that most (68.82%) of the sampled students stay in private hostels, 25.29% reside in the college hostels, and just 5.88% commute from home to campus. The majority (50.59%) of the respondents were in level 200.

As shown in Table 4.1, about 28.82% of the students' mothers had tertiary education, followed by 27.65% of the students whose mothers had no formal education. Further,

17.06% of the students' mothers had primary education, 14.12% had JHS/Middle School education, and 6.47% had vocational/technical education whilst only 5.88% had SHS education. Based on their occupation status, about 45.29% of the students' mothers were traders, followed by 13.53% of the students' mothers employed in the government sector. Only 11.18% of the students' mothers were farmers, 10.59% worked in the private sector, 8.24% were unemployed, and 6.47% and 4.71% were fishmongers and artisans respectively. The educational and employment status of the fathers of the sampled students were also

recorded. Based on the data, approximately 35.88%, of the students' fathers had tertiary education and 21.76% had no formal education. About 20.59% of the students' fathers had SHS education. Only 13.53% and 4.71% had JHS/Middle School and vocational/technical education respectively. Regarding the students' fathers' occupations, 34.12% of the students' fathers worked in the government sector and 25.29% were farmers. Approximately 16.47 % of each of the students' fathers were traders and worked in the private sector. Only 4.12% of the students' fathers were artisans, unemployed (0.59%), and fishmongers (0.59%).

Table 3.2. Definition and measurement of variables

Variable	Description	Measurement
<i>Dependent variable</i>		
Use of online learning	Utilization of online learning	Dummy: 1= utilize online learning, 0 = otherwise
<i>Independent variables</i>		
HHage	Age of student	Number of years
Sex	Male student	Categorical: 1 = if yes; 0 = otherwise
occupation	Occupation of student	Categorical; 1=Trader; 2=farmer; 3=government sector employee; 4=private sector employee and 5=unemployed
education	The educational level of the student's mother	Categorical; 1=no formal education; 2=Primary; 3= JHS/Middle school; 4= Senior High School; 5=Vocational/Technical school and 6=Tertiary
occupation	Occupation of the student's mother	Categorical; 1=Trader; 2= Artisan; 3=farmer; 4= fishmonger; 5=government sector employee; 6=private sector employee and 7=unemployed
education	The educational level of the student's father	Categorical; 1=no formal education; 2=Primary; 3= JHS/Middle school; 4= Senior High School; 5=Vocational/Technical school and 6=Tertiary
occupation	Occupation of the student's father	Categorical; 1=Trader; 2= Artisan; 3=farmer; 4= fishmonger; 5=government sector employee; 6=private sector employee and 7=unemployed
Residential	Residential arrangement	Categorical; 1= college hostel; 2=Private hostel; 3= commute from home
Level	Level of class of students	Categorical: 1= Level 200; 2= Level 300 and 3=Level 400
Train	Students who have received training in online learning	Categorical; 1=if yes and 0=otherwise
Attitude	Students' attitude towards e-learning	Ranked; 1 = strongly disagree; 2=disagree; 3=neutral; 4= agree and 5= strongly agree
norms	Subjective norms	Ranked; 1 = strongly disagree; 2=disagree; 3=neutral; 4= agree and 5= strongly agree

Table 4.1. Socio-demographic characteristics of the sampled students

Variable	Frequency	Percentage
Age (years)		
19 – 29	166	97.65
30 – 39	2	1.18
40 – 49	2	1.18
Total	170	100
Sex		
Male	97	57.06
Female	73	42.94
Total	170	100
Education Level		
200	86	50.59
300	41	24.12
400	43	25.29
Total	170	100
Religion		
Christian	101	59.41
Islam	62	36.47
Traditional religion	2	1.18
No religion	5	2.94
Total	170	100
Residential arrangement		

College hostel	43	25.29
Private hostel	117	68.82
Commute from home	10	5.88
Total	170	100
Mother's educational level		
No formal education	47	27.65
Primary	29	17.06
JHS/Middle School	24	14.12
Senior High School	10	5.88
Vocational/Technical	11	6.47
Tertiary	49	28.82
Total	170	100
Mother's occupation		
Trader	77	45.29
Artisan	8	4.71
Farmer	19	11.18
Fishmonger	11	6.47
Government sector employee	23	13.53
Private sector employee	18	10.59
Unemployed	14	8.24
Total	170	100
Father's educational level		
No formal education	37	21.76
Primary	6	3.53
JHS/Middle School	23	13.53
Senior High School	35	20.59
Vocational/Technical	8	4.71
Tertiary	61	35.88
Total	170	100
Father's occupation		
Trader	28	16.47
Artisan	7	4.12
Farmer	43	25.29
Fishmonger	1	0.59
Government sector employee	58	34.12
Private sector employee	28	16.47
Unemployed	5	2.94
Total	170	100

4.2. Students' Perception and Attitude Towards Online Learning

Table 4.2 presents students' usage and awareness of online learning. The majority (64.71%) of the sampled students used the online learning facility of the college as compared to 35.29% of the sampled students who did not use it. Regarding students' awareness of online learning, most (54.71%) of the students were aware of the online learning facilities of the college, while 45.29% were not aware. This contradicts the results of Nbina et al. [26] who reported that most students are not aware of ICT facilities which discourage its use.

The training of students in online learning facilities ensures that students are equipped with the requisite knowledge and skills to use the system effectively. However, the results showed that most of the students were not trained in terms of the application of the online learning facilities. Interestingly in this study, the majority (81.76 %) of the students reported that they were not trained to use the online learning facilities. Indeed, only

18.24% of the sampled students were trained to use it. Asogwa [27] reported that inadequate training on online learning packages prevents students from using online learning facilities. Hence, the college should intensify its training for students to encourage the use of online learning.

Table 4.2. Students' usage and perception of the online learning system

Response	Frequency	Percentage
<i>Utilization of college's online learning facilities</i>		
Yes	110	64.71
No	60	35.29
Total	170	100
<i>Are you aware of the online learning system?</i>		
Yes	93	54.71
No	77	45.29
Total	170	100
<i>Have you ever been trained to use the online learning system?</i>		
Yes	31	18.24
No	139	81.76
Total	170	100

Table 4.3 presents students' perceptions and attitudes towards online learning. The attitude of a student towards online learning is a critical factor that positively influences the utilization of online learning. Generally, the results demonstrated that the students have a positive attitude towards online learning. Student agrees with the assertion that studying through online learning is a good idea (35.29%), interesting (37.06%), and useful (38.82%). It is not surprising that the students have a positive attitude towards online learning as most of the students are exposed to ICT technology. This result confirms the findings of Mamattah [13] and Allo [14] but contradicts

that of Keller and Cermerud [26] who reported that students had a negative attitude towards online learning.

Regarding the subjective norms variable, students also agree that their friends (36.47%) and family (37.6%) think they should use online learning facilities. About 30% of the students agree that they will use the online learning facilities if their colleagues use it. The fact that the students agree that subjective norms do have a significant influence on their online learning decisions is not surprising. At the college, most students share facilities such as classrooms, and bathrooms and this increases the interaction among them promoting strong social cohesion.

Table 4.3. Students' perception and attitude towards online learning

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	Variables	1	2	3	4	5
	Attitude					
ATT1	Studying through online learning is a good idea	14(8.24)	17(10.00)	34(20.00)	60(35.29)	45(26.47)
ATT2	Studying through online learning is interesting	5(2.94)	17(10.00)	41(24.12)	63(37.06)	44(25.88)
ATT3	For me, studying using online learning platform is useful	12(7.06)	22(12.94)	36(21.18)	66(38.82)	34(20.00)
	Subjective norms					
SN1	My friends think I should use the online learning system.	8(4.71)	26(15.29)	42(24.71)	62(36.47)	32(18.82)
SN2	My family thinks I should use the online learning system	9(5.29)	29(17.06)	30(17.65)	64(37.65)	38(22.35)
SN4	If my colleagues use the online learning system, I will, too	24(14.12)	16(9.41)	29 (17.06)	51(30.00)	50(29.41)

NB: Values in the bracket are percentages.

4.3. Challenges of Using Online Learning in the Era of COVID-19 Pandemic

Table 4.4 presents the challenges students in the colleges have reported facing in online learning in the era of the coronavirus pandemic. As established in previous studies, the current study observed that the challenges that students encounter in the usage of online learning can be categorized into three factors: technological challenges, individual challenges, and institutional challenges. Technological challenges such as inadequate access to ICT technology and poor service delivery including poor internet connectivity frustrate most students in the adoption of online learning. Based on the results, students agree with the perception that the online learning facilities were slow and difficult to use (42.35%). They also strongly agree with the perception that the facilities were not there for them at all times (40.59%), there were poor internet services (57.24%), inadequate access to advanced ICT technologies such as smartphones and computers to support online learning (52.94%) and frequent system failures (55.88%). This is expected as the coronavirus pandemic has compelled all higher educational institutions across Ghana to implement online learning methodology regardless of limited resources and funds.

Based on the in-depth interviews, participants reported that the poor internet network denied their regular internet connection for online learning. Some stated that they miss lectures because of poor internet networks. A participant illustrated:

"... the geographical location of my residence far from internet signals makes it difficult to use the e-learning facility"

Another participant iterated that;

"... I could not join the lecture because of poor network. The network is so bad that I am not able to participate in most of the lectures ..."

The findings are consistent with previous studies by Henaku [16] and Eze et al. [32] who recorded that poor internet connectivity was one of the major challenges faced by students in the middle of the COVID-19 pandemic.

Participants also explained that they were not able to use the online learning facility because of inadequate access to technologies such as smartphones and computers. A participant iterated that:

"... I do not have a smartphone to enable me to access the online learning facility. My friends have to download assignments and share them with me. Due to this, I find it difficult to submit my assignment"

Another participant added:

"... It is difficult and frustrating to utilize the online learning facility because I do not have a laptop or smartphone"

Individual challenges such as a lack of skills in ICT were identified as a key challenge to the adoption of online learning systems. Students strongly agree that inadequate knowledge and skills in the use of online handles (29.41%) was one of the challenges they faced in this study. This result is not surprising because the sudden shift from traditional classrooms and face-to-face learning to the online learning method has resulted in a completely different learning experience for both students and lecturers. This result corroborates the findings of Adnan and Anwar [33].

The students further agree that poor computer skills and self-efficacy of students (31.18%) and poor time

management by students (40.59%) adversely influence the usage of online learning. A participant reported that:

“Some of my colleagues have poor computer skills. As a result of this, they tend to rely on their colleagues for support”.

Another participant added that:

“... I am not good with the usage of computers and since I have poor computer skills, I have lost confidence in using the online learning platform. It is frustrating...!”

Having confidence and adequate skills to utilize the online learning system is a critical factor that promotes the adoption of online learning. It is not surprising that most of the students reported that low self-efficacy and poor computer skills prevent them from using online learning facilities. Even though, online learning is not new in the college, before the COVID-19 pandemic the mode of teaching and learning for the regular student was fully face-to-face. The inadequate exposure to online learning facilities and poor computer skills adversely influence their self-efficacy to utilize online learning facilities. To ensure high self-efficacy and enhance student computer skills, the college should intensify its training programs on ICT.

Institutional challenges such as ineffective orientation of students by service providers and poor speaking patterns of teachers discourage students from using online learning. Students also strongly agree that poor speaking

patterns of the teacher (38.84%) and ineffective orientation of students by service providers (50.59%) were some of the barriers they faced in the adoption of online learning. The high cost of internet data was also cited as a barrier to the use of online learning. Most of the students strongly agree (61.76%) that the high cost of internet data adversely influences the utilization of online learning facilities. Most of the students reported that the high cost of internet data makes them miss lectures because they do not have money to purchase the data. Likewise, some revealed that online learning is expensive since they spend a greater proportion of their money on internet bundles. As opined by a participant:

“... online learning is too expensive as I need to be online for lectures for at least five hours a day staying online means spending money....”

Another participant illustrated:

“... at times I miss lectures because I do not have money to purchase an internet bundle. The cost is too expensive to bear...”

This finding confirms the results of Owusu-Fordjour et al. [34] and Henaku [16] who reported that most students complained about the high cost of internet bundles. Likewise, Mamattah [13] also reported that most students have the perception that online learning is more expensive compared to face-to-face learning.

Table 4.4. Challenges associated with online learning in the era of the coronavirus pandemic

No	Statement	Scale					Total
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
1	Online learning facilities are slow and difficult to use	2 (1.18)	13 (7.65)	17 (10.00)	72 (42.35)	66 (38.82)	170 (100)
2	Facilities are not there for us at all times	1 (0.59)	14 (8.24)	19 (11.18)	67 (39.41)	69 (40.59)	170 (100)
3	Poor internet and intranet services	8 (4.71)	5 (2.94)	3 (1.76)	55 (32.35)	99 (57.24)	170 (100)
4	Ineffective orientation of students by service providers	3 (1.76)	6 (3.53)	12 (7.06)	63 (37.06)	86 (50.59)	170 (100)
5	Systems failures	3 (1.76)	3 (1.76)	26 (15.29)	43 (25.29)	95 (55.88)	170 (100)
6	Poor speaking patterns of the teacher	9 (5.29)	26 (15.29)	27 (15.88)	42 (24.71)	66 (38.83)	170 (100)
7	Poor computer skills and self-efficacy	16 (9.41)	24 (14.12)	26 (15.29)	53 (31.18)	51 (30)	170 (100)
8	Inadequate knowledge and skills in the use of online handles	13 (7.65)	16 (9.41)	43 (25.29)	48 (28.24)	50 (29.41)	170 (100)
9	Poor time management by students	14 (8.24)	13 (7.65)	22 (12.94)	69 (40.59)	52 (30.59)	170 (100)
10	Lack of advanced ICT technologies to support online learning	5 (2.94)	6 (3.53)	16 (9.41)	53 (31.18)	90 (52.94)	170 (100)
11	High cost of internet data	9 (5.29)	3 (1.76)	7 (4.12)	46 (27.06)	105 (61.76)	170 (100)

4.4. Determinants of Use of Online Learning

Table 4.5 presents a chi-square analysis of the drivers of the use of online learning in the era of the COVID-19 pandemic. The Chi-square test is used to examine the association between the use of online learning and the socio-demographic characteristics of the respondents, attitudes, subjective norms, and training in online learning. The results revealed that the predictors of the use of online learning were the occupation of the student's mother, the level of the student, the occupation of the student's father, the educational level of the student's father, training in e-

learning, attitude, and subjective norms. However, there was no statistically significant association between the sex, age, residential status, and educational level of respondents' mothers and the use of online learning.

As shown in Table 4.5, students in level 300 (78.05%) were more likely to participate in the online learning program, followed by those in level 200(47.67%). A possible explanation for this observation is that level 300 students during the COVID-19 pandemic period were at home and their exams were conducted online and this motivated them to use the facility. The study also demonstrated that the occupation and educational level of

the student's parent influences their utilization of online learning. The majority of the students whose mother is employed in the private sector (83.33%) were more likely to use online learning compared to those whose mothers are farmers (36.84%). In addition, most of the students whose fathers have tertiary education (73.77%) and are employed in the government sector (67.24%) were more likely to use online learning as compared to students whose father has no formal education (24.32%) and are traders (21.43%). Education offered the opportunity for people to appreciate the importance of online learning. Likewise, parents/wards working in the private and public sectors are more likely to be exposed to ICT technologies such as laptops and thus have more favorable attitudes towards online learning. Consequently, such parents may train and encourage their wards to adopt online learning.

The study also found that training in online learning has a statistically significant association with the use of online learning. Most of the students who had training in online learning (almost 71%) were more likely to use the online learning system. This finding suggests that training in online learning encourages the usage of it. Training on online learning equips the students with the skills of how the package functions. It facilitates the upload of lecture notes and enhances teaching methods. The result is in tandem with the findings by Aboderin [12] and Eze et al. [32]. The positive attitude of users towards online learning is reported to encourage the use of online learning. This study revealed that most of the students who strongly agree (66.67%) that studying through online learning is a

good idea were more likely to use the online learning facilities. Furthermore, the majority of the students who agree (61.90%) that studying through online learning is interesting were more likely to use it. Thus, it implies that if a student takes a more positive attitude towards online learning then they will be more likely to use it. These findings collaborate with the findings of Keller and Cernerud [26] and Chang et al. [15] but contradict that of Ilechukwu [35], who observed that users' weak attitudes toward computers adversely influence the adoption of online learning.

Regarding the subjective norm constructs, most of the students who strongly agree (59.09%) that their friends think they should use the online learning system were more likely to use it. Similarly, the majority of the students who agree (59.09%) that their family thinks they should use the online learning system were also more likely to use it. This means that the expectations of important others such as family, friends, and colleagues on online learning influence the use of it. This is expected since most of the students share facilities such as lecture rooms, and accommodation and mostly learn in groups, thus they easily observe their colleague's activities and the interaction between them also increases. Consequently, the cohesion bond between them becomes stronger such that their decisions are influenced by the perception of their colleagues and what they observe them do. This conclusion is consistent with the findings by Chang et al. [15] who reported that subjective norms influenced the use of online learning.

Table 4.5. Chi-square analysis of the drivers of utilization of online learning

Variables	Utilization of the College's online learning facilities		Test /Interpretation
	Yes	No	
<i>Sex</i>			$\chi^2 = 2.485$ df=1 Pr =0.115 Not significant
Male	48 (49.48)	49 (50.51)	
Female	45 (61.64)	28 (38.36)	
<i>Age</i>			$\chi^2 = 0.037$ df=2 Pr =0.982 Not significant
19-29	91 (54.82)	75(45.18)	
30-39	1(50)	1 (50)	
40-49	1 (50)	1(50)	
<i>Level</i>			$\chi^2 = 11.897^{***}$ df=2 Pr =0.003 Significant
Level 200	41 (47.67)	45 (52.33)	
Level 300	32 (78.05)	9 (21.95)	
Level 400	20 (46.51)	23 (53.49)	
<i>Residential arrangement</i>			$\chi^2 = 0.928$ df=2 Pr =0.629 Not significant
College hostel	24 (55.81))	19 (44.19)	
Private hostel	65 (55.56)	52 (44.44)	
Commute from home	4(40)	6 (60)	
<i>Mother's educational level</i>	Yes	No	$\chi^2 = 4.268$ df=5 Pr =0.512 Not Significant
No formal education	21 (44.68)	26 (55.32)	
Primary	19 (65.52)	10 (34.48)	
JHS/Middle School	14 (58.33)	10(41.67)	
Senior High School	5 (50)	5 (50)	
Vocational/Technical	5 (45.45)	6(54.54)	
Tertiary	29 (59.18)	20 (40.82)	
<i>Mother's occupation</i>	Yes	No	$\chi^2 = 16.814^{***}$ df=6 Pr =0.010 Significant
Trader	36 (46.75)	41 (53.25)	
Artisan	2 (25)	6 (75)	
Farmer	7 (36.84)	12 (63.16)	
Fishmonger	8 (72.73)	3 (27.27)	
Government sector employee	15 (65.22)	8 (34.78)	

Private sector employee	15 (83.33)	3(16.67)	$\chi^2 = 23.057^{***}$ df=5 Pr =0.000 Significant
Unemployed	10 (71.43)	3 (28.57)	
<i>Father's educational level</i>	Yes	No	
No formal education	9 (24.32)	28 (75.68)	
Primary	3 (50)	3(50)	
JHS/Middle School	10 (43.48)	13 (56.52)	
Senior High School	22 (62.86)	13 (37.14)	
Vocational/Technical	4(66.67)	2 (33.33)	
Tertiary	45 (73.77)	18(29.51)	
<i>Father's occupation</i>	Yes	No	
Trader	6 (21.43)	22 (78.57)	
Artisan	5 (57.14)	2 (42.86)	
Farmer	24 (55.81)	20 (46.51)	
Government sector employee	39(67.24)	20 (34.48)	
Private sector employee	16 (64.29)	12 (42.86)	
Unemployed	2(50)	2(50)	
Retired	1	0	$\chi^2 = 4.046^{**}$ df=1 Pr =0.044 Significant
<i>Training in online learning</i>			
Yes	22 (70.97)	9 (29.03)	
No	71 (51.08)	68 (48.92)	$\chi^2 = 15.351^{***}$ df=4 Pr =0.004 Significant
<i>Attitude</i>	Yes	No	
<i>Studying through online learning is a good idea</i>			
Strongly disagree	3 (21.43)	11 (78.57)	
Disagree	5 (29.41)	12 (70.59)	
Neutral	17 (50)	17 (50)	
Agree	38(63.33)	22 (36.67)	$\chi^2 = 8.585^*$ df=4 Pr =0.072 Significant
Strongly agree	30 (66.67)	15 (33.33)	
<i>I have positive attitude toward online learning</i>			
Strongly disagree	3(60)	2 (40)	
Disagree	4 (23.53)	13 (76.47)	
Neutral	21(51.22)	20 (48.78)	$\chi^2 = 4.098$ df=4 Pr =0.393 Not significant
Agree	39(61.90)	24 (38.10)	
Strongly agree	26 (59.09)	18 (40.91)	
<i>Subjective norms</i>	Yes	No	
<i>My friends think I should use the online learning system.</i>			
Strongly disagree	2 (25)	6 (75)	$\chi^2 = 18.791^{***}$ df=4 Pr =0.001 Significant
Disagree	14 (53.85)	12 (46.15)	
Neutral	22 (57.90)	16 (42.11)	
Agree	39(59.09)	27 (40.91)	
Strongly agree	16 (50.00)	16 (50.50)	
<i>My family thinks I should use the online learning system</i>			$\chi^2 = 18.791^{***}$ df=4 Pr =0.001 Significant
Strongly disagree	4 (44.44)	5 (55.56)	
Disagree	6 (20.69)	23 (79.31)	
Neutral	20 (66.67)	10 (33.33)	
Agree	37 (57.81)	27 (42.19)	
Strongly agree	26 (68.42)	12 (31.58)	
Disagree	0	3 (100)	
Neutral	3 (50.00)	3 (50.00)	
Agree	26 (56.52)	20 (43.48)	
Strongly agree	60 (56.60)	46 (43.40)	

NB: ***, ** and * means it is statistically significant at 1%, 5%, and 10% respectively.

5. Conclusion and Policy Implications

The World Health Organization in 2020 declared COVID-19 as a pandemic. To control the spread of the pandemic all educational institutions were closed down and this compelled universities to shift rapidly from face-to-face

learning to e-learning. Unlike normal e-learning situations, this is 'crisis learning' with unique experiences. This study explores learners' attitudes and the factors that encourage the utilization of online learning during the COVID-19 pandemic. The multi-stage sampling technique was used to select 170 respondents. Descriptive statistics were used to examine the attitude of learners towards online learning in

the era of the COVID-19 pandemic. Further, the chi-square analysis was used to examine the association between the use of e-learning and the socio-demographic characteristics of the sampled students, attitudes, subjective norms, and training in online learning. Finally, content analysis was used to analyze the qualitative data.

The results reveal that most (64.71%) of the students used online learning facilities and the majority (54.71%) were aware of it. However, a few (18.24%) of the students reported they received training in online learning. Generally, the results revealed that the students have a positive attitude towards online learning. Student agrees with the assertion that studying through online learning is a good idea (35.29%), interesting (37.06%), and useful (38.82%). Regarding the subjective norms variable, students also agree that their friends (36.47%) and family (37.6%) think they should utilize the online learning facilities. Approximately 30% of the students agree that they will adopt online learning facilities if their colleagues use them. Challenges that students faced in the utilization of online learning during the COVID-19 pandemic were technological challenges such as inadequate access to ICT technology and poor internet connectivity. Likewise, individual challenges such as inadequate knowledge and skills in the use of online handles (29.41%), poor computer skills and self-efficacy of students (31.18%), and poor time management by students (40.59%) were identified as barriers to the use of online learning. Most reported that ineffective orientation of students by service providers (50.59%) and high cost of internet data (61.76%) were the other challenges they were facing in using online learning in the era of the coronavirus pandemic.

The Chi-square results established that the factors that encourage the use of online learning were the occupation of the student's mother, the level of the student, the occupation of the student's father, educational level of the student's father, attitude, training in online learning, and subjective norms. Based on the findings, the following recommendations are made. Since training in online learning was identified as one of the drivers of the use of online learning, it is recommended that training programs on online learning should be intensified to enhance the skills and knowledge of learners. Also, factors that lead to positive attitudes towards online learning should be promoted. For instance, learners should be educated on the importance and benefits of online learning. Further, ICT technology such as computers should be easily accessible to learners since exposure and easy access to computers is reported to influence attitudes towards online learning. Telecommunication companies should collaborate with educational institutions involved in online learning to identify innovative ways of making the cost of internet bundles affordable to students since this was one of the major challenges students reported. Finally, in educating and promoting the use of online learning opinion leaders and role models should be involved in the training, education, and awareness programs since subjective norms are established to encourage the utilization of online learning.

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