

Students' Perception on the Use of Virtual Learning as a New Innovation of Learning in Tertiary Institutions for Global Best Practices in Gombe State

Chinyere Catherine Ngwakwe¹, Ph.D, Nwosu Chinedu Anthony², Ph.D, Opara David Kalu³

¹School of Education, Federal College of Education Technical Gombe

²Department of Economics, Alvan Ikoku Federal College of Education

³Department of Fine and Applied Arts, Alvan Ikoku Federal College of Education

DOI: <https://doi.org/10.47772/IJRISS.2023.70540>

Received: 25 April 2023; Accepted: 08 May 2023; Published: 02 June 2023

ABSTRACT

This study examined the students' perception on the use of virtual learning as a new innovation of learning in tertiary institutions for global best practices in Gombe State. Two research questions guided the study and two null hypotheses were also tested. Descriptive survey design was adopted. The population comprised 350 final year and 515 penultimate students in five tertiary institutions in Gombe State. A sample size of 250 students was selected for the study using simple random sampling technique. A structured and validated questionnaire on four-point rating scale containing 48 items was used for data collection. Cronbach Alpha method was used to establish the reliability of the instrument which yielded coefficients of 0.87, 0.80, 0.68 and 0.84 for the different clusters with an overall coefficient of 0.79. Data collected were analyzed using mean and standard deviation to answer the research questions while t-test was used to test the hypotheses at 0.05 level of significance. The analysis was carried out using SPSS version 23.0. Findings revealed that not all the students have access to virtual learning services, virtual learning services were not adequately available for some students of tertiary institutions especially those living in rural areas. Students' competency in internet usage was fair and that virtual learning service delivery is constrained by a lot of factors. Therefore, it is recommended that urgent steps should be taken to provide technical resources and improvement in internet connection for ensuring uninterrupted online education in Gombe State to fulfill the education needs of tertiary institution students.

Keywords; COVID-19, Virtual learning, Tertiary Institution, Perception, Best Practices

INTRODUCTION

As the corona virus (COVID-19) pandemic sweeps across the world, it is causing widespread concern, fear and stress all of which are natural and normal reactions to the changing and uncertain situation that every one finds themselves in. The issue facing each and every one of us is how we can manage and react to the stressful situation unfolding so rapidly in our lives, communities, societies and nation and the world at large. This COVID-19 pandemic has already impaired global healthcare systems as well as affected every aspect of human life. For reducing the spread of the disease infection, governments of numerous countries have emphasized taking several unprecedented preventive measures like strengthening health facilities, closure of educational institutions, offices, markets, restaurants, museums, movie theatres, etc., prohibition on social gatherings, border shutdown and travel restrictions. These social distancing measures have a substantive effect on education, health, business, tourism, and so on. Like many other countries, the government of Nigeria decided to close the educational institutions as part of preventive measures against the spread of COVID-19 pandemic. All educational institutions in Nigeria including Gombe State were equally closed as at the period of this pandemic. So the students from primary to tertiary institutions of

learning are being compelled to stay at home instead of attending classes in educational institutions to maintain social distancing in order to avoid contact with the deadly disease.

Previous pieces of literature showed that the closure of educational institutions is an effective strategy for breaking the critical transmission chain of this COVID-19 during this pandemic ([Earn, 2012](#)). Still, it has negative consequences on students' academic study, including learning interruptions, disruption to assessment, and the impact is more severe on students from disadvantaged backgrounds ([UNESCO, 2020a](#)). According to the [UNESCO \(2020b\)](#), the nationwide closure of schools, colleges, universities and other educational institutions, happened for the COVID-19, are adversely affecting over 60% of the world's student population.

In this COVID-19 period, among the world's student population, tertiary institution students are experiencing educational disruptions on an unprecedented scale. The research demonstrated that this COVID-19 situation induced concerns in students about academic activities along with social and economic affairs and fear of infection ([Al-Tammemi, 2020](#)). The pandemic heavily hit the tertiary institution students' social life as no meeting with friends and relatives ([Cao, 2020](#)), financial condition as losing of part-time jobs especially some teachers that are working with the private schools and emotional health as increasing frustration, anxiety and boredom ([Brooks, 2020](#)) and academic life as growing worried about future education and career.

Students experienced significant educational disruptions as the pandemic interfered with their academic functioning. Since the closure of tertiary educational institutions suspended face-to-face teaching-learning sessions, it interrupted the regular flow of academic programs. The delay in re-opening educational institutions has negatively affected their mental state and academic growth ([Chandasiri, 2020](#)). The long-time home quarantine period caused disturbance and deterioration in students' study habits and performance of work, which eventually resulted in the growth of stress and dysfunctional learning behaviours ([Meo, 2020](#)). Major interruptions occurred in students' learning, as many internal and public assessments were postponed or cancelled ([Burgess & Sievertsen, 2020](#)). To diminish the disruptions in tertiary education, a significant shifting of many educational institutions to emergency online learning programs which is a new innovation in education as a best practice from traditional face-to-face learning programs has been noticed during the COVID-19 situation as was announced by the federal government. But research showed that students were uncomfortable and distressed by this new innovation of online learning strategy ([Al-Tammemi, 2020](#)). They faced challenges in switching to online lectures, adjusting in new online assessment methods and workloads, communicating with teachers, and dealing with many online education issues like unavailability of electronic devices, no internet access, high cost of internet, etc. ([Owusu-Fordjour, 2020](#)). Even scientific researches held on and educational conferences cancelled or moved online, which created barriers for students to networking opportunities for scientific communication and job seeking.

CONCEPTUAL CLARIFICATION

In this section an attempt would be made to define some of the key words relevant to this study. This no doubt would provide underlying background for understanding of the subject matter of this work.

Madhav (2017) stated that Coronavirus are viruses that belong to the pathogenic family of influenza, filovirus (such as Ebola virus), flavivirus (such as Zika virus) that have caused epidemics and pandemics due to the fact that they are ribonucleic acids that have high mutation rates. They also unleash what is generally referred to as severe acute respiratory syndrome (SARS) hence it is sometimes referred to as SARS-COV. Furthermore, they posited that because they are pathogenic organisms that have high rate of mutation they pose great health risk to the society. They are therefore biological microorganisms that are responsible for the spread of the Coronavirus disease (COVID-19) and which in most cases exert severe

complication on the respiratory system.

Pandemics have been defined by Madhav (2017) as a large scale outbreaks of infectious disease that can engender disease or even death on a wide geographic area resulting in significant economic, social, political disruption. The Chambers Dictionary (2000) defined the above word as an epidemic that covers a wide area, a wide spread epidemic or one affecting whole people. On the other hand, an online English Dictionary defines pandemic as a disease that hits a wide geographical area and affects a large proportion of the population. From the foregoing the above word as used in this context refers to Corona virus as a great threat to the lives, health, economy and overall wellbeing of the global community.

Perception is the organization, identification and interpretation of sensory information in order to represent and understand the environment (Salawudeen, 2010). All perception involves signals in the nervous system, which in turn result from physical or chemical stimulation of the sense organs. For example, vision involves light striking the retina of the eye, smell is mediated by odour molecules, and hearing involves pressure waves. Perception is not the passive receipt of these signals, but is shaped by learning, memory, expectation and attention (Goldstein, 2009). Perception can be split into two processes. First, processing sensory input, which transforms these low- level information to higher- level information (e.g., extracts, shapes for object recognition). Second, processing which is connected with a person's concepts and expectations (knowledge) and selective mechanisms (attention) that influence perception.

Nwoye (2012) defined perception as the beliefs and feelings that predispose reactions to objects, people and events. It refers to feelings and responses to issues. He also affirmed that this indicates that perception towards a particular object is a measure of the degree of affection or favourableness towards that object. Therefore, if a student has positive thinking towards an object or something like virtual learning (ICTs), the tendency is that the student will be disposed to use it in the learning process. On the other hand, if the thinking is negative, the student will not use it. The contextual definition adopted here is that perception is the beliefs, dispositions, feelings and reactions towards a person, situation or thing.

However, physical health is often associated with students' cognitive acts and academic performance ([Dewa & Lin, 2000](#)). This study disclosed some physical health issues originated due to staying at home: an increase of sleep during the day, lack of sleep at night, loss of appetite, physical inactivity, weight gain or obesity, feeling of weakness, giddiness, fatigue, sluggish sensation. All of these hampered students' flow of study in online learning and decreased their enthusiasm for education. [Shaw \(2015\)](#) similarly noted that different types of educational problems are observed when students have low physical fitness.

Again, the rapid proliferation of COVID-19 is accompanied by moderate to severe self-reported depressive and anxiety disorders in the general population ([Wang, 2020](#)). The current study highlighted some mental issues about students' health and academic education which were created by the COVID-19. Delay in studies, examinations, results, and promotions to new classes raised stress in students. [Cao \(2020\)](#) also found this result in their research. In this study, the thoughts of extending the academic year and session, crossing the age limit of employment, rising of competition, and hardship in getting jobs after graduation, losing job opportunities in this time of economic recession developed uncertainty, frustration, disappointment, anxiety and stress in students. Because of this uncertain situation, some female participants were in extra pressure of getting married soon before graduation, which made them emotionally vulnerable. It can be forecasted that the students' mental state in the pandemic would affect their education in the future because academic achievements are influenced by students' negative emotions and hinder the progression of learning ([Adesoji, 2012](#)).

Furthermore, in this pandemic crisis, online education has emerged as an immediate alternative to the traditional tertiary education system around the world, even in Nigeria especially in Gombe State which is the area of the study. Though online learning has its share of issues, it is a popular innovative method for

providing education ([Nwokike, 2010](#)). The present study identified several common problems concerning online education in Gombe State. The comprised problems were: the absence of electronic devices like laptops, smartphones, computers, and tablets which are compulsory for online courses, limited or no access to the internet, high cost of mobile internet packages or broadband connections, interruption in online classes because of low speed or no speed of the internet and frequent power cut problem in rural or town areas. These findings were in accordance with the results of previous studies ([Kedraka & Kaltsidis, 2020](#); [Mahdy, 2020](#); [Ramij & Sultana, 2020](#)). This unequal access to technical devices and the internet can impede the actual purpose of active learning through online classes and cause a digital divide in education.

Moreover, this study indicated the factors could hamper students' online academic education: lacking in skills of using technical devices, unfamiliarity to the functions of the online class platforms like Zoom, Google Meet, Google classroom, Skype, not having effective learning management systems and other essential equipment in tertiary institutions, lacking in the quality of education, no or little preparation of teachers for running online teaching. According to the students of the study, several difficulties were linked to online learning in these areas: maintaining time schedules of online classes, setting times for homework, collecting learning materials due to online access blocking of many libraries, learning lab-based or practical work-based lessons, convincing family members to keep a proper home environment, solving online tests with short time, interacting with peers and teachers. All these issues associated with online education were also analogous to many pieces of literature ([Adnan & Anwar, 2020](#)). This study also showed that online education developed physical problems like headaches, backache, eye-strain, and ear-pain among students due to access use of laptops, smartphones, and earplugs for remote learning classes. It seemed to new mental stress to the students. [Hand \(2018\)](#) also reported that extensive use of technology for online learning could negatively impact the physical and mental health of students. Because of the above issues related to online education, online classes seemed too dull, uninteresting, unattractive, unsatisfactory, and ineffective to the participants in this study and they preferred conventional face-to-face classes over online classes. This finding was entirely consistent with the findings of previous studies ([Adnan & Anwar, 2020](#); [Tratnik, 2019](#)).

Furthermore, economic status plays an immense role in higher education as financial aids can help students to attain a better quality of education ([Shaw, 2015](#)). The findings of the current study also elicited that students' mental health and study were severely affected by financial factors: losing tuitions or part-time jobs, being incapable of bearing the expenditure of new online classes, reduction in parents' income due to the COVID-19 pandemic, being drop-out of the academic year or semester due to lack of money. These findings were corresponding to the conclusion made by ([Chandasiri, 2020](#)), which was pay-cuts or losing jobs, and parents' lower-income would impact the mental health and study of students.

STATEMENT OF THE PROBLEM

Tertiary institutions in the country as well as in Gombe State are adding online learning programs as new innovation for global best practices to meet the needs of the growing number of students seeking the convenience of virtual learning services and to remain competitive in the rapidly changing market for educational services. Virtual learning service as a new innovation presents an opportunity to enhance learning and to create environments where students and teachers can share knowledge especially during this era of COVID-19. There appears to be inappropriate utilization of electronic devices for educational purposes for this new innovation while the students are at home because not all the students have access to such virtual learning. Most of them that have the opportunity divert their attention in watching of pornographic and very horrible films, defrauding people via the internet and among other negative actions. Also there is the problem of difficulties with practical development and implementation of virtual learning programs as it pertains to new innovation, insufficient virtual learning infrastructure in some areas where these students are living which in most cases hinder them in the use of these new innovations of virtual learning services for educational purposes. Also, this type of innovation in learning affects the mental,

physical, financial and social well-being of these students while staying at home. It is against this backdrop that the study investigated the Students' Perception in the use of virtual learning as a new innovation of learning in the face of COVID-19 Pandemic In Tertiary Institutions In Gombe State.

Purpose of the Study

The main purpose of the study was to ascertain the Students' Perception in the use of virtual learning as a new innovation of learning in the face of COVID-19 Pandemic In Tertiary Institutions In Gombe State. Specifically, the study sought to:

1. Ascertain the availability of various virtual learning services available to students on because of COVID-19 pandemic in tertiary institutions in Gombe State.
2. Determine the effectiveness of online services used in virtual learning during this COVID-19 pandemic among the students of tertiary institutions in Gombe State.

Research Questions

The following research questions guided the study:

1. What are the various virtual learning services available to students on during this COVID-19 pandemic among tertiary institutions in Gombe State?
2. How effective are the online services used by the students in this virtual learning during this COVID-19 pandemic among tertiary institutions in Gombe State?

Hypotheses

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

- There is no significant difference in the mean ratings of university and colleges of education students regarding various virtual learning services available to students during this COVID-19 pandemic in tertiary institutions in Gombe State.
- Male and female students do not differ significantly in their mean ratings regarding the various virtual learning services available to students during this COVID-19 pandemic in tertiary institutions in Gombe State.

METHODOLOGY

Research Design

The design for this study was descriptive survey design. According to Creswell (2009), survey provides a quantitative or numeric description of trends, attitudes or perception of a population by studying a sample population which is essential for the achievement of a study. Survey design was considered suitable for this study by the researcher since the study sought to collect data from tertiary institution students and obtain their views in relation to the students perception of virtual learning services available to students during this COVID-19 pandemic.

Area of the Study

The area for this study was Gombe State which is an agricultural producing State in the north-east geo-political zone of Nigeria.

Population of the Study

The population of this study consisted of all the 350 final year and 515 penultimate students who are currently on lockdown because of COVID-19 pandemic under various courses of study in the five tertiary institutions in the area of the study. This figure was supplied by the Heads of Department of the five tertiary institutions in Gombe State through online with the students contact numbers.

Sample and Sampling Technique

Simple random sampling technique was adopted in selecting a total of 250 students from the five tertiary institutions for this study to obtain their responses on their perception in the use of virtual learning services during this COVID-19 pandemic. This number comprised 110 males and 140 females. Fifty students were drawn from each of the selected tertiary institutions thereby bringing the total number of students to 250. Out of this number, 50 students were drawn from the university while 200 were drawn from colleges of education.

Instrument for Data Collection

The instrument for data collection for this study was a structured questionnaire titled “perception of students on the adoption of virtual learning services in tertiary institutions (QPSAVS) during COVID-19 pandemic developed by the researcher based on the reviewed literature and the research questions guiding the study.

Method of Data Collection

The researcher administered copies of the instrument on the respondents with the help of two research assistants who were briefed by the researcher concerning the purpose of the research, response pattern and subject of the study. The researcher and the research assistants used one week to distribute the instrument to respondents in their various homes and places to be visited by the researcher and the research assistants and another one week for the retrieval of the instrument during which reminders were sent through bulk short messages and telephone calls in order to maintain social distance. Out of the 250 copies of the questionnaire distributed, 242 were correctly filled and returned given a percentage return rate of 96.8%.

Method of Data Analysis

The data collected for this study were analyzed using the descriptive statistics of mean and standard deviation to answer the research questions. The standard deviation was used to ascertain the homogeneity or otherwise of the respondents' views. Inferential statistics of t-test was used to test the null hypotheses at 0.05 level of significance. In testing the null hypotheses, when p-value is less than or equal to 0.05 ($P < 0.05$), the null hypothesis was rejected otherwise, the null hypothesis was not rejected. The Statistical Package for Social Sciences (SPSS) version 23 was used to carry out the analysis.

FINDINGS FROM THE STUDY

Research Question 1

What are the various virtual learning services available to students of tertiary institutions during COVID-19 pandemic in Gombe State? Data collected in respect to this research question were analyzed and the results are presented in Table 1.

Table 1. Respondents’ mean ratings and standard deviations on various virtual learning services available to students of tertiary institutions N= 242

S/N	Items on available virtual learning services	X	SD	Remarks
3	digital library for learning	2.67	0.47	Disagreed
4	Provision of new versions of software	2.37	0.66	Disagreed
5	internet facilities for teaching/learning	2.42	0.63	Disagreed
6	Active involvement of virtual learning services in all school curriculum	2.37	0.70	Disagreed
7	Provision virtual learning services for students by government management during COVID-19	2.52	0.50	Disagreed
8	Use of virtual learning facilities in internal communication	2.70	0.64	Agreed
9	Take home assignments in computer lessons	2.52	0.81	Agreed
10	I have computer lessons on the home timetable	2.90	0.63	Agreed
11	Greater access to virtual learning facilities by students	2.52	0.67	Agreed
12	Audio tapes are provided for learning	2.55	0.59	Agreed
	Cluster Mean	2.32		Disagreed

Data in Table 1 show that out of 10 items listed on availability of virtual learning services, students disagreed that items 4, 5 and 6 are available to them with mean scores ranging from 2.37 to 2.42 while they agreed that the remaining seven items are available. The cluster mean score of 2.32 shows that on the whole, students of tertiary institutions on holidays during COVID-19 in Gombe State disagreed that these virtual learning services are available for them. The standard deviations for all the items are within 0.47 to 0.81. This shows that the respondents are not wide apart in their ratings.

Research Question 2

How effective are the online services used by the students in this virtual learning during this COVID-19 pandemic among tertiary institutions in Gombe State? Data collected in respect to this research question were analyzed and the results are presented in Table 2.

Table 2. Respondents’ mean ratings and standard deviations on the use of virtual learning services of students in tertiary institution N = 242

S/N	Items on competency in virtual usage	X	SD	Remarks
26	Downloading information from the web	2.77	0.42	Competent
27	Uploading information to the web	2.62	0.66	Competent
28	Composing and sending an e-mail	2.15	0.89	Fairly
29	Opening and closing word document	2.62	0.62	Competent
30	Attaching documents	2.87	0.64	Competent
31	Creating, deleting and renaming files and folders	2.27	0.87	Fairly
32	Entering and modifying text	2.15	0.73	Fairly
33	Opening and closing a browser	1.97	0.61	Fairly
34	Formatting a disc	1.77	0.69	Fairly
35	Creating formula.	1.92	0.76	Fairly
	Cluster Mean	2.31		Fairly

Data in Table 2 show that out of 10 items listed on the effective use of virtual learning services in learning during COVID-19 pandemic, respondents indicated that they were competent in the use of items 26, 27, 29 and 30 in learning with mean scores ranging between 2.62 to 2.87, while the remaining six items were rated fairly. The cluster mean score of 2.31 shows that on the whole, students in tertiary institutions during COVID-19 in Gombe State rated their competency in internet usage as fairly. The standard deviations for all the items are within 0.42 to 0.87. This shows that the respondents are not wide apart in their ratings.

RESULT OF TEST OF HYPOTHESES

Hypothesis 1

There is no significant difference in the mean ratings of university and colleges of education students regarding various virtual learning services available to students in tertiary institutions in Gombe State.

Data obtained in respect of the first hypothesis were analyzed and presented in Table 3.

Table 3. t-test summary of analysis of university and College of education students regarding various virtual learning services available for students during COVID-19 pandemic

Gender	N	X bar	SD	df	Sig.	P-value	Decision
University	50	29.3	83.01	240	0.82	0.05	Not Significant
College of Education	192	30.13	2.69				

Table 3 shows that the significant value of 0.82 is greater than the p-value of 0.05 ($0.82 > 0.05$) at 240 degree of freedom. This means that there is no significant difference in the mean ratings of university and colleges of education students regarding various virtual learning services available for students of tertiary institutions during COVID-19. Therefore, the null hypothesis is accepted.

Hypothesis 2

Male and female students do not differ significantly in their mean ratings regarding various virtual learning services available to students in tertiary institutions during COVID-19 pandemic in Gombe State. Data obtained in respect of the second hypothesis were analyzed and presented in Table 4.

Table 4. t-test summary of analysis of male and female students regarding various virtual learning services available

Gender	N	X bar	SD	df	Sig.	P-value	Decision
Male	109	29.52	2.65	240	0.51	0.05	Not Significant
Female	133	30	3.09				

Table 4 shows that the significant value of 0.51 is greater than the p-value of 0.05 ($0.51 > 0.05$) at 240 degree of freedom. This means that male and female students did not differ significantly in their mean ratings on various use of virtual learning services available for students during COVID-19 pandemic. Therefore, the null hypothesis is accepted.

DISCUSSION OF THE FINDINGS

Findings of the study are discussed as follows:

Use of Virtual Learning Services in learning in during COVID-19 Pandemic

The findings of the study showed that students sometimes used virtual learning services in learning among the tertiary institutions students on holidays in Gombe State. This is in line with the findings of Nwokike, (2010), as he stated that in this pandemic crisis, online education has emerged as an immediate alternative to the traditional tertiary education system around the world, even in Nigeria especially in Gombe State which is the area of the study. Though online learning has its share of issues, it is a popular innovative method for providing education. The present study identified several common problems concerning online education in Gombe State. The comprised problems were the absence of electronic devices like laptops, smartphones, computers, and tablets which are compulsory for online courses, limited or no access to the internet, high cost of mobile internet packages or broadband connections, interruption in online classes because of low speed or no speed of the internet and frequent power cut problem in rural or town areas.

These findings were also in accordance with the results of previous studies of [Kedra & Kaltsidis, 2020](#); [Mahdy, 2020](#); [Ramij & Sultana, 2020](#). This unequal access to technical devices and the internet can impede the actual purpose of active learning through online classes and cause a digital divide in education. The current study showed that the participants were unhappy and unsatisfied; instead, shocked by the quick decision of countrywide closure of educational institutions, which concurred with the results of the previous studies. It was also found in the study that the prolonged tertiary institutions closure and home confinement due to COVID-19 caused immense disruptions in the students' learning, which were parallel to the findings of several studies such as interruption in the daily routine of life and study ([Kedra & Kaltsidis, 2020](#)), no access to the tertiary institutions library for issuing academic books, and lack of learning materials at home and disturbance in the home environment ([Owusu-Fordjour, 2020](#)), complexity to remember read lessons, decrease in overall study time and deterioration in motivation and concentration to study subject contents at home ([Meo, 2020](#)).

Effective use of Virtual Learning services available to Students in Tertiary Institutions during this COVID-19 Pandemic

The findings of the study also showed that students effectiveness in the use virtual learning services in learning during COVID-19 pandemic in Gombe State were not substantial. This is in line with what [Adnan & Anwar, \(2020\)](#), their study indicated some of the factors that could hamper students' effective use of online in academic education such factors include lacking in skills of using technical devices, unfamiliarity to the functions of the online class platforms like Zoom, Google Meet, Google classroom, Skype, not having effective learning management systems and other essential equipment in environments, lacking in the quality of education, no or little preparation of teachers for running online teaching. According to the students of the study who were interviewed in the course of writing this emphasised that, several difficulties were linked to online learning in these areas such difficulties include maintaining time schedules of online classes, setting times for homework, collecting learning materials due to online access blocking of many libraries, learning lab-based or practical work-based lessons, convincing family members to keep a proper home environment, solving online tests with short time, interacting with

peers and teachers. All these issues associated with online education were also analogous to many pieces of literature. This study also showed that online education developed physical problems like headaches, backache, eye-strain, and ear-pain among students due to excessive use of laptops, smartphones, and earplugs for remote learning classes. It seemed to new mental stress to the students. This is also in line with what [Hand \(2018\)](#) reported in his study. He was of the opinion that extensive use of technology for online learning could negatively affect the physical and mental health of students. Because of the above issues related to online education, online classes seemed too dull, uninteresting, unattractive, unsatisfactory, and ineffective to the participants in this study and they preferred conventional face-to-face classes over online classes. This finding was entirely consistent with the findings of previous studies [of Adnan & Anwar, 2020;](#) [Tratnik, 2019.](#)

CONCLUSION

This study discovered that the use of virtual learning services by students in tertiary institutions during COVID-19 pandemic was low due to insufficient availability of virtual learning services in Gombe State as well as students fair competencies in using virtual learning resources such as internet for learning. COVID-19 outbreak has spread its adverse effects on students' education, including health, economy, and societal relationship. The measures like social distancing, quarantine, closure of educational institutions taken to reduce the transmission of the disease have affected students' academic learning to a great extent. The significant effects of this pandemic have crippled the conventional tertiary education system. Students at the tertiary institution level have fallen into a massive problem about their future. The current study shaded light on the students' perception of the use of virtual learning during COVID-19 pandemic on education in Gombe State. It showed that the learning disruptions, difficulties in social interaction, physical and mental health problems, economic crisis, caused by the outbreak of COVID-19, had discrepant consequences on tertiary students' academic education and learning behaviours.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made

1. The Federal and State Government should take an urgent step in providing technical resources and improving internet connection for ensuring uninterrupted online education in Gombe State to fulfill the education needs of tertiary institutions level of students in this crisis period of COVID-19 pandemic.
2. Administrators of tertiary institutions in collaboration with the private sector should provide more virtual learning resources to various institutions in the State so as to facilitate the training of students in skills needed to use virtual learning services equipment while still in school so as to have the knowledge of the needed skills involved in learning through virtual learning in case any outbreak any other pandemic.
3. Government should provide fund to all the local government in the state so as to enable them acquire more virtual learning resources for various students in their localities to facilitate teaching and learning in this COVID-19 pandemic era.
4. The government of Nigeria should provide digital libraries with server for storage, retrieval, uploading and downloading of information in all the rural and township areas for easy teaching assessment by the students on holidays during this COVID-19 pandemic.
5. The federal government and the state government should employ technologists and technicians to take care of internet facilities and equipment in all local government areas various states in order to carry out daily routine repairs and maintenance of these services in this COVID-19 pandemic era.

REFERENCES

1. Adesoji, F. F (2012). Undergraduate students' perception of the effectiveness of ICT use in improving teaching and learning in Ekiti State University, Ado. Nigeria international Journal of Library and Information Science 4(7), 121-130.
2. Adnan, M., & Anwar, K. (2020). Online Learning amid the COVID-19 Pandemic: Students' Perspectives. *Journal of Pedagogical Research*, 1, 45-51. <https://doi.org/10.33902/JPSP.2020261309>
3. Ahmed, M. (2020). Tertiary Education during Covid-19 and Beyond. *The Daily Star*. <https://www.thedailystar.net/opinion/news/tertiary-education-during-covid-19-and-beyond-1897321>
4. Al-Tammemi, A. B. (2020). Is It Just about Physical Health? An Internet-Based Cross-Sectional Study Exploring the Psychological Impacts of COVID-19 Pandemic on University Students in Jordan Using Kessler Psychological Distress Scale. <https://doi.org/10.1101/2020.05.14.20102343>
5. Brooks, S. K. (2020). The Psychological Impact of Quarantine and How to Reduce It: Rapid Review of the Evidence. *The Lancet*, 395, 912-920. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
6. Burgess, S., & Sievertsen, H. H. (2020). Schools, Skills, and Learning: The Impact of COVID-19 on Education. <https://voxeu.org/article/impact-covid-19-education>
7. Cao, W. (2020). The Psychological Impact of the COVID-19 Epidemic on College Students in China. *Psychiatry Research*, 287, Article ID: 112934. <https://doi.org/10.1016/j.psychres.2020.112934>
8. Chandasiri, O. (2020). The COVID-19: Impact on Education. *Journal of Asian and African Social Science and Humanities*, 6, 37-42. <https://www.aarcentre.com/ojs3/index.php/aarcentre/article/view/207/472>
9. Creswell, J. W. (2013). *Qualitative Inquiry and Research Design: Choosing among Five Approaches* (3rd ed.). New York: SAGE Publications.
10. Dewa, C. S., & Lin, E. (2000). Chronic Physical Illness, Psychiatric Disorder and Disability in the Workplace. *Social Science & Medicine*, 51, 41-50. [https://doi.org/10.1016/S0277-9536\(99\)00431-1](https://doi.org/10.1016/S0277-9536(99)00431-1)
11. Hand, B. (2018). 3 Common eLearning Health Issues and How to Overcome Them. *eLearning Industry*. <https://elearningindustry.com/elearning-health-issues-overcome-3-common>
12. Goldstein, E. B. (2009). Sensation and perception. 978-0-495-60149-4. Retrieved 26 March 2020.
13. Kedraka, K., & Kaltsidis, C. (2020). Effects of the Covid-19 Pandemic on University Pedagogy: Students' Experiences and Considerations. *European Journal of Education Studies*, 7, 8. <https://doi.org/10.46827/ejes.v7i8.3176>
14. Mahdy, M. (2020). The Impact of COVID-19 Pandemic on the Academic Performance of Veterinary Medical Students. <https://doi.org/10.20944/preprints202006.0130.v2>
15. Meo, S. A (2020). COVID-19 Pandemic: Impact of Quarantine on Medical Students' Mental Wellbeing and Learning Behaviours. *Pakistan Journal of Medical Sciences*, 36, 43-48. <https://doi.org/10.12669/pjms.36.COVID19-S4.2809>
16. Nwokike, F.O. (2010). Economic implications of e-learning in Nigerian educational system. A paper presented at the 2010 annual conference of the faculty of education Nnamdi Azikiwe University Awka.
17. Nwoye, N. C (2012). Effects of reciprocal peer guidance on adolescent attitudes and engagement in family responsibility. An unpolished Ph.D dissertation in faculty of education, NnamdiAzikiwe University, Awka.
18. Owusu-Fordjour, C. (2020). The Impact of Covid-19 on Learning—The Perspective of the Ghanaian Student. *European Journal of Education Studies*, 7, 88-101.
19. Ramij, M. G., & Sultana, A. (2020). Preparedness of Online Classes in Developing Countries amid COVID-19 Outbreak: A Perspective from Bangladesh (SSRN Scholarly Paper ID 3638718). *Social Science Research Network*. Retrieved from <https://doi.org/10.2139/ssrn.3638718>
20. Salawudeen, O. S. (2010). *E- Learning technology. The Nigerian experiences*. Abuja: Rosger Printing and Publishing Ltd.
21. Shaw, S. R.(2015). *The Relationship between Student Health and Academic Performance*:

- Implications for School Psychologists. *School Psychology International*, 36, 115-134.<https://doi.org/10.1177/0143034314565425>
22. Tratnik, A. (2019). Student Satisfaction with an Online and a Face-to-Face Business English Course in a Higher Education Context. *Innovations in Education and Teaching International*, 56, 36-45. Retrieved from <https://doi.org/10.1080/14703297.2017.1374875>
23. UNESCO (2020a). Adverse Consequences of School Closures. UNESCO. <https://en.unesco.org/covid19/educationresponse/consequences>
24. UNESCO (2020b). Education: From Disruption to Recovery. UNESCO. <https://en.unesco.org/covid19/educationresponse>
25. Wang, C. (2020). Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *International Journal of Environmental Research and Public Health*, 17, 1729. <https://doi.org/10.3390/ijerph17051729>