

**COVID-19 PANDEMIC PREVENTION PROTOCOLS AND CLASSROOM
TEACHING AND LEARNING IN PUBLIC PRIMARY SCHOOLS IN
ADAMAWA STATE, NIGERIA**

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DECLARATION

I declare that this thesis is my original work and has not been presented in any other University / Institution for consideration. This thesis has been complimented by referenced sources duly acknowledged. Where text, data (including spoken words), graphics, pictures, or tables have been borrowed from other sources, including the internet, these are specifically credited and referenced using the current APA system and in accordance with anti-plagiarism regulations.

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DEDICATION

To my beloved brothers, Prof. Adamu Bakari Girei and Dr. Salihu Bakari Girei, for their love, care, and support throughout my studies

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ACRONYMS AND ABBREVIATIONS

CDC:	Centre for Disease Control
FMOH:	Federal Ministry of Health
FMOE:	Federal Ministry of Education
ICT:	Information Communication and Technology
NCDC:	Nigeria Centre for Disease Control
TV:	Television
UK:	United Kingdom
UNESCO:	United Nations Educational, Scientific and Cultural Organization
USA:	United States of America
WHO:	World Health Organization

ABSTRACT

This study sought to examine COVID-19 prevention protocols and guidelines and how they influenced classroom teaching and learning in public primary schools in Adamawa State, Nigeria. The COVID-19 pandemic has resulted to massive disruption within the education system globally, affecting learners and teachers in numerous ways. Considering the economic status and technological challenges the Nigerian education sector faces, some COVID-19 prevention protocols and guidelines faced challenges in their implementation, which needed to be fully understood by carrying out a study of this nature. The study was guided by five objectives; to examine the knowledge on COVID-19 prevention protocols and guidelines by teachers and learners in public primary schools in Adamawa State; to investigate the application of ICT integration in teaching during COVID-19 pandemic in public primary schools; to assess the utilization of learning resources during COVID-19 pandemic in public primary school; to identify challenges in the interaction between learners and teachers during teaching and learning in public primary schools and to suggest measures and interventions of addressing COVID-19 during teaching and learning in public primary schools. The study adopted mixed methods approach. Data was collected using questionnaire, interview, Focus Group Discussion and observation. To ensure reliability and internal consistency of the research instruments, a pilot study was conducted in three primary schools in Adamawa State. While the qualitative data collected were subjected to qualitative analysis thematically based on the objectives of the study, numerical data analysis was carried using SPSS software. The findings of this study revealed that, pupils and teachers in public primary schools in Adamawa State, have the knowledge on COVID-19 prevention protocols and guidelines. There was high level of ICT integration in learning during the COVID-19 pandemic in public primary schools in Adamawa State, despite challenges in network connectivity and ICT material availability. There was high level of utilization of learning materials during the COVID-19 pandemic in public primary school in Adamawa State. There were challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic in public primary schools in Adamawa State, Nigeria. There are suggested measures and interventions of addressing COVID-19 pandemic during teaching and learning in public primary schools in Adamawa State, Nigeria which include: operating a shift system to reduce overcrowding in classes and sensitization on the immediate action to be taken in classes during teaching and learning in the context of COVID-19. It was recommended that there is need for the Adamawa State government to introduce seminars and workshops for the teachers to be updating their preventive knowledge in the context of COVID-19 and other infectious diseases and that Adamawa State government should incur more ICT equipment for proper integration in teaching and learning during and after the COVID-19 pandemic among other suggestions.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter provides the research background on the COVID 19 pandemic prevention protocol and classroom teaching and learning, statement of the problem, research objectives, research questions, significance of the study, research limitations and delimitation of the study, and operational definition of terms.

1.1 Background to the Study

One of the Millennium Development Goals (MDGs) for 2015 was to attain universal basic education. It was emphasized that developing countries, particularly those in Africa, have made significant headway in bridging the school enrolment gap with that of developed countries like Europe (Blomeke, 2017). Notably, through the Sustainable Development Goals, the focus has been shifted from not just school attendance but excellent education. In the year 2020, Sub-Saharan Africa made the most gain in primary enrolment among emerging regions, increasing from 52 to 78 percent for 30 years. However, considerable gaps remain in the achievement of SDG 4, which seeks to offer high-quality, inclusive education to all children by 2030. Children from poor homes are more likely to drop out of school than their more affluent counterparts.

1.1.1 COVID-19 Pandemic Outbreak

In the year 2019, the whole world was shocked with the outbreak of Coronavirus disease caused by SARS-CoV-2 (Severe acute respiratory syndrome – coronavirus initially known as 2019-nCoV). The disease was reported in Wuhan, a city in

China, in the year 2019. On March 11, 2020, the World Health Organization declared COVID-19 a global pandemic (World Health Organization, WHO, 2020). During the same month, China confirmed 83,878 cases of the infection and mortality rate at 4636. The World Health Organization described the infection as a H1N1 influenza pandemic. Since then, COVID-19 went on the rise globally bringing about social and economic implication to all economies, learning institutions and population of different countries (WHO, 2020).

The COVID-19 pandemic had infected over 3.04 million people around the world as of April 28th, 2020, with over 211,305 deaths and slightly more than 895,261 verified recovered cases (United Nation Educational Scientific and Cultural Organization, UNESCO, (2020a).

With 988,469 infected cases, 56,253 deaths, and 111,583 recoveries, the United States of America (USA) was declared to be in the lead (Powell, 2020). Italy had 199,414 infected cases, 26,977 deaths, and 66,624 recoveries, while the United Kingdom (UK) had 158,348 infections, 2,157 deaths, and 809 recoveries (Coll, 2020). Spain documented 229,422 infected cases, 23,521 fatalities, and 120,832 recoveries within the same time period (WHO Report, 2020).

Egypt reported the first COVID-19 cases in Africa at the beginning of February 2020. As of April 28th, 2020, Africa had recorded 33,389 incidents (UNESCO, 2020a). In South Africa, within the same year, there were 4,793 infected cases, 90 fatalities, and 1,473 recoveries (Schröder et al, 2020). Egypt reported 4,782 infections, 337 deaths, and 1,236 recoveries. There were 1,550 infections, 11 fatalities, and 155 recoveries documented in Ghana (Dorcas, 2020). Nigeria

experienced 1,337 infections, 40 fatalities, and 255 recoveries (Sima, Mariam & Byanaku, 2020, Adegboye, Oyelola, Adekunle, Adeshina, Gayawan, & Ezra, 2020). Most social, political, and economic activity in Africa halted due to the coronavirus outbreak (Jacob, Abigeal, & Lydia, 2020). Officials from the African Union's Centre for Disease Control (CDC) described the coronavirus outbreak as an existential threat to the continent. The situation in the education industry was never any better, with more than 1,268,164,088 pupils (72 percent) leaving their learning institutions in over 177 countries by April 2020 (Marivate & Combrink, 2020). These closures, along with hashtags like "lockdown," "social distancing," and "stay at home," necessitated new creative ways of thinking. Some of the strategies and approaches that were used to control the spread of COVID-19 were as follows: distancing," and "stay at home" sanitizing, hygiene, eating diet among others.

1.1.2 COVID-19 and Education around the World

The rate at which the virus was spreading in 2020 led to the declaration of COVID 19 as a pandemic by the World Health Organization with the top 10 most affected countries being China, United States of America (USA), Italy, Iran, France, South Korea, United Kingdom (UK), Switzerland, Spain and Germany (UNESCO, 2020a). Learning institutions were massively affected, resulting to their closure, hence students were required to learn from home (Perez & Morris 2020). In China, Universities were challenged to respond to the situation by providing guidance on how students could isolate themselves. This led to massive curriculum digitalization to enhance online-learning.

Numerous reports provided conflicting information on how the institutions of higher learning in the world responded to the COVID-19 pandemic. A report from Shanghai by the New York Institution of higher learning indicated that online classes commenced from February 14th, 2020 while Duka Kunshan and Zhejiang institutions of higher learning followed suit by 24th of the same month and year (Sharma, 2020). As much as other universities responded quickly and resorted to online learning, not all the institutions were able to respond in a timely manner towards online delivery due to lack of resources. This resulted to delayed semester for most universities except for those that had timely online class option. According to numerous reports, the online learning platform was a short term learning measure and for its implementation to have been successful, one month or so had to be compromised to settle into online classes. In the meantime, the face to face classes remained closed with the advent of online learning. Accordingly, the question that comes into our mind is the quality of the learning and its impact on the institutions of learning (Capelleti, 2020).

Just like other countries such as the USA who responded to the needs of students who were in a quagmire of travelling and the need to reduce the rate of infection, the first student who tested positive for the virus was reported on the February 17th, 2020. This called for the need for the USA to support students and staff safety by providing the protection and prevention resources.

Upon the announcement of the pandemic in the USA, online classes did not begin immediately. When some institutions confirmed to have begun online classes, the number of infections in the country had increased to an extent that it surpassed China's infections with 103, 321 infections 1,668 mortalities as at 29th March

2020 (WHO, 2020a). Among the universities that announced online class commencement within the same month of March included the Harvard, Stanford and California University. Other universities were still on break for at least a week to allow for transition to take place while other institutions were still deciding on the appropriate teaching methodologies (Clerk, 2020). A report shows that two hundred and sixty universities out of five thousand three hundred had resorted to use online platform by mid-march with reduced campus presence.

Reportedly, South Africa had 1187 transmissions by 29th March of 2020 with no mortality (WHO, 2020a). In response to the pandemic, its government issued regulations that banned gatherings and travels in and out of the country, encouraged self-quarantine and closure of learning institutions until further decisions were made (South Africa News Agency, 2020). Institutions of higher learning such as Cape Town, Johannesburg and Fort Hare suspended their classes while others such as Witwatersrand, Stellenbosch and Rhodes suspended their graduation formalities (Baker, 2020). Further, other learning institutions and colleges remained closed while research from different universalities were permitted to examine how learning could continue under online delivery (Coll, 2020).

The South African government through the ministry of education also banned travels for students and teaching staff unless crucial need arose. Additionally, isolation was required for those who had travelled from abroad, and conferences and symposiums were alternated using different formats in order to come up with the plan to protect students in campuses. Students who came from other countries

were allowed to make contact with their friends and relatives in order to attain safe evacuation (South African Government, 2020).

In Nigeria, the government closed all international flights for a month from March 23rd 2020 (Marivate & Ceombrink, 2020). Furthermore, there were 22 reported cases with no mortality. The government advocated the need to put social distance, and also banned gatherings (NCDC 2020). Private, public and tertiary institutions of learning were closed to prevent disease transmission (Nigeria Education Report, 2020). On March 29th, 2020 a lockdown was announced in the country, public office holders from grade level 12 and above were to work from home. The lockdown order placed by the government generated shock and confusion among the citizens and their economic and social living, and caused many people to suffer from hunger and lack of other basic necessities for living.

In 2020, the Federal Government of Nigeria reconsidered the reopening of the lockdown which was guided by some COVID-19 prevention protocols and guideline which includes, keeping social and physical distance, hand washing, wearing face mask, and limiting the number of people in social places, other protocols which citizens had to abide by at any place they found themselves in the country were put in place to avoid further transmission. For schools to reopen and continue with teaching and learning process, virtual exchange between the teachers and students like the use of Information and Communication Technology (ICT) tools such as radio, television and other relevant online sources were recommended (Byun & Slavin, 2020).

According to Jacob, Abigeal and Lydia (2020) the COVID-19 pandemic paralyzed economic, social and political activities. Similarly, the African Union Centre for Disease Control (AUCDC) officials described the pandemic as a continental war. According to Marivate and Combrink (2020), the learning institutions will never be the same given that 72% of students in more than one hundred and seventy seven countries were out of their learning institution by 1st April, 2020. That closure of learning institutions due to COVID-19 lock down, social distance and stay safe initiatives brought about new innovations for purposes of conceptualising the situation. Numerous approaches were used by the government to provide education to secondary school learners through broadcast media such as TV, radio, home schooling, online learning and distance learning (Asamoah & Kiddy, 2020).

According to a report by the United Nations Development Programme UNDP (2020), the COVID-19 Pandemic has massively disrupted learning systems affecting over 1.6 billion learners in secondary schools in one hundred and ninety nations. Closure of learning institutions affected 94% of students' population globally as well as 99% of students from low and middle income nations (UNDP, 2020). The crisis caused by COVID-19 has exacerbated existing educational differences and thus reduced the opportunities for most vulnerable populations living in rural areas, refugee camps persons living with disability in their endeavours to pursue for education (UNESCO, 2020b). The disruption within learning institutions continued to affect not only education worldwide but also access to essential services within the community that complicated health provision, increased poverty levels attributed to lack of food and brought about unemployment among other issues (World Bank, 2020a). In education, the

COVID-19 pandemic has brought about major challenges attributed to finances thus increasing the educational funding gaps.

Since March 2020, 185 countries and territories around the world have decreed the closure of Schools for more than a billion students, and the need for States to change learning models has become all the more pressing (International Monetary Fund, 2020a). The global shift means Africa must reposition its education ecosystems as part of this movement for change, in order to meet the major challenge of ensuring continuity in quality education for all (International Labour Organization, 2020). Several governments have turned away from traditional methods of learning so as to preserve educational continuity while limiting the spread of the virus. National strategies for responding to the pandemic have turned towards alternative forms of education; where teachers and students are no longer physically present (IMF, 2020b).

1.1.3 COVID-19 Pandemic Response in Education Sector Globally

Massive disruptions have been caused within the educational systems amidst COVID-19 pandemic globally (World Bank, 2020c). From the second quarter of the year 2020, the need arose for responding to the closure of learning institutions attributed to the higher percentage of children 86% in primary education having dropped out as a result of low develop human resources when compared to 20% in nations with higher human resources (Rahman & Matin, 2020).

The need to adopt technological advancement became very important amidst COVID-19 (Byun & Slavin, 2020). Despite the type of channelling being used in teaching and learning with TV, radio, online or even mobile phones, teachers

needed to embrace ICT innovation to keep students engaged at all the time. During the COVID-19 pandemic, teachers' were forced to divide their time on how they engaged with students, administration and teaching as well (Asamoah & Kiddy, 2020). A research conducted in Brazil indicated that 53% of instructors were prepared to teach remotely while 37% were nervous while less than 10% felt that they were tired and not satisfied respectively (Campos *et al* 2021). The pandemic has called flexibility among instructors and teachers. For instance, teachers in Estonia were given sovereignty to adjust their lesson plan and time distribution (Raudla & Douglas, 2020).

As much as the education sector has been involving itself in developing emergency plan to ensure learning, 8% of students in Africa have no access to computers and among those who can access computers, 82% have no internet services (UNESCO, 2020). The same report has established that in South Africa, social distancing brought about inequalities which might be grievous after the pandemic. While technological access and literacy is on the rise, the inequalities between students from the rich and poor have widened. Thus, while vulnerable Students are far behind their learning, their counter parts are far much ahead (Maryjacob, & Mukhtar, 2020).

In Kenya, the government had three approaches to aid in continued learning remotely. They included: sticking to social distancing, quarantine, and sanitizing (Baker, 2020), promoting the use of technology for remote learning (Githinji, 2020) Distributing learning materials and resources to disadvantaged students (Kenya Broadcasting Corporation, 2020).

Kenyan ministry of education coined an online platform that can get accessed by students through various TV and radio channels to safeguard against learning interruption within the country amidst of the pandemic. This system was coupled with a lot of challenges like: availability, accessibility and cost (Federal Ministry of Education, MoE, 2020).

The Nigerian ministry of education gave out a reopening protocol for learning institutions that called for social distancing among learners and teachers in classrooms, staff rooms dining halls and offices (Federal Ministry of health, FMOH, 2020). There were other exemptions where the two meter rule distance could not be applied as mitigations to the pandemic, for instance, the pre- primary children and those with special needs (Nigeria Educational Report, 2020). In such circumstances, assessments were to be carried out to put in place students, teachers and educational best interest at hand. This called for the need to organize learners into small groups in compliance with risk mitigations (FMOH, 2020). Learning institutions were required to put social distancing that would minimise transmission rates as much as other methodologies could be adopted to enhance flexible schedules within the learning process (FMOH, 2020). For instance, outdoor learning could be used to allow for better social distancing for students and teachers (FMOH, 2020).

In Nigeria, students were obligated to arrive at and leave school within different duration to avoid congestion. Additionally, learning institutions were to open gradually starting with different grades and the learning process was to be done in shifts in terms of attendance in a week depending on the number of lessons a student had in a week for those in secondary and tertiary levels. For instance,

junior secondary school students were required to attend classes on Tuesday and Thursday while those in primary went to school on Monday, Wednesday and Friday (FMOH, 2020).

The approaches that were taken for learning were fully within different environments both indoor and outdoor. Further, different media were used to pinpoint the importance of social media via printed resources, Television, Online learning and Radio. Students were needed to allocate their time in the learning process within their environment (FMOH, 2020). The major challenge that came with this approach is that it was difficult to maintain participation among groups (Capdeferro & Romero, 2012). This means that one on one learning can enhance and develop practice based environment for learning thus allowing participation of peers, teachers and self.

1.1.4 Teaching and Learning during COVID-19 Pandemic

The COVID-19 pandemic did not only put strain on each country's public health system, but it also affected the whole world educationally. People's lives changed as a result of stay-at-home orders, and many were overwhelmed by the amount of information that became available (Goldschmidt, 2020).

Teaching and learning during COVID-19 pandemic was largely conducted with ICTs, which comprise the internet platforms, apps, phones, and also databases, as well as underlying infrastructure, which were critical component of the already existing social order, especially during the global pandemic of COVID-19.

Amidst COVID-19, the use of Information and Communication Technology (ICT) in learning institutions became compulsory globally and took over the real learning

and teaching processes. This methodology, according to Zalat, Hamet and Bolbol (2021), proved to be the best teaching and learning methods that brought out the best in the students. Integration of ICT into learning process especially during COVID-19 pandemic showed its prowess due to its flexibility giving the students a chance to learn on their own while at home. This means that when proper online learning techniques and resources are available within the learning institutions, students might have a good learning experience. The use of ICT within the teaching and learning process amidst COVID-19 pose as the most modern method in educational system and thus provides students with extensive knowledge and information outside the class.

1.2 Statement of the Problem

The outbreak of COVID-19 pandemic has caused a lot of disruption in teaching and learning process and impacted negatively on teachers, learners and learning resources at all levels of education in Nigeria. Schools were closed, classroom teaching was suspended and remained at home in fear of the spread of COVID-19 virus in schools.

Given that schools could not remain closed forever, the Nigerian government considered re-opening them to allow teaching and learning to continue. The Ministry of Health came up with some prevention protocols and guidelines to curtail the spread of COVID-19 pandemic and at the same time ensure the continuation of teaching and learning in schools. These protocols include: virtual exchange between teachers and learners, social distancing, few number of not more than twenty students in a physical class, use of face mask, hand washing with soap

and water, and using out door and ventilated area for learning to minimize the spread of COVID-19.

Most schools in Nigeria seemed to lack technological capacity and resources to adapt to COVID-19 containment measures such as use of Radio, television and other online learning models. Despite the fact that schools had limited facilities and resources, the challenge they faced and the strategies they used to navigate the prevention protocols and guidelines had not been thoroughly researched. It is against this background that this study was designed to examine COVID-19 prevention protocols and guidelines and their influence on classroom teaching and learning in public primary schools in Adamawa State, Nigeria.

1.3 Purpose of the Study

This study aimed at examining COVID-19 pandemic prevention protocols and guidelines and their influence on classroom teaching and learning in public primary schools in Adamawa State, Nigeria.

1.3.1 Research Objectives

This study set out to achieve the following objectives:

- i. To examine the knowledge on COVID-19 prevention protocols and guidelines by teachers and learners in public primary schools in Adamawa State, Nigeria
- ii. To investigate the application of ICT integration in learning during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria
- iii. To assess the utilization of learning materials and resources during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria

- iv. To identify the challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic in public primary schools in Adamawa State, Nigeria
- v. To suggest measures and interventions of addressing COVID-19 pandemic and similar pandemics during teaching and learning in public primary schools in Adamawa State, Nigeria.

1.3.2 Research Questions

This study set out to answer the following questions:-

- i. How do teachers and learners understand COVID-19 prevention protocols and guidelines in public primary schools in Adamawa State, Nigeria?
- ii. How is ICT being integrated in learning during the COVID-19 pandemic in public primary schools in Adamawa State, Nigeria?
- iii. How are learning materials and resources utilized in the classroom during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria?
- iv. What are the challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic in public primary schools in Adamawa State, Nigeria?
- v. What are the measures and interventions used in addressing COVID-19 pandemic and similar pandemics during teaching and learning in public primary schools in Adamawa State, Nigeria?

1.4 Significance of the Study

The findings of this study may be used by the policy makers who wish to enact laws and regulations that will guide and ensure strict adherence to the COVID-19 prevention protocols and guidelines among teachers and pupils during teaching and

learning in public primary schools in Adamawa State and Nigeria at large. It will also enhance understanding as far as the application of ICT integration in learning during the COVID-19 pandemic among the public primary school community and suggest how it could be improved. In addition, the information from the study may help in increasing the utilization of learning resources during the COVID-19 pandemic in Nigerian public primary schools. Also, the study may help in identifying more challenges in the interaction between pupils and teachers in school in the COVID-19 pandemic context in public primary schools in the country.

The findings of this study would be useful to primary school teachers in Adamawa State who want to effectively implement COVID-19 prevention protocol measures like social distancing, wearing face masks, hand washing, and sanitizing among students while still facilitating the teaching and learning process. The data would enhance the capacity of pupils to understand and also respect various measures to be put in place. This is because primary school children may find it difficult to adhere to social distancing as well as wear face masks properly. Because the information would greatly contribute to a better understanding of the pandemic.

1.5 Limitations of the Study

Because of the COVID-19 preventative measures put in place by Nigeria's federal government, reaching out to some participants such as teachers was difficult due to the risk of in-person interaction with COVID-19. The researcher dealt with this by acquiring a COVID-19 free certificate from the Ministry of Health and giving it to the school, as well as ensuring that the mask was correctly worn at all times. When necessary, online interviews were considered, with full adherence to the COVID-

19 prevention protocols. Participants felt more secured as a result of this, and shared information willingly.

1.5.1 Delimitation of the Study

The study was restricted to pupils in senior primary school, health education and basic science teachers and head teachers in public primary schools in Adamawa State Nigeria. This means that pupils in junior primary school and teachers that are not teaching Health Education and Basic Science were not included in the study.

1.6 Theoretical Framework

This research was grounded on the Protection Motivation Theory which was coined by Rogers in 1975. Protection motivation theory is based on Expectancy-Value Theory (Rogers, 1975). The theory proposes that people protect themselves based on two factors: threat appraisal and coping appraisal. Threat appraisal assesses the severity of the situation and examines how serious the situation is, while coping appraisal is how one responds to the situation. The theory also postulates that expectancy and value are the two factors determining the likelihood of a person engaging in behaviour (Vroom, 1964). Expectancy concerns the probability that behaviour will result in the desired outcome, while value refers to the utility that an individual assigns to that outcome.

Protection motivation theory is used to evaluate, forecast, and encourage behaviours that are protective within the cognitive process which calls for a response to a situation that is threatening and at the same time calls for the need to cope with the situation. This might lead to either positive (adaptive) or negative

(maladaptive) responses which might threaten individual health (Sadeghi, Mazloomy & Fallahzadeh, 2019).

In this theory, threats in a situation are dependent on perceived severity, vulnerability and rewards. Where perceived severity refers to the harshness of the situation, vulnerability refers to chances of being infected. According to Yehudai, Bender and Grisenco (2020), when the perceptions (severity and vulnerability) are on the rise, then the rewards are low, thus bringing about a strong motivation towards involving in practices that promote healthy behaviours.

The Protection Motivation Theory posit that to acquire a protective behaviour, individuals need to cope with threat (response efficacy), individual beliefs and capability (self-efficacy) of acquiring protective behaviour and estimating the cost of a perceived behaviour against the cost of performing a protective behaviours also known as response cost. The variable in PMT theory response and self-efficacies ought to strengthen how individuals cope with a situation while the cost of response is there to minimise the negative behaviour (Sadeghi, Mazloomy & Fallahzadeh, 2019).

In Protection Motivation Theory, fear is used to predict and encourage preventive behaviours and explain the processes involved in threat and coping behaviour (Rogers, 1975). Threat, and coping appraisals can lead to adaptive or maladaptive responses, which are considered threats to one's health (Sadeghi, Mazloomy, Fallahzadeh, Rezaeian, Bidaki and Khanjani (2019).

According to Yehudai, Bender and Gritsenko (2020) the appraisal process in motivational behaviours are linked to situational threats and how to cope. As per

the literature provided for by the PMT theory, it is evidenced that one can predict how an individual can encourage or discourage protective behaviour (Morovati & Rouhani, 2008). The theory can be used in examining different behaviours in acquiring flue vaccination, cancer, SARS, HINI prevention behaviours (Moeini, Ezati & Barati, 2019). Therefore, COVID-19 pandemic has similar characteristics in terms of level of spreading in the society. This made the theory more appropriate for this study.

Protection Motivation Theory considers the motivation to adopt the recommended behaviour as an attitudinal state (attitude change) predicted by cognitive processes mediating the effect of fear appeals (Rogers, 1975). In line with expectancy-value theories, Atkinson, (1964), Edwards, (1954) and Rogers, (1975), broke down fear appeals into three crucial stimuli, namely the magnitude of the noxiousness of an event, the probability of event occurrence, and the efficacy of recommended response reducing the stimuli of the noxious event. For example, studies in health psychology examine fear stimuli, such as the strength and the probability of cardiac attacks, and the efficacy of a healthy diet and lifestyle in reducing the likelihood of cardiac diseases (Plotnikoff & Higginbotham, 1998).

This theory was significant to this study because both the theory and the study concerned on the adoption of protective behaviour and process involved in responses which are considered threat to one's health and learning process respectively. This study set out to establish the knowledge on COVID-19 prevention protocols by teachers and learners, the application of ICT integration in learning during the COVID-19 pandemic, the utilization of learning resources during the COVID-19 pandemic, the challenges in using learners centred pedagogy

during COVID-19 pandemic in public primary school in Adamawa State, Nigeria. The relevance of the theory to the present study cannot be over emphasised considering the fact that both the theory and the study encourages the adaption of protective behaviour and process involved in coping responses which are considered a threat to one's health, learning and process.

Adoption of protective behaviour and coping response mechanisms would be beneficial in limiting the spread of COVID-19 infections in the broadest sense. The effective management of the condition serves as a significant barrier to preventing the virus from spreading among schoolteachers and students. As a result, disease transmission occurs directly through person-to-person contact and polluted settings. The increased usage of ICT currently may be put to good use in ensuring that physical control and maximum social distance are maintained. However, more education and awareness are needed to prevent the disease from spreading further. This is due to the fact that persons who have already been infected, as well as the dangers of failing to follow the preventive measures, may result in more infections among children and their teachers in primary schools.

1.6.1 Conceptual Framework

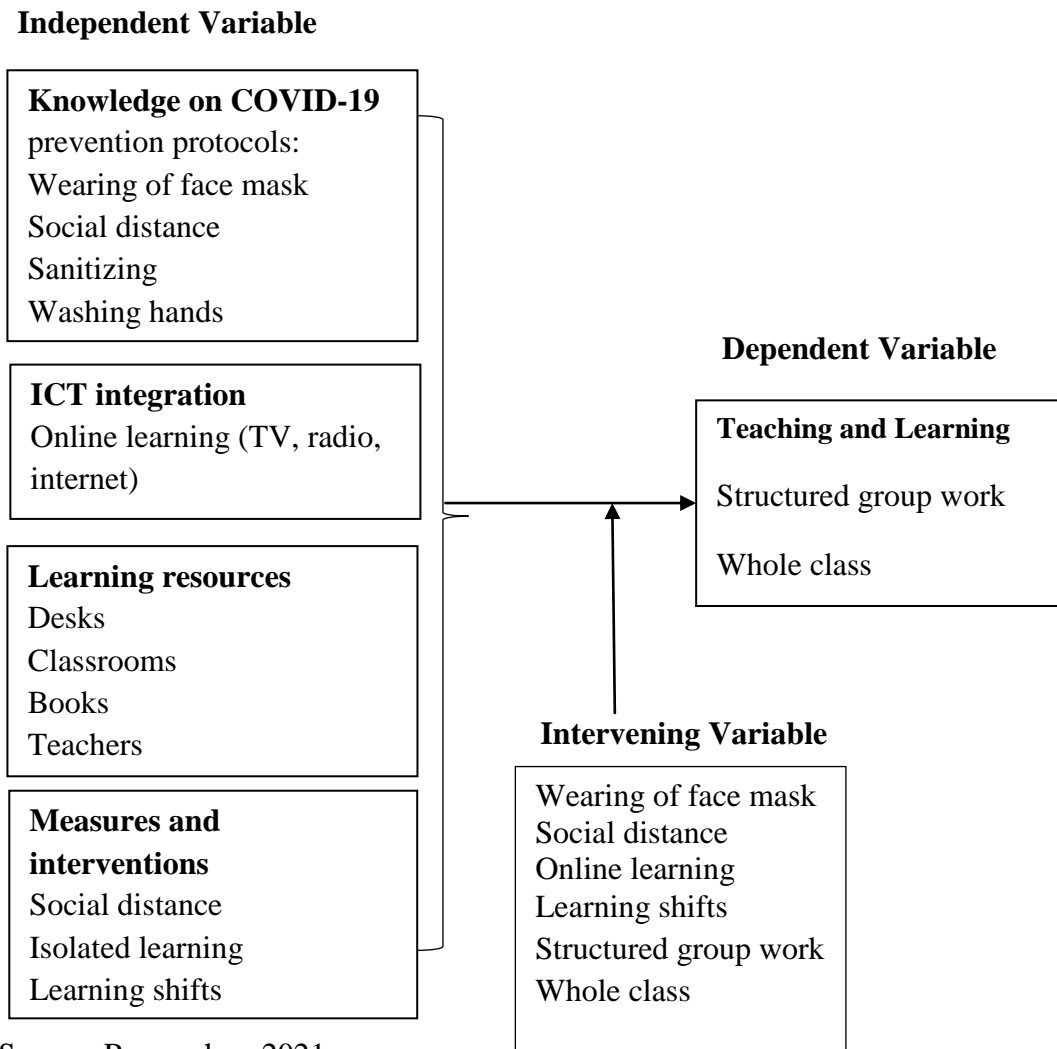
In this study, the conceptual framework aided in defining the various variables that were examined, their relationships, and how they relate to the research questions. The classroom teaching and learning was influenced by knowledge of the COVID-19 prevention protocols, ICT integration, learning materials, and measures and interventions. Intervening variables, such as structured group work, whole-class activities, isolating learning, and learning shifts, also had an indirect impact on the dependent variables.

Independent variables are attributes or characteristics that influence or affect the outcome of a dependent variable (Creswell, 2014). The independent variables of this study are knowledge of COVID-19 prevention protocols, ICT integration during the COVID-19 pandemic, learning resources during the COVID-19 pandemic, and measures and interventions during the COVID-19 pandemic.

The dependent variables are attributes or characteristics that are dependent on or are influenced by the independent variable (Creswell, 2014). The dependent variable of this study is classroom teaching and learning in public primary schools in Adamawa State, Nigeria. Intervening variables are also referred to as mediator variables. They are theoretical variables that are usually used by researchers to give an explanation of a relationship or cause between other factors in a study (Kombo and Tromp, 2006).

Intervening variables are usually associations, not observations, and they mainly help in explaining the links between the dependent and independent variables. As a result, this study included intervening variables such as age, particularly for teachers, climatic conditions such as when relative humidity is low (to about 50%) as well as low temperatures, underlying medical problems, survival of the COVID-19 virus on different surfaces, and exposure of surfaces to sun heat. Variables are meant to help in managing COVID-19 in relation to Intervening variables interfere with both dependent and independent variables.

Figure 1.1: Conceptual Framework



Source: Researcher, 2021

1.7 Operational Definition of Terms

Classroom Teaching and Learning: Teacher-student interactions that take place during learning aimed at promoting permanent positive behaviour change among students.

COVID-19 Prevention Protocols: Refers to the measures and practices aimed at minimizing the spread of COVID-19 between persons.

COVID-19 Prevention Protocols in School: Refers to the measures taken in School, both inside and outside the classroom, to stop the COVID-19 virus from spreading.

COVID-19 Pandemic: A disease caused by a novel corona virus known as severe acute respiratory syndrome corona virus 2 (SARS-CoV-2)

ICT Integration: Refers to the use of internet and technological tools by learning institutions to offer support to the online education system while maintaining the quality of education.

Interventions: Refers to various suggestions and assistance on how to prevent COVID-19 from spreading.

Learning Resources: Refers to materials used in the process of teaching and learning.

Pandemic Response: Measures taken by the education sector to prevent COVID-19 from spreading among students, teachers, and non-teaching personnel.

Prevention Protocol: Refers to the COVID-19 reaction policy steps to stop the virus from spreading throughout society

Public Primary School: A school for children between the ages of about five and eleven, funded and controlled by government.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

Apart from the introduction and summary, this chapter is divided into five sections. The chapter focuses on review of related literature. Literature related to the topic under study were reviewed thematically based on the objectives of the study. The chapter reviewed literature on the knowledge of COVID-19 pandemic prevention protocols and guidelines by teachers and learners, the application of ICT integration in learning during COVID-19 pandemic, the utilization of learning resources during COVID-19 pandemic, the challenges in the interaction between teachers and pupils and teachers during teaching and learning in the context of COVID-19 pandemic in public primary schools and measures of addressing COVID-19 pandemic during teaching and learning in public primary schools and finally the study will provide gaps.

2.1 The Knowledge on COVID-19 Prevention Protocols and Guidelines

Among the preventive measures amidst COVID-19 included social distancing, quarantine of population suspected to have been exposed to the virus, covering mouth while sneezing and coughing, washing hands frequently and avoiding touching the face at all times. The use of mask while in public space was also advocated for to reduce disease transmission.

Each day, new discoveries were made concerning the COVID-19 and its effects. Individuals who aged 65 and above and those with underlying conditionality such as diabetes and heart conditions were found to be more vulnerable to the disease. Constant research was carried out on how the virus can impact children given that

few reports had been uncovered and recorded amongst children. Thus, calling for the need to research on the impact of the virus on children since it seemed to largely affect the old and those with medical conditionality.

The first COVID-19 cases in Africa were reported in South Africa at the beginning of February 2020. Africa had 33,389 instances as of April 28, 2020 (UNESCO, 2020b). There were 4,793 cases and 90 deaths in South Africa. During the same time period, Tanzania recorded 299 infection cases and 10 fatalities, while Nigeria reported 1,337 infections and 40 deaths (Adegboye, et al, 2020). Most activity froze as a result of the COVID-19 epidemic, including social, political, economic, and other activities the situation in the education industry had never been the same, with over 1,268,164,088 (72 percent) of learners out of their institutions in over 177 countries (Marivate & Combrink, 2020).

The COVID-19 pandemic prevention protocols are measures done both inside and outside the classroom to stop the virus from spreading. Physical distancing at school, practicing health and hygiene, cleaning and sanitizing advice for classrooms, and intervening if a pupil appeared sick were all part of the program (UNICEF, 2021). Teachers' knowledge of the facts could not only protect the teachers but also help the students in understanding COVID 19, how it spread and how they could protect themselves and others. This was an important step in establishing classroom procedures and protocols, because students needed to understand in order for them to follow the rules.

Globally, Physical separation in the classroom was necessary for creating classroom ground rules in line with school administration procedures as well as

protocols defined by the each country's ministry of health and authorities. Maintaining a distance of at least one metre between everyone present at school, increasing desk spacing, limiting class mixing for school and after-school activities, staggering school start and end times. In addition, avoiding having all students and teachers together at the same time were all recommended measures (Baker, 2020). Increasing the number of teachers to allow for fewer pupils per class room was another important measure, where possible, advice against crowding at school pick-up or day care was to be observed. Moreover, the use of sign ground marking tape barriers and other ways to ensure one meter gap in queues around entrances was to be of great help (Baker, 2020). There were discussions on how to manage physical education and sports lessons, transfer lessons outside, or ventilate rooms as much as possible, and encourage children not to form large groups and socialize outside of school ground.

UNICEF (2021) explained on how to properly handle and store masks. König *et al.* (2020), urged that cleaning and sanitizing frequently handled objects and surfaces such as desks, countertops, doorknobs, computer keyboards, hands-on, learning materials, taps, phones, and toys on a daily basis were important in the prevention of the spread of COVID-19. Teachers could collaborate with students to come up with some entertaining and innovative methods and guidelines for avoiding high-risk and high-touch locations in their class or school (Hanawi *et al.*, 2020). For example, when walking up and down stairs, it was advisable to avoid touching the handrail, and keep classroom doors open to prevent touching door knobs. There was need to make a list of rules as a group and write them down on a flip chart that was to be displayed in the classroom later. Additionally, some amusing

leftovers/posters were to be hang in the hallways to encourage others to follow the sanitation regulations (UNICEF, 2021).

The COVID-19 prevention protocols refer to the measures and practices aimed at minimizing the spread of COVID-19 between persons. In this case, the study focused on the COVID-19 prevention protocols among schools and the teachers' and learners' knowledge on these protocols. Baker *et al.* (2018), indicates that lack of appropriate platforms and tools deprives students and teachers of an effective common space to learn and work and may lead to a less effective learning. His study was meta-analysis on whether teaching with PowerPoint Increase Students' Learning. The study focused on the learners and teachers knowledge on COVID-19 and prevention protocol. According to Lauermann and König (2016) school administrators can offer modified job responsibilities for staff at higher risk for severe illness who have not been fully vaccinated while protecting individual privacy. They majored basically on school staff while learners were given little or no consideration. As indicated by Krommer, Wampfler, & Klee, (2020), the interference of face to face learning by the pandemic as a result of the need for social distancing brought about a huge workload to teachers. Thus, changes called for the need to acquire new teaching methodologies and ensure that communication to students was done via online platform. This brought about lots of complexities as students asked more questions at all times. The study focused on challenges in face to face learning brought by COVID-19 pandemic. However, the current study will focus on seeking the awareness of teachers and learners on COVID-19 prevention protocols.

Learning institutions comprises of mixed groups of individual (those who have been fully vaccinated and those who have not been vaccinated). The basic primary schools constitute of children who are below 12 year of age and thus are not entitled to acquire COVID-19 vaccine. The findings by Al-Hanawi *et al.* (2020) show that respondents to her study had knowledge concerning COVID-19 pandemic with a score from the finding reporting 81.64%. 98% of the respondents knew the clinical signs while 96% knew that there were no ratified treatment for the pandemic (Adegboye, *et al.*, 2000).

DigComp and Ferrari (2013) established that the old educated females had more knowledge concerning the emerging communicable illnesses. Also, individuals with high income were knowledgeable as well. From the research respondents', educational level, income and age provided the basis of the findings. Further, the researcher called for the need to delegate the mass media so that they can target low income earners, less educated and the young individuals within the public so that they could provide information pertaining to their awareness concerning the COVID-19 pandemic.

Al-Hanawi *et al.* (2020), also indicated that the overall population had minimal knowledge concerning who and when to wear mask for purposes of COVID-19 prevention. A report by World Health Organization in conjunction with center for disease control, indicates that masks should be worn by the sick, suspected of COVID-19 and caregivers. The findings from this research called for the need to use and embrace social distancing as a way of preventing the virus from spreading.

According to Adegboye et al (2020) Germany had acknowledged the role of online teaching and learning within its society. The educational ministry and cultural affairs in its strategy paper on education and global world, required learning institutions to adopt digital capability in teaching students in all subjects. DigComp (2013) classified student's competencies as areas corresponding to the competency digital framework by the European. Lack of proper technical resources posed a challenge to the integration of ICT into learning and teaching systems (Adegboye, et al, 2020). And that proper infrastructures was to be made available to communities affected by digital inequalities (Chetty, Aneja, Mishra, Gcora & Josie, 2018). Bakhshi, Downing, Osborne and Schneider (2017) noted that digital capabilities are essential in performing daily task. Solving problems and creating digital information's. However, in the coming years, digital skills will be necessary at work while the technological skills that are connected to occupations will remain constant and thus for administrative purposes software use will be embraced (Chetty *et al.*, 2018).

Numerous countries were responding to the pandemic by trying to minimise the rate of infection using different methodologies such as contact tracing, quarantine as per the requirement with the health systems. (Caena & Redecker, 2019). Furthermore, most governments had banned mass gathering such as parties, weddings, political functions while putting pressure on hygiene as being mandatory while applying social distance, coughing and sneezing on elbow and regular washing of hands. For these strategies to be embraced, individuals were to be knowledgeable on COVID-19 epidemic, which called for change of attitude among individual practices (Campos *et al.*, 2021). These preventive measures

were crucial since there was no treatment for the disease and there was need to reduce the rate of transmission from one person to another.

Mobile messages and TV commercials were effective in promoting hand-washing behaviour in non-emergency settings (37), and messages leveraging prosaically (38) and deontological (39) motives could be effective in the context of COVID-19 (Campos et al., 2021). The findings suggest that the next steps for behaviour change messaging campaigns were to focus on reaching the most vulnerable.

2.2 ICT Integration in Teaching and Learning amidst COVID-19

According to Pisapia (2018), integration of ICT into learning refers to the use of the internet and technological tools by learning institutions to offer support to the online education system while maintaining the quality of education. The use of ICT in learning has been a challenge to teachers in assessing the right methodology of teaching (Byun & Slavin, 2020). As much as students might study on their own using soft skills attributed to the availability of ICT, creativity can be developed by teachers and tutors who use motivational approaches to help students reach their maximum potential.

Online education is not a pastime. When done well, it's a finely refined skill that's been practiced over several semesters, just like classroom methods and skills. It is unfair to the teacher or the students to take an online class without any preparation. There were just a few faculty members who were experts in online instruction at the time of this study, and these people were made available to struggling faculty for help after a hard couple of weeks. As the semester continued, more tools were made available to faculty to help them improve their skills to a level acceptable to students and teachers. However, the notion of

teaching online or mostly online all of the time was intimidating and for me primarily unsatisfying (Paul & Jefferson, 2019).

Teachers are obligated to understand the different capabilities students possess and thus teaching and learning styles are very important thereby calling for the need to use best practice methodologies within curriculum assessment as an approach to identify different learning models as per VARK (visual, auditory, writing/reading and kinaesthetic) model (Morata, 2020). The COVID-19 epidemic has disrupted learning and teaching endeavours globally and especially after the declaration by the WHO as a worldwide pandemic resulting to closure of learning institutions and calling for the adoption of online learning within the educational system for purposes of minimising the rate viral transmission (UNICEF, 2021). Being that online learning seemed to be the best method at hand upon the pandemic, it was seen to limit the benefits of face to face learning and social connectivity for purposes of surviving amidst the pandemic. The use of smart phones and internet had been on the rise in education, thus calling for the need to embrace and strengthen the system.

According to Pisapia, (2018), Integration of ICT refers to introducing, reinforcing supplementing and extending ICT skills. A research conducted by Morata (2020) reviews the integration of ICT into the learning and teaching process amidst COVID-19. In her research she established that COVID-19 has increasingly used technology globally. This scenario is different from the demography at Nigeria Adamawa State. COVID-19 situation not only requires skill set and knowledge, but as well requires resources to attain a successful teaching and learning process

on the online platform using software such as Skype, Zoom and YouTube and applicable expertise (Lauermann & Konig, 2020).

Adopting ICT in teaching and learning institutions gives more chances for learners and tutors to work well in the digital age (Lawrence & Tar, 2018). According to Danilo (2020), the research was not specific on the type of learning institutions as well as the purpose. Thus this research aimed at focusing on the integration of ICT in the learning institutions amidst COVID-19 with major emphasis on Adamawa State's primary schools in Nigeria. Research conducted by Casillas, Cabezas, Sánchez, and Texeira (2018) on significance of technological skills on students learning for purposes of increasing students' capabilities amidst technological advancement did not assess how ICT could be integrated amidst the COVID-19 epidemic thus this research filled the gap.

According to Ocana et al (2020), inaccessibility of technological resources act as a challenge in the implementation of ICT into teaching and learning process. He calls for the need to acquire infrastructure in order to cater for the inequalities linked with the digital divide. Bakhshi *et al.* (2017) established that technological skills are used in solving problems and providing information. This is evidenced in Ocana *et al.* (2020) and Bakhshi *et al.* (2017) as they put more emphasis on the need to embrace the use ICT within teaching and learning processes. Their research on the other hand did not examine how ICT could be influential in learning and teaching process amidst COVID-19 epidemic.

According to a research by OECD, 36% of teachers in secondary school participate in online courses. This number is less when compared to number of teachers who

participated in individualized courses. This is the scenarios in most third world countries with exception of Shanghai and Korea where more than 90% of teachers undertook online development courses. (Byun et al., 2020). These practices are common in Underwriters Laboratories, Mexico, USA, Israel, Russia, Austria and China where the contribution was more than 50%.

The COVID-19 pandemic needed teachers to acquire not only the knowledge but also the expertise in order to have successful online teaching process. Thus, much emphasis had to be put on the self-efficacies by teachers to ascertain for their competencies (Lauermaun & König, 2016). Bandura (1997) states that self-efficacy enables teachers to succeed, since their perception as a result of efficiency might influence their action on the efforts put across in their line of duty thus showing their prowess amidst the barriers (Tschannen-Moran & Hoy, 2001). Self-efficacy by teachers therefore is regarded as a crucial resource for purposes of adopting to the online teaching and learning platform amidst Covid 19 epidemic.

Remote learning had become the basis of the educational system amidst COVID-19 pandemic and thus educational institutions had to seize the opportunities that came with technology to bridge the educational gaps. Digitilization offers a solution to the current problem and thus individuals have to learn how, where and when they learn. It can enable students and tutors to access specialized resources that are beyond textbooks and to those that come in different format that would allow to bridge the created gap. Working hand in hand with tutors, and digital learning systems will not only impact knowledge on the students but can also bring about a shift on the learning methodology (Katz, 2018).

According to Ocana et al (2020) inaccessibility of technological resources act as a challenge in the implementation of ICT into teaching and learning process, he calls for the need to acquire infrastructure in order to cater for the inequalities linked with the digital divide. Morata (2020) on the other hand opines that the COVID-19 pandemic has called for the need to use technology due to the significance of ICT resources within institutions today. Further, other internet platforms such as the social media have enabled people to share information and in case all students can acquire laptops and mobile phones (hardware's) and software's and internet then learning could be continuing normally (Katz, 2018).

In a research to investigate on the link between ICT, pedagogy and ethics among Spain students, Daz et al (2016) observed that integrated use of ICT takes place when students understand and acquire operations knowledge. Li (2018) on the other had established that ICT which is linked to technology use with the learning institution wholesomely is not a function specific but a development study on issues influencing integration and adoption of ICT within the learning and teaching processes.

This offers more openings for teachers and tutors for purposes of working together within the digital era (Lawrence & Tar, 2018). It's important to note that the relationship between globalized technological skill in addition to the digital framework aims at providing knowledge for skilled workers. Thus, research provides a review of literature from one thousand five hundred and ninety two articles where 75 percent gave a predefined criteria. The result gathered indicated the importance of expertise within the globalized era. In response to increasing demand for online classes, an educational technology in Bangladesh known as

BYJU's has been offering free classes and thus have seen an increase in the number of students embracing the platform. (Klieme, 2020).

Casillas et al (2018) saw the importance of technological skill for purposes of facilitating student learning and to enhance their performance when new technologies emerge. In regards to technological knowledge, a research by Mateus and Suarez (2017) indicated that 45% of the participants were advanced while 39.2% were in the intermediate while 11.7 were at the basics. Suárez et al. (2019) established that performance within organization improved with the advent of new technologies attributed to the link between the communication systems.

Van-Laar *et al.* (2018) affirmed that there is a connection between ICT integration and technological skills as a result of COVID-19 pandemic, in the research students were allowed to learn how to use technological tools thus bringing about compatibility with the online program. The analysis indicated that student compatibility enhance easy adoption of ICT into the learning and teaching process. Much emphasis were put on the attributes of technology versus the task. Lin *et al.* (2014) on the other hand indicate that innovation should be embrace for purposes of fitting into the situation and saving cost as well.

According to Chauhan (2017) digital transformations have opened up for opportunities within the learning and teaching process. The use of ICT has become prevalent in secondary school in the recent years. Despite its potential on learning and teaching process, presence of computer hardware is not necessary in achieving successful outcome (Li & Ma, 2010). Students and teachers need to acquire appropriate knowledge and skills. As much digital literacy has an added values,

competencies among students might not be obtained. This is per ICILS research where one third of students didn't attain the second level of proficiency which is an under achievement. According to European commission report in Germany computer studies were taught to apply those instruction to students within secondary schools. But this study focused on implementation of ICT into the learning and teaching process amidst COVID-19 pandemic at Adamawa State public primary schools.

Morata, (2020) stated that as a result of the COVID-19 pandemic educational institutions by decision of the Government to protect the welfare of pupils and students from the spread of the COVID-19, were obliged to close and continue with online learning. The logistics of implementing online learning are determined by the schools, the teachers and the learners meaning there was no strict guideline on which online platform was to be used by educational institutions. With a variety of online forms, some teachers and learners showed preferences for social networks, some had preference for online learning with Zoom or through Google Meet.

Wambui, Nyambura and Muriuki (2022) conducted a study to determine how ICT integration impacted on classroom instruction in higher education institutions in the light of COVID-19 outbreak. The findings showed how ICT integration was highly advantageous for both teachers and students. Teachers who are well-prepared with ICT tools and resources are one of the critical components in the success of technology-based teaching and learning, according to study. The researcher's findings indicate that for teachers and students to get the most from ICT adoption, the first phase must be effective.

Kisirkoi and Kamanga (2022) conducted a study on Lessons from online learning during COVID-19 pandemic for building education resilience in secondary schools in Kenya. The objectives were to find out: the technology devices used by teachers and students to learn; whether the teachers and the students had knowledge, skills and attitudes to engage in online learning; how teachers and students acquired knowledge and skills to use the technology devices and whether there were any interventions provided to support them. The findings established that few students managed to engage in online learning without adequate support and other technology devices were used for learning

2.3 The Utilization of Learning Resources during the COVID-19 Pandemic

Utilizing resources is an important obligation of learning institutions. This obligations include proper use of learning materials, availability of infrastructure such as building, number of students in relation to building and human resource within the teaching process (Seels & Richey, 1994).

Numerous publishers and well-wishers have been providing teaching and learning materials for free. This means that there are more learning resources through Learning Management Systems (LMS) to support learning through Problem Based Learning (PBL) curriculum integration. Morata (2020) posits that, during COVID-19 pandemic, courses were conveyed to students for purposes of attaining a learning that is self-centered via online platform thus their study did not assess utilization of learning material during the pandemic. Findings by Huber and Helm (2020) established that PBL pupils worked in group to develop and construct knowledge. Of which the activities were procedural and done using online facilitation. This research examined how schools can work with health officials to

prevent COVID-19 transmission. However, this current study examined how learning materials are utilized amidst the pandemic.

The teaching platform used in Australia includes the use of Moodle's, LMS and cloud solution which is aided by ICT companies such as Google and Microsoft. This platform that was developed by the ministry of education enables the nursery school children to learn and exercise at home thus enabling them to enlarge their knowledge. Presently, different publishers and well-wishers have provided learning resources content with no charges (Jager-Biela *et al.*, 2020).

Problem based learning requires pupils to work in groups to develop and construct knowledge. Of which the activities were procedural and done using online facilitation. Institution of higher learning on the other hand was facilitated to teach at different academic levels for instance undergraduate in deontology (Huber & Helm, 2020). Further while this phenomenon is not new, increased e-learning has not conceptualized globally and especially among developing countries attributed to uneven dispersion of cultures across different countries.

2.4 The Challenges in the Interaction between Pupils and Teachers during Teaching and Learning during COVID-19 Pandemic

Leaners- teachers' interaction is a process of using interactive strategies to engage the students to develop their abilities. This educational approach helps students to develop skills such as decision making, problem solving, team work and presentation skills that are relevant to the current labor needs (Caena & Redecker, 2019). Leaner- teacher interaction in education is important because it empowered students to take ownership of what they learn by focusing on how the

new knowledge assist to solve the problems or add value. Instead of simply pouring information over the child mind, the teacher presents the students with an issue and guides the classes as they build a solution. Students "discover" the new information and come up with a solution instead of passively waiting for teacher's answers. Thus, developing the skills of exploring problems and making decisions to solve them is extremely valuable for quick-paced companies where solutions are needed as soon as possible (Blomeke, 2017). An interaction in education allows students to sit in group to interact with their teams through discussions and group activities. This approach encourages students to sit in group for collaboration. By sitting with their other peers, students discuss, work together, and learn to deal with others and many other daily tasks that will eventually help them to become team players. Interaction creates opportunities for students to teach each other, answer their peers' questions and present the results of their works.

In the era of the COVID-19 pandemic prevention protocol, learner- teacher interaction is fundamental since its main characteristics are team work and group collaboration. Students are allowed to sit with other peers for discussions, among others. Teachers can be trained in this approach so that they can apply the principles and provide their students with a better learning experience. This method does not require technology or special resources that schools from communities in need may not have; in fact, students are the most valuable assets in the classroom (Caena & Redecker, 2019). Thus, the COVID-19 prevention protocol discouraged face-to-face contact, group sitting, and group activities, and it required technology and special resources for learning to be effective. The current study investigated the challenges faced in the interaction between pupils and

teachers in teaching during COVID-19 pandemic in public primary schools in Adamawa State, Nigeria.

Zalat, Hamed and Bolbol (2021) urged that learners' the interruption within the educational calendar have negatively and affected vulnerable students who don't have learning opportunities at their homes. Their presence at homes further aggravate the parent's economic status by caring for their children who could have otherwise been making use of school meals. The study focused on learner's presence at home and how it poses challenge to their academic performance. However, the current study will focus on challenges in the interaction between pupils and teachers during COVID-19 pandemic. According to Jager-Biela, Kaspar, and Konig (2020), parents have to get involved with their children learning process while the ministry of education will have to find way of mitigating the challenges that comes with the use of technology. All these are undertaking to ensure the country education is on the move. The study focused on how to improve and strengthen education system through assessing the gaps in using technology among learners in schools. However, the current study focused on challenges in the interaction between pupils and teachers during COVID-19 pandemic. In USA the inequalities between the rich and poor were grievous. From the report students who were 15 years old and less privileged 25% opined that they had no computer and also lacked connectivity when compared with their rich counterparts. In some institutions, government for instance in Australia, South wales have provided ICT resources.

Eickelmann and Drossel (2020) conducted a study with a focus on USA and Australia whose demographic characteristics are different from that of Nigeria more so in Adamawa State. In the United Kingdom, the representative of a training authority noted a cultural reluctance to embrace online learning in the field of TVET. The study focused on TVET learning institutions while the current study focused on public primary schools in Adamawa State of Nigeria since the children in primary school pose a great challenge in integration of ICT in learning.

The interruption within the educational calendar have negatively and affected vulnerable students who don't have learning opportunities at their homes. Their presence at homes further might aggravate the parent's economic status by caring for their children who could have otherwise been making use of school meals (Zalat *et al.*, 2021).

According Egypt ministry of education, the way forward towards the pandemic were in two ways. First the students who were transitioning were to continue learning after three weeks. On the other hand the TVET institutional adapted very first to the situation and thus were able to turn online means of learning (Eickelmann & Drossel, 2020). In USA the inequalities between the rich and poor were grievous. From the report students who were 15 years old and less privileged 25% opined that they had no computer and also lacked connectivity when compared with their rich counterparts.

Numerous states have been in a position to use technological skills via T.Vs and radio for the purposes of supporting educational endeavors amidst the emergence of the COVID-19 epidemic. (Krommer *et al.*, 2020). Parents have been obligated

and thus have been held responsible for their children educational endeavors despite the huge gap and challenges brought by the pandemic. this have called for the need for parents as well as the government to find a way forward to sustain education through providing for connection through advancement of digital technology.

Jager-Biela *et al.*, (2020) study emphasizes on the parents involvement on their children education process and Government understanding of challenges in learning. The current study focused on the interaction between pupils and teachers during COVID-19 in public primary school in Adamawa State.

2.5 Measures and Interventions of addressing COVID-19 Pandemic during Teaching and Learning

According to Huber and Helm (2020) it is prudent to encourage students to observe COVID-19 prevention protocols such as hand washing practice or sanitizing when they have touched learning resource such as books and also coughing and blowing their nose using the appropriate methods (Green & Thorogood, 2014). In cases where students sneezes on their hands, they are instructed to wash their hands using soap and water and sanitize. In case it has been done on a tissue, the tissue is to be disposes and wash hands as well. The study was a general study whose findings cannot be applicable to primary school learners in Adamawa State, Nigeria.

Inspire pupils to involve into hand washing practice while sanitizing at the same time always, when getting into and departing from class, when they have touched learning resource such as books and also coughing and blowing their nose using

the appropriate methods (Huber & Helm, 2020). In cases where students sneezes on their hands they are instructed to wash their hands using soap and water and sanitize. In case it has been done on a tissue that the tissues is to be disposes and wash hands as well. It is very important to make the ideas normal and thus it becomes a routine. Despite most learning institution's having opted to use digital innovation there is need to develop digital literacy among teachers (König *et al.*, 2020).

Since digital technology is important to teachers, numerous teachers still lack the expertise and knowledge to use this innovation to facilitate teaching and learning online. Again numerous students are unable to use digital technologies on their own (Klieme, 2020). Thus many teaching have been obligated to play double roles by training students on how to use the technology while still handling lessons.

2.6 Summary of Research Gaps

This study has identified several research gaps. The uniqueness of the study lies in the fact that previous studies conducted by Zalat, Hamed and Bolbol (2021), König *et al.* (2020), Krommer et al (2020), Morata (2020), Fraillon et al (2020), Al Hanawi *et al.* (2020) and Jager-Biela, Kaspar, and König (2020) etc. did not address on the knowledge of COVID-19 Pandemic prevention Protocol and Classroom teaching and learning in Public Primary Schools. For example study by Al Hanawi *et al.* (2020), center on clinical symptoms and ways of preventing the infections. Among all the literatures consulted none of the authors carried out a study on knowledge of the COVID-19 prevention protocol into public primary schools, similarly no single study focused on classroom teaching and learning in public primary schools. Therefore, the current study focused on the COVID-19

Pandemic prevention Protocol and Classroom teaching and learning in Public Primary Schools in Adamawa State, Nigeria.

Findings by UNICEF (2021), dealt with the benefits of e-learning on students, but none of the studies carried on ICT integration in public primary schools in Nigeria. Ocana (2020), focus on the need for provision of ICT resources in teaching and learning. However, the studies did not take into account the COVID-19 pandemic as a major factor for integration into teaching and learning. The current study focused on ICT integration in teaching and learning during the COVID-19 pandemic in Adamawa State, Nigeria. Studies by Jager-biela (2020), stressed the provision of free books and availability of learning resources, but did not carry on the utilization of learning resources during the COVID-19 pandemic in public primary schools which the current study aimed to address.

Konig *et al.* (2020) and Krommer et al (2020) studies focused on the United States of America and Australia respectively, whose demographic characteristics are different from those of Africa in general and Nigeria in particular. However, the current study focused on challenges in using learner-centered pedagogy during the COVID-19 pandemic in Adamawa State. But the studies are silent on the challenges of using learner-centered pedagogy during the COVID-19 Pandemic, which the present study focused on. Studies by Krommer, Wampfler, and Klee (2020) focused on the meaning and significance of outdoor learning, while the current study focused on the measures and intervention of addressing classroom pedagogy during the COVID-19 pandemic in public primary schools in Adamawa State. A related study by Krommer, Wampfler and Klee (2020), carried out in Canada, indicated that an educational model of learning and teaching could

increase student motivation, Reduce anxiety and enhance students' sense of community. The study was carried out in Canada, while the current study was conducted in Adamawa State, whose characteristics differs from those of Nigeria, and thus cannot be generalized.

The current study looked at prevention protocols regarding COVID-19 pandemic, with key areas for improvement in the communication of information regarding symptoms and risk, and recommendations on ways to support teachers and pupils in Adamawa State during the implementation of mitigation measures.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

This chapter focused on research design that includes the methodology. It presents the study area, as well as the targeted population of the research, sampling procedure, sample size, and also the data collection instruments for the study contained in this chapter. The chapter also contains the validity of data collection tools, reliability, and pilot study. Moreover, strategies for collecting data together with analysis are described in this chapter as well. Finally, this chapter presents ethical, logistical, and logical considerations for the research.

3.1 Study Design

This research made use of a mixed methods approach. As explained by Creswell (2012), this approach is important since it provides a thorough analysis of the research problem and, hence, it adds value to the findings of a study. Creswell and Clark (2011) argue that, a mixed methods approach is an improved design that can be used, especially when researchers want to do data collection and analysis for both qualitative and quantitative information and it provides a better and deeper understanding, by providing a full picture of the research that can enhance description and understanding of the phenomena.

A mixed methods approach is very useful for research since it allows relevant design variables, which usually guarantees opportunities to achieve the set objectives of the research. Therefore, mixed method was deemed suitable for this study because of the researcher's intention to probe deeply, the problem under investigation. The method allowed the researcher to obtain quantitative data that

enabled him to set up the assessment of COVID-19 pandemic prevention protocols and classroom teaching and learning in public primary schools in Adamawa State, Nigeria.

3.1.1 Variables

Variables are attributes of persons or institutions that measures what have been observed in the study. They are ideologies by the researcher that aim at collecting data pertaining to the research (Creswell, 2012). Independent variables are characteristics that affect results of the study. Thus as per this study, the independent variables are knowledge on protocols for COVID-19 prevention, ICT implementation in teaching and learning, and availability and utilisation of learning materials amidst COVID-19 pandemic. Dependent variables on the other hand, are characteristics that influence independent variables and thus they include classroom teaching and learning in public primary schools in Adamawa State, Nigeria. Intervening variables are also referred to as mediator variables. They are theoretical variables that are usually used by researchers to give an explanation of a relationship between other factors in a study (Valdebenito *et al.*, 2020).

Intervening variables are usually associations, not observations, and they mainly help in explaining the links between the dependent and independent variables. As a result, this study included intervening variables such as age, particularly for teachers, climatic conditions such as when relative humidity is low (to about 50%) as well as low temperatures, underlying medical problems, survival of the COVID-19 virus on different surfaces, and exposure of surfaces to sun heat. Variables are meant to help in managing COVID-19 in relation to Intervening variables interfere with both dependent and independent variables.

3.1.2 Research Methodology

This study made use of both qualitative and quantitative methods while the design was cross-sectional survey research design. A stratified random sampling method was used in the selection of the participants in the study. Data collection was done with the help of a structured questionnaire, an interview schedule, focus group discussion and observation. Both qualitative and quantitative data was collected and analyzed. Data analysis was done by the use of the Statistical Package for Social Science (SPSS) version 20. Quantitative data was presented by the use of descriptive statistics such as frequencies and percentage. Qualitative data was analyzed and presented thematically, narratively and qualitative content analysis was done in line with the research objectives.

3.2 Study Locale

This study was conducted in Adamawa State, Nigeria. Adamawa State was created out of Gongola State in 1991 with Yola as its capital. The state is located at 9.3265⁰ N and 12.3984⁰ E, has a land area of 36,917 km², and borders by Borno and Gombe States to the north and west, respectively. It is bordered by the national border with Cameroon (Tukur, 2015).

Adamawa State was chosen for this study because it was among the states that experienced high rates of COVID 19 pandemic with cases of 1,157 in 2021 when compared to other states like Borno which recorded 81, Yobe 19, Taraba 25, Gombe 30 and Bauchi 70 cases of infections within the same year (NCDC, 2020). Primary schools were chosen because of their vulnerability in the society and lack of resources and awareness towards adhering COVID-19 Pandemic prevention protocol (FMOE, 2020). Ibrahim and Uchechi (2021), explained that it is obvious

that the COVID-19 pandemic greatly affected the system of educational globally without exception of Nigeria. This led to the near total closures of educational institutions including public primary schools. In addition, many of the public schools had high populations which was a concern as far as the pandemic is concerned. Based on this knowledge therefore, the researcher found this location suitable for a study of this nature.

3.3 Target Population

According to Cooper and Schindler (2011), population refers to entire set of units or entire group of objects for which the study data is to be used to make inferences (Kombo & Tromp, 2011). The target population, according to Mugenda and Mugenda (2013), is a part of the population drawn from the entire universe. The target population for this study comprised all the public primary school pupils (309,434), and head teachers and teachers (37800) in Adamawa State, numbering 347,234. Public primary school pupils were chosen due to their high vulnerability in society and high level of exposure to COVID-19.

Lack of awareness and resources for primary school pupils may cause a major challenge in adhering to the COVID-19 prevention protocols. Public primary schools are very crowded, and this, hence, increases vulnerability to the disease. Adamawa State was chosen for the study because it was one of the states that experienced high COVID-19 cases (Ibrahim & Uchechi, 2021). The researcher used the target population of public primary school head teachers numbering 1,890 and subject teachers numbering 35,910 and primary school pupils numbering 309,434 distributed across the 21 local education authorities according to Adamawa State Universal Basic Education Board (ADSUBEB, 2021).

Table 3.1: Indicating the Target Population

Population of Head teachers	Population of subject teachers	Population of pupils	Total
1, 890	35,910	309,434	347,234

Source (ADSUBEB, 2021)

3.3.1 Sampling Techniques

This study employed multistage sampling techniques which include stratified random sampling, simple random sampling, and also purposive sampling. The study used stratified random sampling to select four (4) schools from each of the five educational zones in Adamawa State, to form a total of 16 schools for the study. To begin with, schools were grouped into three strata in each of the four zones that included mixed-sex schools, boys-only schools, and girls-only schools. In each of the four strata, the names of every single school was written on a piece of paper, folded and placed in a bowl. The bowl was shaken and a school randomly picked to be included in the sample.

The study also made use of a purposive sampling method to select head teachers. Purposive sampling was used because it meets with the research purpose of studying COVID-19 pandemic prevention protocols in the area of teaching and learning primary school. A study by Jen (2013) argues that purposive sampling (also referred to as judgment sampling) is used, especially when one has got an intended respondent's choice and the characteristics that they possess. According to Patton (2015), purposive sampling is used mainly in qualitative research to identify and select cases rich in data for perfect resource utilization. In addition, Mugenda (2013) points out that purposive sampling is appropriately used to gather data for

opinions, attitudes, and perception surveys. In this case, therefore, the sample was obtained purposively in regard to COVID-19 pandemic prevention protocols and classroom teaching and learning in public primary schools in Adamawa State, Nigeria.

The researcher purposively selected 16 head teachers from the 1890 total population of head teachers in Adamawa State. The stratified sampling technique enabled the researcher to ensure that a group of the target population was fairly included in the sample of the study. Additionally, the method ensured that a more accurate sample was obtained from the target population. Orodho (2017) explains that stratified sampling usually ensures that proportionate representation of sub-strata in a population sample is obtained.

Simple random sampling technique was also used for selecting primary school teachers from each selected stratum. The researcher further stated that, simple random sampling enables the researcher to have all respondents with a similar probability of getting involved in the study. In this study, two (2) teachers from each school were selected for an interview, the teachers selected are basic science and physical and health education teachers, thus making a total of (32) teachers in all. This is because the teachers are the ones responsible for handling lessons on basic science and physical and health education in primary schools in their respective Local Education Authorities.

The researcher used a simple random sampling technique for selecting primary school pupils. The adoption of the simple random sampling technique for the selection of primary school pupils was because of the fact that it enables the

researcher to have all respondents with a similar probability of getting involved in the study. In this study, 10 pupils were randomly selected from each of the 16 sampled schools making a total of 160 pupils. Further break down shows that 3 pupils were selected from primary 4, four (4) pupils were selected from primary five and 3 pupils from primary six (6).

3.3.2 Sample Size

Twenty-one (21) Local Education Authorities (LEAs) were grouped into educational zones. Each educational zone was regarded as a stratum, and all the schools were grouped into five (5) strata. In selecting the study sample, the researcher used the stratified random sampling method to select four (4) schools from each stratum, hence a total of sixteen (16) schools studied. The researcher used sixteen (16) schools for the study, (16) head teachers for questionnaire, one hundred and sixty (160) pupils for FGD, thirty-two (32) subject teachers for FGD, and sixteen (16) classes for classroom observation as a sample for the study.

Table 3:2: Indicating Educational Zones and Sample Size

S/N	Educational zone	Schools selected for the study	Pupils' population taken for FGD	Teachers' population taken for FGD	Classes selected for classroom observation	Head teachers population taken
1	Gombi zone	5	35	8	4	5
2	Mayo Belwa	4	40	8	4	4
3	Numan zone	4	45	9	4	4
4	Yola Zone	3	40	7	4	3
Total	4 zones	16	160 pupils 87 (males and 73 females	32 teachers	16 classes	16 head teachers

Source: Researcher 2021

3.4 Research Instruments

This researcher used both quantitative and qualitative methods of data collection. These included: Questionnaire, interview schedules, FGDs and observation.

3.4.1 Questionnaires for Head Teachers

According to Ozuagulu (2008), a questionnaire contains a series of questions that are designed to obtain information from the selected respondents. It is composed of both structured and unstructured items. This study set out to collect quantitative data from head teachers using questionnaires.

On the other hand, a questionnaire is a unique tool that can have a lot of details, and so it allowed collection of data broadly on the variables of the study (Orodtho, 2009). Ozuagulu (2008) further observed that questionnaires are useful, especially when dealing with literate respondents, as was the case in this study. Mugenda and Mugenda (2013) explain that closed-ended questionnaires have got one main advantage since they are easy to administer, analyze, as well as economical as far as time is concerned.

The researcher organized questionnaires into categories of 6 divisions, whereby section A contained the general information about respondents, such as age, gender, teaching experience, and level of education. In sections B to E, the researcher used semi-structured interviews to collect data from the sampled head teachers. Creswell (2014) points out that an interview schedule is used by researchers to record answers given out by respondents in studies. It enables researchers to collect data that is needed to achieve the objectives of the study.

3.4.2 Interviews for Teachers

In this study, interviews were used to gather qualitative data from teachers since they enabled the researcher to give an explanation of the quantitative results. The researcher interviewed and made in-depth conversations where questions were asked and probing made to solicit more information on particular aspect of the objectives of the study. The interviewers posed alternating series of questions as well as prompts which encouraged participants to expand on their answers. The interview schedule was used for collecting in-depth information from teachers in all the sampled schools. The interview was chosen for teachers because they are responsible for managing the teaching and learning in public primary schools. Interview schedule solicited information on all the objectives of the study.

3.4.3 Classroom Observation

Classroom observation is a way to gather data on people, events and settings by use of body senses such as: hearing, touch, smell, taste and sight. Observation can be overt (subjects know they are being observed) or covert (subjects do not know they are being watched) (Center for Disease Control, 2019). The school and classroom observation was used in the systematic noting and recording of events, behaviors, and objects in the study area. The researcher observed keenly and took note of the situational happenings, appearance, and activities of both the teachers and pupils on their arrival and within the school, during assembly, during their classes, how teachers and pupils handled instructional materials during teaching and learning, among other things. This instrument solicited information from all the objectives of the study.

3.4.4 Focus Group Discussion (FGD)

A Focus Group Discussion is a method that brings together a group of people to discuss and answer questions in a moderated setting. The group is chosen due to predefined demographic traits, and the questions are designed to discuss and shed light on a specific topic (Creswell, 2012). FGD in this study was useful in giving different sentiments pertaining to primary school, thereby enhancing data collection for the research. The FGD was used in collecting first-hand information from the pupils in the various sample schools. The FGD was used voluntarily with the pupils in the study area this encouraged pupils to open up and share their experiences. The researcher discussed with a set of ten pupils in each sample school the questions for the FGD. The FGD comprised open-ended questions that addressed all the objectives of the study.

3.5 Piloting the Study

Tools for data collection were pretested on a selected sample that is similar in terms of characteristics to the actual sample that was used in the research. The instruments were piloted on primary school teachers, pupils and head teachers from public primary schools in the same state. According to Tichapondwa (2013), a pilot study should use a group of respondents, and this group needs to be part of the population whose attributes and characteristics are identical to those of the target population. However, the pilot group should not be included in the sample for the actual study.

Orodho (2017) observes that piloting of research instruments is important because it enables the researcher to detect weaknesses in the instrument of the data collection, it reveals to researchers' vague questions or whether the tool will be able to provide data that is needed, and it reveals to researchers if the proposed techniques of analysis

are appropriate. Pretesting of research instruments was done to reveal the adequacy of instruments, not excluding language, length, focus, and ambiguity.

Pilot study was done in ten randomly selected primary schools in Adamawa State that are not part of sampled schools for the study but possess similar characteristics as those of the study area. The various research instruments were administered to different categories of respondents to test the extent to which they were to be understood and elicit the expected responses during the actual study. The pilot study provided new insights that helped the researcher to modify some questions thus enhancing reliability of the instruments. The pilot study also provided an opportunity for training research assistants on how to implement the research tools and assist the researcher effectively.

The data from the pilot study were collated and analyzed using Cronbach Alpha Statistic. The analysis yielded a reliability co-efficient 0.89 which formed the basis for the reliability of the instruments for the study. The pilot study provided new insights that helped the researcher modify some questions thus enhancing reliability of the instruments.

3.5.1 Instrument Validity

Orodho (2008) defines validity as the degree to which a test measures what it is designed to measure or the degree to which results obtained from the analysis of data actually represent the phenomenon been investigated. For purposes of ascertaining research tools validity, triangulation of research tools was applied. This means that more than one data collection method used through interviews, FGD, observation, while questions were checked for validity by supervisors.

3.5.2 Instrument Reliability

According to Muijs (2011), reliability is defined as ‘the extent to which test scores are free from measurement error’. It is also seen as a measure of stability or internal consistency of an instrument in measuring certain concepts (Jackson, 2003). Based on the sentiments, the research tools used for the study were suitable and reliable for the purposes data collection from the sampled population. Accurate data thus generated perfect data analysis process that enhanced unswerving dependable result. Reliability is attained when a study process is repeated severally and it gives the same results (Field, 2009). This shows that the study reliability has been demonstrated by matching it to what other academicians and scholars have established.

In order to ascertain the reliability of the instruments for the study, the researcher administered ten (10) copies of questionnaire to ten (10) head teachers while the items for FGD and Interview were piloted on teachers and pupils respectively in ten primary schools in Adamawa State that are not part of the sampled schools for the study but they possess similar characteristics as those of the study area. Questionnaire and Items that were given to the respondents to answer and were collected back by the researcher the same day of visit. Data were collated and analysed for reliability using Cronbach Alpha Statistic. Cronbach Alpha Statistics was used because it helped the researcher to determine the internal consistency of items of the instrument. The reliability co-efficient yielded 0.89 for questionnaire, 0.77 for FGD items and 0.82 for interview schedule items. These reliability coefficient of 0.89, 0.77 and 0.82 were considered high enough and reliable to be used for the study.

3.6 Data Collection

Data was collected using questionnaire, interview schedule, focus group discussion and classroom observation within two months. The researcher administered the questionnaire personally, with the help of two research assistants that were given induction training on how to collect data specifically for this study. The questionnaire was distributed to the head teachers in the sampled schools. A letter introducing the researcher as a student to collect data from the target institutions was obtained from Kenyatta University. The researcher then sent the request letter to the Adamawa State universal Basic Education Board and the sampled schools for permission to carry out the research there. Since the unit of analysis is public primary schools, the respondents were primary school teachers, pupils, and various sample schools. Research assistants were trained on how to collect the data specifically for this study. Basic science, physical and health education teachers were interviewed while FGDs were used with students. Classroom observation was carried out with the sole purpose of determining the exact situation that the study's objectives seek to achieve in the sample schools.

3.7 Data Analysis

Data analysis is the process of bringing order, structure, and meaning to the mass of collected information (Mugenda & Mugenda, 2013). Data collected for this study were analyzed using quantitative and qualitative methods. Data obtained from questionnaire were quantitatively analyzed using a Statistical Package for Social Science (SPSS) version 20 and this was guided by the research objectives. The responses from interviews, focus group discussions were qualitatively analyzed thematically, narratively and qualitative content analysis done in line with the

research objectives. Through this analysis, it was possible to outline and summarize the data, The responses from the interview, observation and focus group discussion were qualitatively analyzed thematically drawn from informants' descriptions (interpretive and grounded) according to the study objectives, which include noting, recording, and cording the voices of the respondents.

3.8 Ethical Considerations

Among the ethical considerations for the research was that respondents to the research were respected and thus their informed consent was vital for purposes of conducting this research. The researcher as part of the ethical consideration conducted the research as per Kenyatta University considerations where participant and school children confidentiality assured by the researcher and his assistants. Research permit was obtained from Adamawa State Universal Basic Education Board and presented to the sampled schools during data collection. The aim of the research was explained to all participants to do away with their fears. Recording and photos that were taken during the interview were done via participant consent. And thus the research required honest information from the respondents to enhance the attainment of research objectives.

3.9 Logistical Considerations

The researcher obtained an introductory letter from Kenyatta University which was issued to the Adamawa State Universal Basic Education Board (ADSUBEB) to grant for permission to conduct the research. Further, the researcher asked for permission from the head teachers so that he can have the opportunity of collecting data without bridging the ethical consideration.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.0 Introduction

This chapter presents analyses and discussions of the findings based on the objectives of the study. The objectives of the study were:

- i. Examine knowledge on COVID-19 pandemic prevention protocols by teachers and learners in public primary schools in Adamawa State, Nigeria
- ii. To investigate the application of ICT integration in teaching and learning during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria
- iii. To assess the utilization of learning materials and resources during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria
- iv. To identify the challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic in public primary schools in Adamawa State, Nigeria
- v. To suggest measures and interventions of addressing COVID-19 pandemic during teaching and learning in public primary schools in Adamawa State, Nigeria.

The chapter was presented in several sections: general and demographic information of participants, questionnaire return rate, characteristics of the study sample and findings under each objective. Quantitative data obtained from questionnaire was quantitatively analyzed using a statistical package for social science research (SPSS) version 20 and this was guided by the research objectives, while qualitative data from interviews, focus group discussions and observations

were qualitatively analysed thematically, narratively and qualitative content analysis was done in line with the research objectives.

4.1 Questionnaire Return Rate

The Instruments used to generate primary data for the study were questionnaires; focus group discussion (FGD), interview schedule and classroom observation. Content analysis was used to evaluate secondary data. The questionnaire, as the main data collection instrument, was administered to 16 participants divided into 9 males and 7 females. The return rate was 100 percent. The permission to administer the questionnaire was obtained from the head teachers, and the researcher's experience in the data collection process enabled him to accomplish this task as required. In the process of collecting data, the researcher administered the questionnaires personally to the respondents, waited for them to fill them out and collected them once they were done. Interviews were conducted with 36 teachers (18 males and 18 females). Only two respondents declined to participate in the interviews because of their official engagements. Focus Group Discussion (FGD) was also conducted on the 160 pupils (87 males and 73 females).

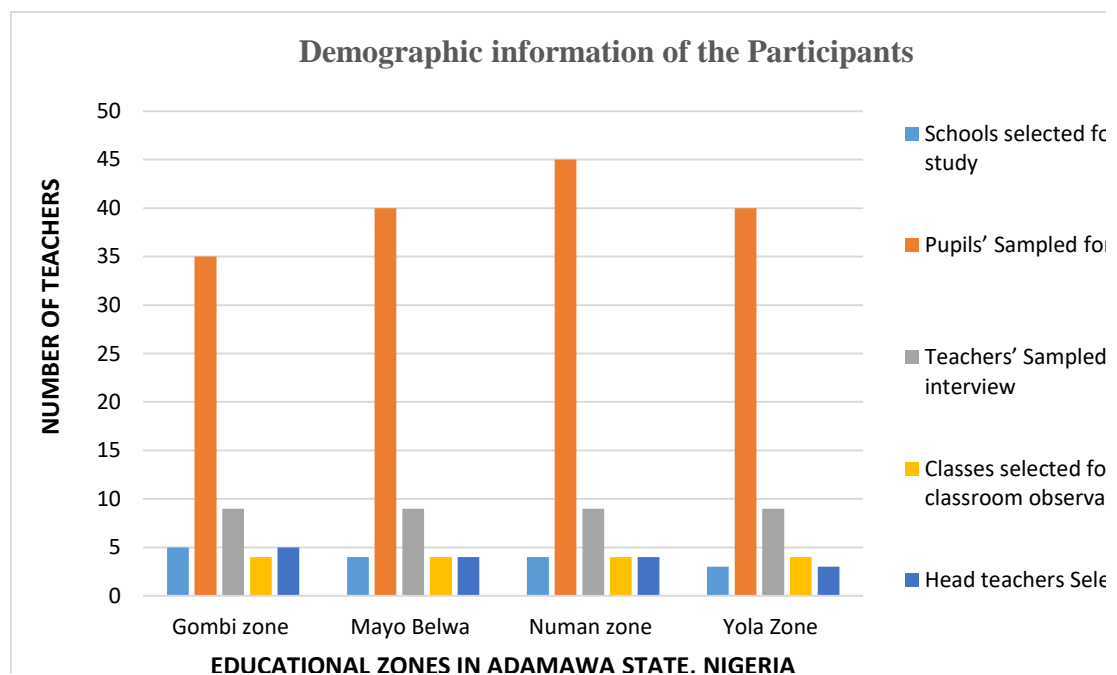
4.2 Characteristics of the Study Sample

This study sought to examine the COVID-19 pandemic prevention protocols and classroom teaching and learning in public primary schools in Adamawa State, Nigeria. To achieve this aim, 16 primary schools were randomly selected in Adamawa State, Nigeria. Sixteen Head teachers (7 males and 9 females), 160 pupils (87 males and 73 females) and 36 teachers (18 males and 18 females) participated in the study.

4.3 Demographic Information

Data collection tools used to generate primary data contained a personal data section, which describes the respondents' characteristics such as gender, age and educational background. The demographic data helped to understand the nature of the respondents, their bio-data as well as their basic knowledge of COVID-19. The analysis was divided into five sections; section one deals with Knowledge of COVID-19 pandemic prevention protocols; section two deals with Application of ICT integration During COVID-19 pandemic; section three deals with Utilization of learning materials during COVID-19 pandemic; section four deals with Challenges in the interaction between teachers and learners during COVID-19 pandemic and section five deals with measures and intervention in addressing COVID-19 during teaching and learning.

Figure 4.1: Distribution of the Study informants



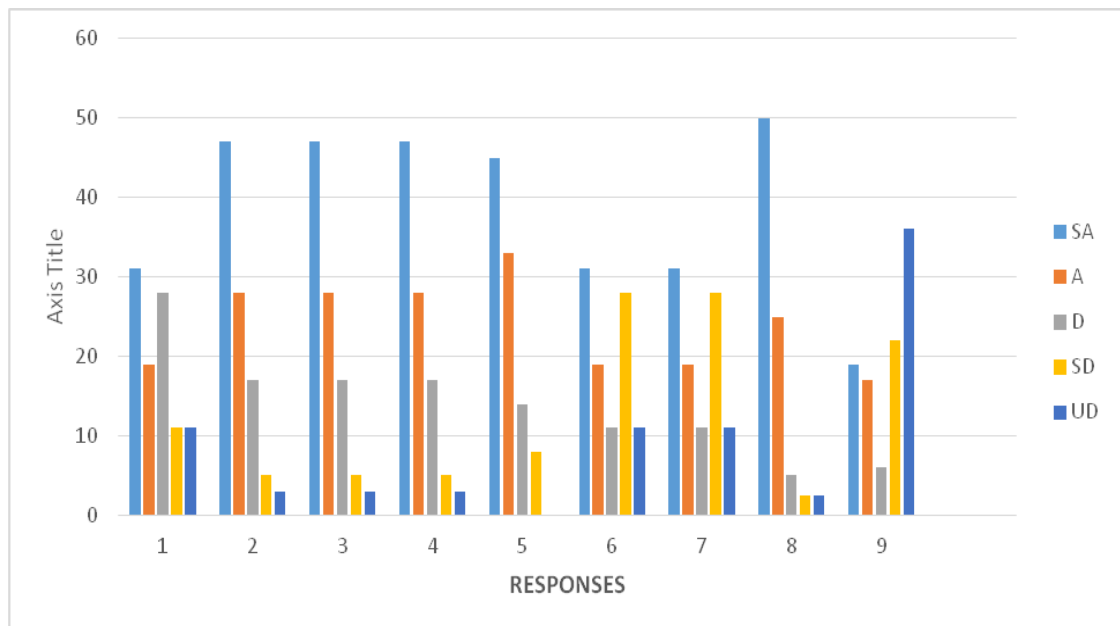
Source: Researcher, 2022

The findings in figure 4.1 show that the distribution of informants selected for the study on COVID-19 pandemic prevention protocols and classroom teaching and learning in public primary schools in Adamawa State covers the four education zones in the state with pupils, teachers and head teachers well represented.

4.4 Knowledge on COVID-19 Prevention Protocols by teachers and learners in public primary Schools in Adamawa State, Nigeria.

The first objective of the study was to examine knowledge on COVID-19 prevention protocols collected from 36 teachers (18 males and 18 females), 87 male and 73 female pupils as well as 16 head teachers (7 males and 9 females) in the selected primary schools in Adamawa State.

Figure 4.2: Head Teachers opinion on Knowledge of COVID-19 Prevention Protocol



Source: Researcher 2022

KEY: SA= Strongly Agree A= Agreed D= Disagreed
 SD= Strongly Disagreed UD= Undecided

The analysis of the result generated from the questionnaire in figure 4.2 indicated that, 31% of the respondents strongly agreed that the teachers and pupils can easily identify a person with COVID-19 Symptoms, 47 % of the respondents strongly agreed that the teachers and pupils can protect themselves from COVID-19 virus through the use of face mask , 47 % of the respondents strongly agreed that the teachers and pupils can protect themselves from COVID-19 virus through the use of sanitizers, 47 % of the respondents strongly agreed that the teachers and pupils can protect themselves from COVID-19 virus through the use of social distancing, 45% of the respondents strongly agreed that COVID-19 virus spread through shaking hands with an infected person, 31% of the respondents strongly agreed that COVID-19 virus has no cure, 31% of the respondents strongly agreed that COVID-19 virus can be prevented / managed by maintaining a healthy life style including a healthy diet, sleep, exercise and social contact, 31% of the respondents strongly agreed that, 50 % of the respondents strongly agreed that COVID-19 vaccine can protect us from infection of the Virus while 36% of the respondents are of the view that children are not free from contacting COVID-19 The qualitative findings from the Focus Group Discussion and interviews as exemplified by the voices below, illustrate that the teachers and students had a good understanding of the COVID-19 Prevention Protocol:

COVID-19 prevention protocols are many, we were told by National Centre for Disease Control (NCDC) officials that we should be using facemask, washing our hands with soap and water regularly, avoid staying in an overcrowding places and sanitizing” (Bilyaminu, male teacher, mixed school, 21st October 2022).

Our teachers separated us in the class and reduce our number in a seat and the reason was to reduce overcrowding in order to be safe from contacting with COVID-19” (Bilkisu, female pupil, Girls only school, 21st October 2022).

Our school banned the assembly gathering and imposed the use of facemask and hand washing with soap and water in order to protect ourselves from being infected with COVID-19 virus” (Jonathan, male pupil, boys only school, 21st October 2022).

Yes we know the safety guidelines to COVID-19 virus and we always encourage our pupils and teachers to always use facemask properly, wash their Hands with soap and water in the absence of soap they may use sand or potash, observe social distancing, avoid hand shaking, avoid overcrowding and stay in a ventilated area” (Nuru, male teacher, mixed school, 21st October 2022).

Teachers and pupils can mention many ways on the preventive measures against COVID-19 virus. The ministry of Education with the collaboration of ministry of health and non- Governmental organisation sensitise our staff and pupils in most of the schools on the protective measures against COVID-19 virus. Some of the measures according to them include: use of face mask, sanitizing, regular washing of hands with soap and water, social distancing, classes and objects disinfecting, avoid un-necessary gathering and

being vaccinated among other measures” (Abigail, female teacher, mixed school, 21st October 2022).

The finding from the result indicated that teachers and pupils in public primary schools in Adamawa State have the knowledge of COVID-19 prevention measures. Additionally, they were enlightened on the COVID-19 Prevention Protocol by Ministry of Education in collaboration with Ministry of Health and Non-Governmental Organisations. Some preventive measures according to them include: use of facemask, washing hands with soap and water or sanitizing, social distancing, disinfecting school and classes and staying away from large gatherings. The finding agreed with the position of Koniq et al (2020) who urge that cleaning and sanitizing frequently the handled objects and surfaces can reduce the spread of COVID-19 virus.

On the symptoms of COVID-19 virus, the participants had these to say:

Whenever I see a person with severe fever, intense cough with shorten breath or difficulty in breathing and headache, I can categorically say such person has COVID-19 symptoms” (Kefas, male Pupil, boys only school, 21st October 2022)”.

COVID-19 patient shows signs like severe cough, fever and sore throat” along similar vein another interviewee said “signs and symptoms like fever, headache, congestion and running nose, vomiting, fatigue, and many more such person has COVID-19”(Binta, female teacher, Girls only school, 21st October 2022).

The finding from the result indicated that both teachers and learners in public primary schools in Adamawa State have the knowledge on COVID-19 pandemic; they can easily identify any person with COVID-19 Symptoms. According to them, severe fever, dry cough, shorten breath, congestion, running nose vomiting and fatigue among others are the major symptom of COVID-19 virus. Summarily, almost all the interviewees and FGDs participants agreed on headache, cough and fever as major sign and symptoms of COVID-19.

In the area of how COVID-19 virus spread, as exemplified by the following voices during FGD and FGI;

COVID-19 usually spread through physical contact, such as handshaking, inhaling sneeze of infected person". (James, pupil, boys only school, 21st October 2022).

COVID-19 as airborne disease, transmit through primary routes of transmission by inhaling a small droplets from infected person. The small droplets produced from an infected person usually arise from sneezing, coughing, and even talking" (Mal. Abubakar, teacher, mixed sex school, 21st October 2022).

The finding also indicated that the informants have the knowledge on the possible ways through which COVID-19 virus spread. They clearly pointed out that COVID-19 virus may be spread through various means such as hand shaking with an infected person, physical contact with an already infected person. Inhaling the sneeze and cough of an infected person among other means.

The researcher went further to ask respondents another question. How can we protect ourselves from COVID-19? The following are some of the answers received;

Maintaining a safe distance from others even if they don't appear to be sick, wearing clean facemask, staying at home" (Mrs. Joe teacher, mixed sex school, 21st October 2022).

Wearing facemask in public, especially indoors or when physical distance is not possible, clean your hands often, choose well-ventilated spaces over closed one (Mrs. Ahmad, teacher mixed sex school, 21st October 2022).

Frequent cleaning of hands, wearing facemask, maintaining safe distance, get vaccinated, and staying at home if you feel unwell (Mr. Shehu teacher, boys only school, 21st October 2022).

The above finding from the study revealed that teachers and learners are aware on the various ways of protecting themselves from COVID-19, many measures were identified by the respondents ranging from maintaining social distance, wearing clean facemask, hands washing with soap and water, dis-infecting the classes and the objects and staying in a ventilated area. This finding is in line with the recommendation of Baker (2020) that, maintaining a distance of at least one meter between everyone present at school, increasing desk spacing, limiting class mixing for school and after-school activities, staggering school start and end times reduce the possibility of getting infected with COVID-19. Similarly, the finding also agreed with the position of Konig *et al.* (2020) who urge that cleaning and sanitizing frequently handled objects and surfaces such as desks, countertops,

doorknobs, computer keyboards, hands-on, learning materials, taps, phones, and toys on a daily basis reduce the spread of the disease.

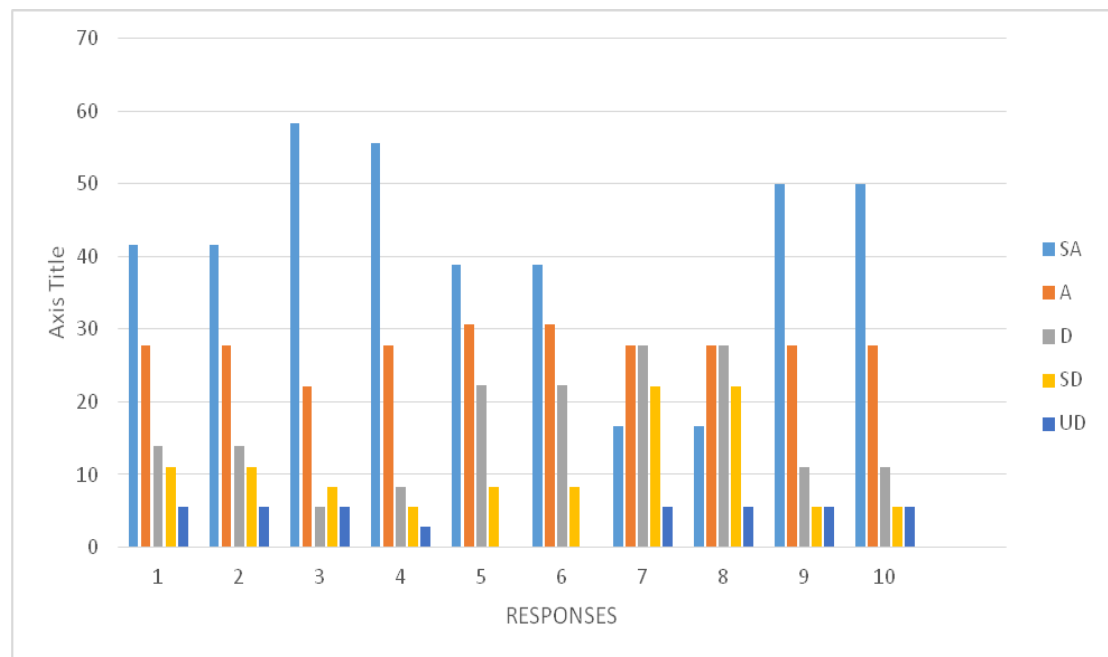
Despite having the knowledge of the COVID-19 pandemic prevention protocol as provided by the NCDC (2020) for safe school reopening and given to schools through the Ministry of Education which include:: ensuring that schools provide learners with a “medical status” form to be completed by all parents and kept in confidence by the school head; ensure that a triage point is identified for high temperature screening, wearing of face masks and performance of hand hygiene; ensuring that classrooms are well ventilated with minimum of one metre sitting arrangement, and identification a section that can serve as a sample collection site, results of the classroom observation revealed that the teachers and the learners were not strictly observing the protocol. The following excerpt from observation data concretizes the findings:

The teachers and the pupils are not frequently using face masks, there is less provision of hand washing equipment and sanitizers at the class entrance and the social distance is not strictly adhered to (22nd June, 2021, Mixed sex School, 23rd October 2022).

4.5 Application of ICT Integration in Learning during the COVID-19 Pandemic in Public primary School in Adamawa State, Nigeria

The Second objective of this study was to investigate the application of ICT integration in learning during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria.

Figure 4.3: Head Teachers Opinion on ICT Integration in Learning during the COVID-19 Pandemic in Public Primary School in Adamawa State, Nigeria



Source: Researcher 2022

KEY:

- SA= Strongly Agree A= Agreed
- D= Disagreed SD= Strongly Disagreed
- UD= Undecided

The result generated from the questionnaire in table 4.3 revealed that, 41.7% of the respondents strongly agreed that their schools makes use of ICT for teaching and learning during COVID-19 pandemic, 41.7% of the respondent strongly agreed that the use of ICT for teaching and learning during COVID-19 helps in maintaining physical distance but remain socially connected, 58.3 of the respondent strongly agreed that Zoom is the only means of online teaching we have during COVID-19 pandemic, 58.3 of the respondent strongly agreed that Google meet is the only means of online teaching we have during COVID-19

pandemic, 38.8% of the respondent strongly agreed that the level of teachers competence has been enough to meet the challenge using ICT Integration during COVID-19 in teaching and learning, 38.8% of the respondent strongly agreed that the level of pupils competence has been enough to meet the challenge using ICT Integration during COVID-19 in teaching and learning, only 16% of the respondent strongly agreed that there is stable internet supply and stable power supply for E-Learning to be effective in our school, while 50% of the respondents strongly agreed that the Technological changes and methodological changes as a result of COVID-19 will change the future teaching and learning process in the school.

Similarly, some responses from the interview and Focus Group Discussion supported the above finding as illustrated by the sample voices below:

ICT integration in teaching and learning during COVID-19 lockdown is a welcome idea and good initiative; the reason why I said so because the teaching and learning process continued and the spread of COVID-19 virus was prevented since the protective protocols was adhered to (Zubaina, female teacher mixed school, October 2022).

When we were told to close the schools I was thinking on what will be the fate of our pupils in terms of learning but thank God with integration of ICT in the context of COVID-19 the learning and teaching process continued (Musa, male teacher boys' only, October 2022).

ICT integration in teaching and learning during COVID-19 lockdown helped us in learning while at home, and helped in preventing the spread of COVID-19 virus ICT integration in learning is good even though not all of us were able to participate in the ICT learning process because of one reasons or the other, but I am among the beneficiary of learning using ICT integration during COVID-19 lockdown (Janet, female pupil Girls only school, 25th October 2022).

Our teachers taught us using zoom, online platform, WhatsApp, face book during COVID-19 lockdown and this help in preventing the spread of COVID-19 virus (Ali, pupil mixed sex school, October 2022).

The finding from the research revealed that, the use of ICT integration in teaching and learning during COVID-19 lockdown facilitated the continuity of teaching and learning process in some area. This finding agreed with the findings of UNICEF (2021) that: online learning was embraced within the educational system worldwide for purposes of minimizing the rate of viral transmission. Accordingly, online learning seemed to be the best method at hand in dealing with the spread of the COVID-19 Pandemic even though it limited the benefits of face to face learning and social connectivity necessary in the learning process.

On the area of preferences on the ICT platform to be used in teaching and learning, participants in the study had varied opinions as demonstrated by the voices below:

I prefer my teacher to use Whatsapp, and YouTube to teach us
(Ado, pupil mixed sex school, October 2022)

Any social media platform is good in teaching since we can use
our parent's phones to get connected online" (Joy, pupil Girls only
school, October 2022).

This finding is similar to that by Morata (2020) who recommended the integration of ICT into the learning and teaching process amidst COVID-19 while Lauermann and Konig (2020) revealed that COVID-19 situation not only requires skill set and knowledge but as well requires resource to attain a successful teaching and learning process on the online platform using software such as Skype, zoom and YouTube and applicable expertise. In line with the above, Coll (2020) revealed that as a result of the COVID-19 pandemic educational institutions by decision of the Government to protect the welfare of pupils and students from the spread of the COVID-19, were obliged to close and continue with online learning. The logistics of implementing online learning are determined by the schools, the teachers and the learners meaning there was no strict guideline on which online platform to be use by educational institutions. With a variety of online forms some teachers and learners have shown preferences for social networks, some have preference for online learning with Zoom or through Google Meet.

On the challenges faced in relation to ICT integration in teaching and learning in the context of COVID-19 pandemic, participants in this study mentioned lack of electricity and money to buy the necessary ICT gadgets especially on the part of the learner. Even where the ICT gadgets were available some students pointed out that their parents denied them access to such equipment, denying them an

opportunity to participate in the online teaching and learning activities. This indicates that some parents did not have sufficient awareness on their role in supporting ICT integration for their children as a measure in controlling the spread of COVID-19 Pandemic.

On whether ICT integration in teaching and learning in public primary schools in Adamawa State during COVID-19 lockdown yielded an intended result or not, the research participants had diverse view to share as stated below:

I can say the ICT integration in teaching and learning during COVID-19 lockdown yielded a partial result, when I say partial I mean that the spread of the COVID-19 virus was prevented but pupils' participation to ICT learning while at home was very minimal not all of my pupils participated in my ICT classes during COVID-19 lockdown. I had about 25 pupils in my class but only 9 of them participated during online teaching (Saraya, female teacher, mixed school, October 2022).

To me, ICT integration in teaching and learning during COVID-19 lockdown achieve nothing, this is because as you can see we are in a remote area where there is no power, no network and most of our teachers do not have smart phones do not talk of our pupils. How and from where can we start teaching using ICT? (Ismail, male teacher, boys' only school, October 2022).

Those that benefited in ICT integration in teaching and learning during COVID-19 lockdown are the children of well to do

persons and they are very few, they can use their parents smart phones, laptops, taps and bundles for steady network and they will be guided to learn using these technologies while at home during COVID-19 lockdown,” (Aliyu, male teacher, Girls only school, October 2022).

During COVID-19 lockdown I have not benefited in ICT learning at all in fact I was not aware about online teaching nobody inform me because I don't have access to gadgets for E-learning. I was just helping my mother in the kitchen throughout the COVID-19 lock down” (Fatima, female pupil, mixed school, October 2022).

Yes, I had participated and benefited through ICT integration to learn during the COVID-19 lockdown. I used my parent's laptop and sometime their smart phone to connect to our lessons. And the lessons were very interesting (Ibrahim, male pupil Girls only school, October 2022).

On the whole we can reasonably argue that, ICT integration in teaching and learning in public primary schools in Adamawa State did not fully achieve the intended purpose which was to ensure that every teacher and learner in all public primary schools in Adamawa State participate in teaching and learning during the COVID-19 lockdown while remaining safe from the COVID-19 virus

Clearly not all teachers and pupils were able to use ICT in teaching and learning during COVID-19 lockdown as read from their voices. However, evidence from

this research has demonstrated that there exist teachers and learners in public primary schools in Adamawa State who used ICT in teaching and learning during COVID-19 lock down. The use of ICT integration in teaching and learning during COVID-19 lockdown facilitated the continuity of teaching and learning to some extent. Several online plat forms were used for teaching among them were: Zoom, whatsapp, and Google meet. Schools where teachers and learners confessed to not having used ICT in teaching and learning were mainly those which did not have access to power supply, internet facilities and electronic gadgets.

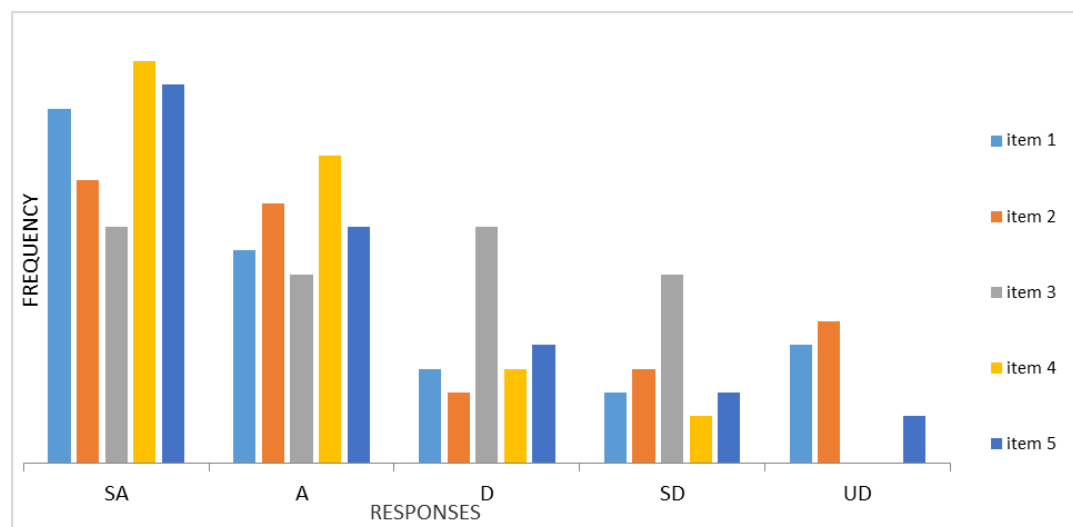
This is not something new Ocana et al (2020) postulated that, inaccessibility of technological resources act as a challenge in the implementation of ICT into teaching and learning process, acquiring infrastructure in order to carter for the inequalities linked with the digital divide was necessary.

Results of the school and classroom observation revealed that most of the schools visited in this study did not have electricity; some had weak Wi-fi connectivity especially during the rainy season. In addition to the above most of the schools that have electricity, the supply is epileptic. It was also observed that only urban primary schools had Computer laboratory and internet facilities and majority of such facilities were not in good condition for learning to be effective. Majority of the head teachers expressed in anonymity that the Ministry of Education did little or no effort in ensuring that there was steady power supply and good internet connectivity for e- teaching to be effective.

4.6 The Utilization of Learning Materials and Resources during the COVID-19 Pandemic in Public Primary School in Adamawa State, Nigeria

The third objective of the study was to assess the utilization of learning materials and resources during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria.

Figure 4.4: Head Teachers opinion on Utilization of Learning Materials and Resources during the COVID-19 Pandemic in public Primary School in Adamawa State



Source: Researcher 2022

KEY:

SA= Strongly Agree

A= Agreed

D= Disagreed

SD= Strongly Agreed

UD= Undecided

The Analysis of the Result generated from the questionnaire in table 4.4 revealed that, 38.9% of the participants who answered this question strongly agreed that they effectively utilized learning materials and resources during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria and also 28.3% agreed, in a contrary view, 14.4% of the participants who answered this question strongly disagreed with the views and 11.1% of the participants who answered this question disagreed, while 7.2% had not decided on their opinion on utilization of learning materials and resources during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria as provided in the questionnaire.

In summary, 67.2% of the teachers agreed that learning materials and resources were utilized during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria 25.5% of respondents disagreed, while the remaining 7.2% did not decide on the utilization of learning materials and resources during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria. The finding implied that learning materials and resources were utilised during COVID-19 Pandemic in Public Primary Schools in Adamawa State, Nigeria.

Similarly, findings from the focus group discussion and interview supported the above finding as can be seen in the voices below:

Our schools have enough classes to accommodate all students, in fact there are some classes that are empty, which we called them reserve classes, some classes are not having enough desk to accommodate all students especially, with regards to social distance”. Another respondent said “we have adequate classes that can accommodate social distancing but, our seats were design in

three persons per seat, which will be difficult to get the required COVID-19 social distance protocol (Mrs. Usman, teacher mixed sex school, October 2022).

Our schools have no problem in terms of classroom structure, some classes are empty with empty space, but the desk are not enough some of us are even sitting on the ground (Mal. Adamu, teacher girls only school, October 2022).

In the area of the utilization of learning materials, halls and playground during break and games”, the participants revealed that:

Our teachers make use of instructional materials effectively during teaching and learning in a midst of COVID-19 pandemic (Mrs. Fatima, teacher mixed sex school, October 2022).

We used the instructional materials in such a way that pupils can see them from far without touching them with their hands in order to protect them from infection of COVID-19 virus (Bello, Teacher, Girls school only, October 2020).

School management discourage Pupils from borrowing learning materials, they were instructed to use their personal learning materials such as books, pen and pencils as part of measures of protecting them from COVID-19 virus (Peter, Teacher, mixed sex school, October,2022).

We only use our halls during examinations while the playground is an empty space where we usually play after school hours (Mrs. Gayus, teacher boys only school, October 2022).

we do not have halls in our school, we write exams in our classes, while the playground is usually use during physical education”, another respondent said “we have three halls in our school which are used for examinations but during COVID-19 all our classes were spread into these examination halls to accommodate our over populated classes while, the playground stands as playground before and during COVID-19” (Jauro, pupil mixed sex school, October 2022).

On the issues of Teachers sanitizing the learning materials before using them in the class, the participants have these to say:

We always sanitize the learning materials before using them in the teaching and learning process (Mr. Lawson, Teacher Mixed sex school, October 2022).

We do not know whether they are sanitizing the materials before bringing them to class but we know that after class the teachers wash their hands and they also ask us to wash our hands after the lesson (Sani, pupil boys only school, October 2022)

The finding from the study revealed that public primary schools in Adamawa State are effectively utilizing the available teaching and learning resources within their domain. Majority of schools have classes that can accommodate all the leaners in

the schools using COVID-19 spacing guideline, the chairs and desk are adequate and is well utilize, the schools have an open and ventilated space for games activities among others.

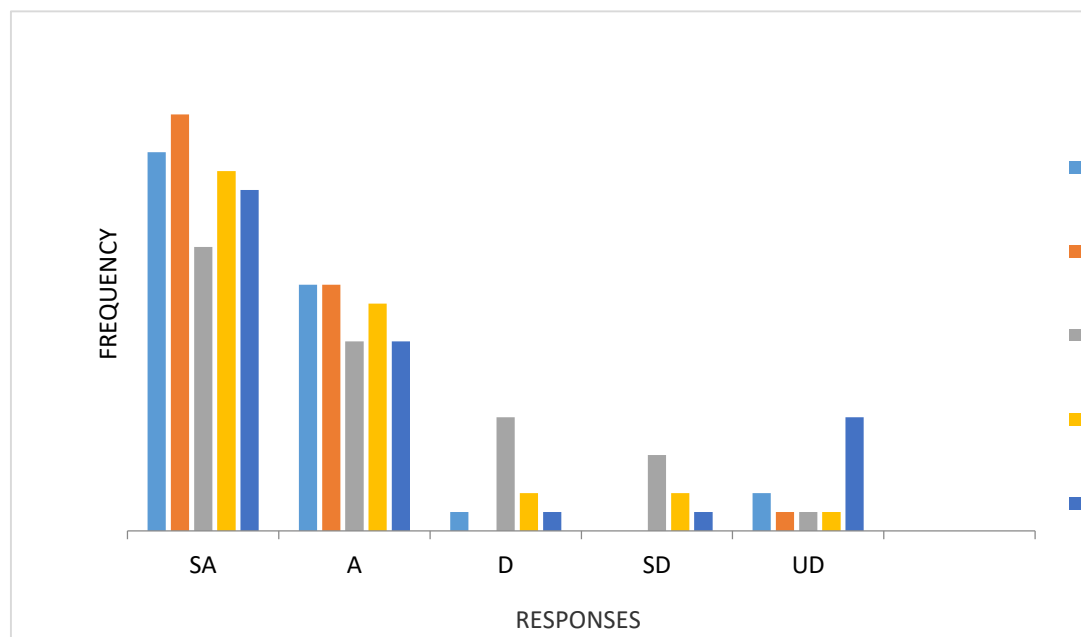
The findings of this study is in line with that of Huber and Helm (2020) who established that utilization of learning materials especially in primary school help pupils to work in group and as such make them develop and construct knowledge amidst COVID-19. Utilization of learning materials help pupils to work in group to develop and construct knowledge especially during COVID-19. Similarly, the findings of Huber & Helm (2020) proved that, utilization of learning materials are procedural and were done using online facilitation during COVID-19. Furthermore while this phenomenon is not new, increased e-learning have not conceptualized globally and especially among developing countries attributed to uneven dispersion of cultures across different countries.

Despite the above findings, observation by the researcher revealed although in most of the schools visited, there are enough classrooms to observe social distancing, but the school seats are produced to accommodate three persons per seat which is making observance of social distance a near impossible. In addition to the above, the researcher also observed that even though most of the school under observation have examination halls, it is obvious the halls are only used for examinations and PTA meetings only. The researcher also observed that the teachers do wash their hands after the teaching learning process and the students are seen exchanging learning materials in the class after which they were asked to wash their hands at the end of the lesson and used hand sanitizers.

4.7 Challenges in the Interaction between Pupils and Teachers during Teaching and Learning in the context of COVID-19 Pandemic

The fourth objective of the study was to identify the challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic in public primary schools in Adamawa State, Nigeria.

Figure 4.5: Head Teachers opinion on the Challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic in public primary schools in Adamawa State



Source: Researcher 2022

KEY:

SA= Strongly Agree

A= Agreed

D= Disagreed

SD= Strongly Agreed

UD= Undecided

The analysis of the results generated from the questionnaire in table 4.5 revealed that, 52.2% of the respondents strongly agreed that they faced challenges in the interaction with pupils during teaching and learning in the context of COVID-19 Pandemic in public primary schools in Adamawa State, Nigeria, 32.2% agreed with the statement. In a contrary view, 5.6% of the respondents strongly disagreed likewise 6% disagreed while 3.9% of the respondents who responded to the instrument have not decided on the challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic in Public Primary schools in Adamawa State, Nigeria.

In summary, 84.4% of the teachers agreed that there are challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic in public primary schools in Adamawa State, Nigeria, while 9.5% disagreed with the challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic in public primary schools in Adamawa State, Nigeria, and the remaining 6.1% did not decide on the challenges..

Similarly, focus group discussions and interviews that were conducted revealed that there were numerous challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic as illustrated below:

The COVID-19 affected physical contact in our school and as such any pedagogy that requires physical contact was suspended (Dauda, male pupil, mixed sex school, October 2022).

Our school was closed due to COVID-19 lockdown and classroom activities suspended, the only way we engage with our teachers is through online (Jane, female pupil Girls only school, October 2022).

The normal teacher-student pedagogical contacts were affected and schools were closed due to the COVID-19 lockdown, the only option is online learning which is feasible for all students (Daniel, male teacher Boys only school, October 2022).

The study revealed that there were challenges in the interaction between teachers and learners during COVID-19 pandemic in public primary schools in Adamawa State. It was revealed that teachers find it difficult to physically interact with their pupils to teach an aspect that may require physical interaction, in another situation classroom interaction were suspended in other schools and online teaching and learning was introduced.

On the issue of practical lessons in the school some of the respondents had this to say:

Our practical classes were shifted to a remote distance learning mode. As result classes were offered online using videos of lab demonstrations, Microsoft power point slides with voice-over recordings that were prepared to guide students further in the particular procedure of the experiment” (Bulus, teacher, mixed sex school, October 2022).

The online lab experiments, on the other hand allow students to experience performing hands-on experiments and help them observe and relate to concept (such as classifying matter, making physical measurements, employing units, and significant figures, preparing solutions, calculating moles, and molarity, and employing separation techniques) that were discussed in the class before COVID-19” (Sa’ad, male pupil Mixed sex school, October 2022).

The study revealed that practical lessons were shifted to a remote distance learning where online videos of laboratory demonstrations, power points and voice recording were used to guide the learners to learn in the context of COVID-19 pandemic in public primary schools in Adamawa State.

The third question asked was “how do pupils solve group tasks in the class”?

The respondents had diverse opinions as expressed in the excerpt below:

The pupils usually solve group task through whatsapp, face book and zoom” another respondent said “whatsapp was the online way of solving group interaction problem during COVID-19” (Jennifer, female pupil mixed sex school, October 2022).

Our village has no network connectivity and as such group interaction was stopped during lockdown” (Fatee, female pupil mixed sex school, October 2022).

Despite the above finding, observation by the researcher revealed that pupils were not observing the safety protocols for COVID-19 while interacting within

themselves during extra-curricular activities. They were seen exchanging their belongings like pens, spoons and water bottles among others and at the same time hugging each other while playing. During lunch hours, students were observed sharing their food without taking into cognizance the laid down protocol against COVID-19 virus.

Caena & Redecker, (2021), emphasizes that, in the era of the COVID-19, learner-teacher interaction is fundamental since its main characteristics are team work and group collaboration. During COVID-19 lockdown Students are allowed to sit with other peers for discussions, among others at home. Teachers were trained online in this approach so that they can apply the principles and provide their students with a better learning experience. This method requires technology or special resources that schools from communities in need may have. Similarly, Zalat, Hamed & Bolbol (2021) urged that learners' the interruption within the educational calendar have negatively and affected vulnerable students who don't have learning opportunities at their homes. Their presence at homes further aggravated the parent's economic status by caring for their children who could have otherwise been making use of school meals. According to Jager-Biela, Kaspar, and Konig (2020), parents have to get involved with their children learning process during COVID-19 lockdown while the ministry of education will have to find way of mitigating the challenges that comes with the use of technology. All these are undertaking taken to ensure the country education is on the move.

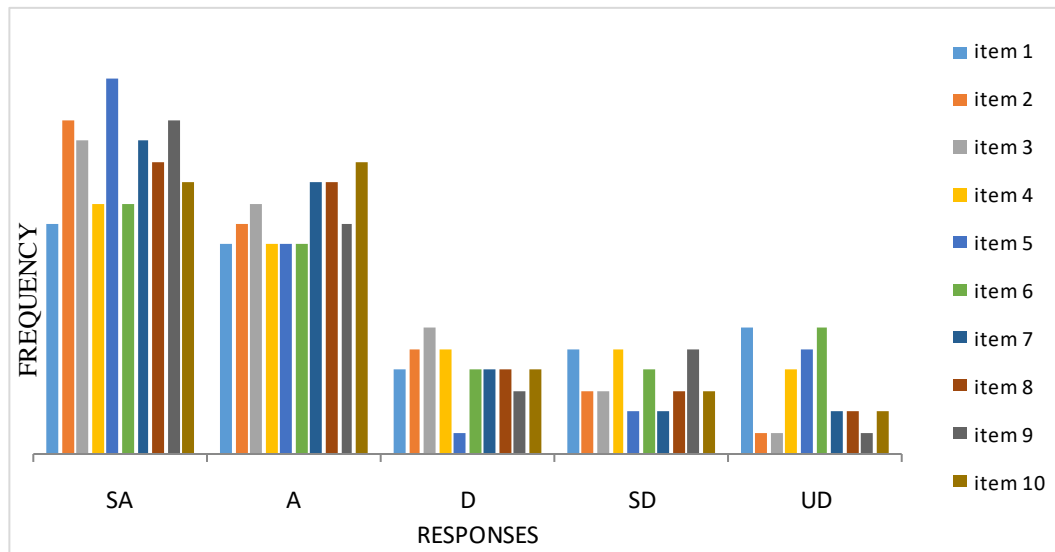
Learner-teacher interaction in education is important because it empowers students to take ownership of what they learn by focusing on how the new knowledge solve the problems or add value especially during COVID-19 when all students were

sent from school to stay home. Instead of simply pouring information over the child mind, the teacher presents the students with an issue and guides the classes as they build a solution during online mode. Students discover the new information and come up with a solution instead of passively waiting for teacher's answers. Current work environment requires collaborators willing to innovate. Thus, developing the skills of exploring problems and making decisions to solve them is extremely valuable for quick-paced companies where solutions are needed as soon as possible (Blomeke, 2017). An interaction in education allows students to interact in group virtually with their teams through discussions and group activities. This approach encourages students' collaboration during COVID-19. By interacting with their other peers, students discuss, work together, and learn to deal with others and many other daily tasks that will eventually help them to become team players. Interaction creates opportunities for students to teach each other, answer their peers' questions and present the results of their works.

4.8 Measures and Interventions of Addressing COVID-19 Pandemic during Teaching and Learning

The fifth objective of the study was to suggest measures and interventions of addressing COVID-19 pandemic during teaching and learning in public primary schools in Adamawa State, Nigeria.

Figure 4.6: Head Teachers opinion on the Suggested Measures and Interventions of Addressing COVID-19 Pandemic during Teaching and Learning in Public Primary Schools in Adamawa State



Source: Researcher 2022

KEY:

SA= Strongly Agree

A= Agreed

D= Disagreed

SD= Strongly Disagreed

UD= Undecided

The analysis of the results generated from the questionnaire in table 4.6 revealed that, 39.4% of respondents strongly agreed, that community provides some suggested measures and interventions of addressing COVID-19 pandemic during teaching and learning in public primary schools in Adamawa State, Nigeria, and 31.7% also agreed. In a contrary view, 11.1% strongly disagreed, 9.7% disagreed while 8.1% were silent on the suggested measures and interventions of addressing

COVID-19 pandemic during teaching and learning in public primary schools in Adamawa State, Nigeria.

In summary, 71.1% of the respondents agreed that community provides some suggested measures and intervention of addressing COVID-19 pandemic during teaching and learning in Public Primary Schools in Adamawa State, Nigeria, while 20.8% disagreed with the statement. On the independent view 8.1% have not decided on the view that there are community suggested measures and interventions of addressing COVID-19 pandemic during teaching and learning in public primary schools in Adamawa State, Nigeria. The above finding shows that Community provides with some suggested measures and intervention of addressing COVID-19 Pandemic during teaching and learning in Public Primary Schools in Adamawa State, Nigeria.

Data from focus group discussion and interviews concerning suggested measures and interventions of addressing COVID-19 pandemic during teaching and learning illustrate thus:

The measures include: wearing facemask, use of ventilated classrooms for teaching, regular hand wash are part of the suggestions provided (Mr. Audu, male teacher mixed sex school, October 2022).

We were advised to provide washing hand basin, pupils should wear facemask and so on, (Ladi, female pupil Girls only school, October 2022).

The only suggestion we received from community was to allow their children stay home in order to reduce the menace of spreading the disease” (Asma’u female teacher Girls only school, October 2022).

Health personnel need to be send to the schools on standby (Fateema female teacher Girls only school, October 2022).

Health talks to be introduced in the school system regularly (Mr. John male teacher Boys only school, October 2022).

Schools need to be equipped with functional First Aid box (Mr. Bala male teacher Boys only school, October 2022)

School feeding programme to be introduced to ensure that student are given balanced diet at least once a day (Fortune, pupil boys only school, October 2022).

The finding from research indicated that public primary schools in Adamawa State received some measures, interventions and suggestions on how to address COVID-19 pandemic and at the same time ensuring a continuity of teaching and learning in the context of COVID-19 pandemic, some of suggestions included the proper use of facemask, provision of washing hand points, posting of health personnel to schools, introduction of health talk in schools, provision of equipped first Aid box in schools, schools feeding programme , schools to operate on shift system and erecting additional classes where they are lacking.

On the issue of “how the school operate to reduce the overcrowding during COVID-19, some respondents had this to say:

In our schools all empty classes were equipped to decongest used classes” (Jared, pupil boys only school, October 2022).

We were provided with tabs and zoom apps were installed to teach our pupils while staying home” (Fatima, female pupil girls only school, October 2022).

We didn’t do anything during lockdown, schools were closed, children stay home and no provisions were made to teach online” (Ado, Male pupil Boys’ only school, October 2022)

On the issues of school sensitizing the pupils and staff on immediate actions to be taken in class during lesson the respondents stated that:

Yes, we were sensitized on COVID-19 protocols in my school” (Eunice, female pupil mixed sex school, October 2022).

We were even provided with pamphlet that stated ways of wearing facemask, washing hand and so on” (Mrs. Jameela, female teacher Girls only school, October 2022).

“We were not sensitized; we only received directives to close schools” (Mal. Adamu, male teacher boys only school, October 2022).

The next question asked was “Does school disinfecting the classes regularly? The respondent said:

Yes, the school authority disinfected all classes (James, male pupil Mixed sex school, October 2022).

Yes, everywhere in the school was disinfected (Mrs. Habibu, teacher mixed sex school, October 2022).

The researcher observed that, some community members and association like PTA took the responsibility of providing water, water containers and soap to schools as part of their intervention in ensuring safety of pupils and teachers during teaching and learning process in the context of COVID-19 pandemic. It was also observed that some community members suggested that schools should be operating in two sessions, that is junior classes from primary one to three should operate in the morning session while the senior classes should operate in the afternoon session as part of the measures to protect the pupils and teachers against COVID-19 virus during teaching and learning process.

The finding from the study revealed that both teachers and learners were sensitized on the COVID-19 pandemic protocols. Pamphlets that contained safety measures on COVID-19 were placed in various places in the schools notice boards, the schools were being disinfected on a regular basis for safety of teachers and learners as well as ensuring smooth and healthy teaching and learning process.

The findings of this study is similar to that of Huber and Helm (2020) who suggested encouragement of students to observe COVID-19 prevention protocols such as hand washing practice or sanitizing when they have touched learning

resource such as books and also coughing and blowing their nose using the appropriate methods. Along the same vein, König *et al.*,(2020)recommended that, pupils should be encouraged to involve into hand washing practice while sanitizing at the same time always when getting into and departing from class, when they have touched learning resource such as books and also coughing and blowing their nose using the appropriate methods. In cases where students sneeze on their hands than they are instructed to wash their hands using soap and water and sanitize. In case it has been done on a tissue that the tissue is to be disposes and wash hands as well. It is very important to make the ideas normal and thus it becomes a routine. Despite most learning institutions having opted to use digital innovation there is need to develop digital literacy among teachers.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents a summary of the research findings, conclusions, recommendations and suggestions for further studies.

5.1 Summary of the Major Findings

The purpose of this study was to examine the COVID-19 pandemic prevention protocols and guidelines and their influence on classroom teaching and learning in public primary schools in Adamawa State, Nigeria. Five research objectives guided the presentation, analysis and discussion of the findings. These research objectives focused on; first, examining knowledge on COVID-19 prevention protocol by teachers and learners in public primary schools in Adamawa State, Nigeria; second, investigating the application of ICT integration in learning during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria; third, assessing the utilization of learning materials and resources during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria; fourth, identifying the challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic in public primary schools in Adamawa State, Nigeria; and last, suggesting measures and interventions of addressing COVID-19 pandemic during teaching and learning in public primary schools in Adamawa State, Nigeria. The study adopted a mixed methods research design. The sample comprised 32 teachers and 160 pupils. Primary data were gathered using the questionnaire, interview, focus group discussion and

observation. Both qualitative and quantitative approaches were used to analyze the primary data generated.

5.1.1 Knowledge on COVID-19 Prevention Protocols by Teachers and Learners in Public Primary Schools in Adamawa State, Nigeria

It was established that the teachers and pupils in public primary schools in Adamawa State had knowledge on COVID-19 pandemic prevention protocols, they identified the use of face mask, frequent hand washing with soap and water, sanitizing, social distancing, avoiding overcrowded places, using ventilated areas for learning, object and class disinfecting among others as the preventive protocols against COVID-19 virus. Additionally, teachers and pupils could easily identify the symptoms of a COVID-19 virus and several ways of managing it in such a way that it does not spread to others. They also pointed out that COVID-19 Vaccine could help in protecting one from infection with the virus. The teachers and students also pointed out that COVID-19 virus could spread through hand shaking with an infected person and that children were not free from contacting COVID-19 virus.

5.1.2 Application of ICT Integration in Learning during the COVID-19 Pandemic in Public Primary School in Adamawa State, Nigeria

This study found out that public primary schools in Adamawa State integrated ICT in teaching and learning during COVID-19 lockdown, although the use of ICT in teaching and learning during COVID-19 lockdown achieved little of the intended purpose. Schools used ICT platforms like Zoom and Google meet to maintain physical distance in the course of teaching and learning during COVID-19 lockdown to prevent the spread of COVID-19 virus and ensure the continuity of

teaching and learning process. It was also established that teachers and pupils were competent to use ICT integration in teaching. However, ICT integration was not devoid of challenges. It was revealed that there was no stable internet and power supply for E-learning to be effective in public primary schools in Adamawa State, Nigeria.

5.1.3 Utilization of Learning Materials and Resources during the COVID-19 Pandemic in Public Primary School in Adamawa State, Nigeria

This study found out that chairs and desks were enough for social distance to be observed in the studied schools. The chairs and desks that were hitherto kept in the stores were all utilized for teaching and learning during the COVID-19 pandemic. Notably, the examination halls and Parents Teachers Association (PTA) halls were used as classrooms to decongest students during the COVID-19 pandemic. On the area of sanitization of the learning materials for teaching and learning during the COVID-19 pandemic, the findings revealed that teachers sanitized the learning materials and utilized them effectively in the classroom

5.1.4 Challenges in the Interaction between Pupils and Teachers during Teaching and Learning in the Context of COVID-19 Pandemic in Public Primary Schools in Adamawa State, Nigeria

This study established that, the outbreak of COVID-19 affected the interaction between teachers and learners in public primary schools in Adamawa State. It was also established that practical lessons faced challenges and pupils were no longer working in groups. Similarly, physical interactions had been suspended and schools were no longer conducting assembly in public primary schools in Adamawa State, because of the fear of contacting the COVID-19 virus.

5.1.5 Measures and Interventions of Addressing COVID-19 Pandemic during Teaching and Learning in Public Primary Schools in Adamawa State, Nigeria

This study found out that communities where the schools are located provided the schools with suggestions on how to address COVID-19 pandemic in schools. It was also established that public primary schools in Adamawa operated on shift system to reduce overcrowding in classes. The study further revealed that staff and pupils in public primary schools in Adamawa were sensitized on the immediate action to be taken in classes during teaching and learning in the context of COVID-19. It was also established that schools had running water and several points of hand washing. In another vein, some participants suggested that health personnel needed to be sent to schools on standby in case their services were needed in regard to COVID-19 prevention, health talks needed to be introduced in the school system regularly. School feeding programme was also necessary to ensure that students were given balanced diet at least once a day. Finally, schools needed to be equipped with functional First Aid kits.

5.2 Conclusions

This study drew five conclusions from its findings. First, learners and teachers in public primary schools in Adamawa State, Nigeria had the knowledge on COVID-19 pandemic prevention protocols. Secondly, there was ICT integration in learning during the COVID-19 pandemic in public primary school in Adamawa State, Nigeria, despite challenges in network connectivity and unavailability of ICT materials. Thirdly, there was high level of utilization of learning materials and resources during the COVID-19 pandemic in public primary schools in Adamawa

State, Nigeria. Fourthly, there were challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic in public primary schools in Adamawa State, Nigeria, especially with regards to inadequate learning materials. Fifthly, suggested measures and interventions of addressing COVID-19 pandemic during teaching and learning in public primary schools in Adamawa State, Nigeria included: Introduce seminars and workshops for the teachers to be updating their preventive knowledge, and Adamawa State Government should incur more ICT equipment and ensure stability of power supply and good network for proper integration in teaching and learning during the COVID-19 pandemic and beyond.

5.3 Recommendations for Policy and Action

This study puts forward the following recommendations:

Policy makers should:

1. Enact laws that will support learning in schools during Covid- 19 pandemic and any other pandemic that may emerge in future. Some of these policies can include regular sensitization workshops on health related issues in schools and establishing health centers in schools.

Government should:

- 1 Introduce seminars and workshops for the teachers to be updating their preventive knowledge.
- 2 Adamawa State Government should incur more ICT equipment and ensure stability of power supply and good network for proper integration in teaching and learning during the COVID-19 pandemic and beyond.

- 3 State Government should build more ventilated classrooms for utilization during the COVID-19 pandemic and beyond.

Schools should:

- 1 Take teachers for seminars on how to overcome challenges in the interaction between pupils and teachers during teaching and learning in the context of COVID-19 Pandemic and other disease outbreaks.
- 2 All stakeholders of primary education should join hands to make sure that the suggested measures and interventions of addressing COVID-19 pandemic during teaching and learning are fully implemented.
- 3 There is the need for ICT training for teachers on how to utilize the various e-learning platforms for teaching and learning during COVID-19 and beyond.

5.4 Recommendations for Further Studies

The findings of this study puts forward the following suggestions for further studies:-

1. This study focused on COVID-19 Pandemic Prevention Protocols and Classroom Teaching and Learning in Public Primary Schools in Adamawa State, Nigeria. The study should be expanded to the whole country to ensure wide coverage.
2. Similarly, this study is restricted to primary schools; it is recommended that a similar study should be expanded to secondary and tertiary institutions of learning.

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APPENDICES

APPENDIX I: Introductory Letter

Dear respondents,

I am a Ph.D. student from Kenyatta University, Kenya undertaking a research as part of requirement for the award of Doctor of Philosophy of the University of Kenyatta.

This instruments is part of my PhD research that is designed to gain a better understanding on the “Covid -19 pandemic prevention protocol and classroom teaching and learning in public primary school, in Adamawa State, Nigeria. You have been selected to provide information on the knowledge of COVID-19 pandemic prevention protocol, the application of ICT integration during learning, the utilization of learning resources during learning, the challenges in the interaction between pupils and teachers during Covid -19 and measures and intervention of addressing COVID-19 pandemic during teaching and learning in public primary schools in Adamawa State, Nigeria.

The information provided will be confidential and thus answers given for this research will be combined with others for the sole purpose of addressing my research objectives. Your participation is in voluntary and thus you are free to withdraw from the research at any given time.

Thank you



Yusuf Bakari

APPENDIX II: Questionnaire for Head Teachers

Age [] Gender []

Teaching experience [] Level of Education []

Knowledge of Covid-19 pandemic

S/N	Statement	Items	SA	A	D	SD	UD
1.	I can easily identify a person with COVID-19 Symptoms						
2.	I can protect Myself from COVID-19 virus through the use of face mask,						
3.	I can protect Myself from COVID-19 virus through the use of sanitizers						
4.	I can protect Myself from COVID-19 virus through the use of social distancing						
5.	COVID-19 virus spread through shaking hands with an infected person.						
6.	COVID-19 virus has no cure						
7.	COVID-19 virus can be prevented / managed by maintaining a healthy life style including a healthy diet, sleep, exercise and social contact.						
8.	COVID-19 vaccine can protect us from infection of the Virus						
9.	Children are free from contacting COVID-19						

Application of ICT integration During COVID-19 pandemic

S/N	Statement	Items	SA	A	D	SD	UD
1.	Our school makes use of ICT for teaching and learning during COVID-19 pandemic						
2.	The use of ICT for teaching and learning during COVID-19 helps in maintaining physical distance but remain socially connected						
3.	Zoom is the only means of online teaching we have during COVID-19 pandemic						
4.	Google meet is the only means of online teaching we have during COVID-19 pandemic						
5.	Level of teachers competence has been enough to meet the challenge using ICT Integration during COVID-19 in teaching and learning						
6.	Level of pupils competence has been enough to meet the challenge using ICT Integration during COVID-19 in teaching and learning						
7.	There is stable internet supply for E-Learning to be effective in our school						
8.	There is stable power supply for E-Learning to be effective in our school						
9.	The Technological changes as a result of COVID-19 will change the future teaching and learning process in the school.						
10.	The methodological changes as a result of COVID-19 will change the future teaching and learning process in the school.						

Utilization of learning materials during COVID-19 pandemic

S/N	Statement	Items	SA	A	D	SD	UD
1.	The chairs and desks are enough for social distance to be observe in our school						
2.	The school need additional classes to be constructed to meet the COVID-19 spacing guidelines						
3.	Pupils learn in an outdoor / ventilated environment in our school						
4.	Teachers sanitize the learning materials before using them in the class.						
5.	Teachers in my school need a special training on how to teach in the context of COVID-19						

Challenges in the interaction between teachers and learners during COVID-19 pandemic

S/N	Statement	Items	SA	A	D	SD	UD
1.	The outbreak of COVID-19 affects teacher / learner interaction in school						
2.	Our practical lesson faces a lot of challenges amidst of COVID-19 pandemic						
3.	Pupils are no longer work in group to solve task in a class						
4.	Parents are helping the pupils to learn at home to assist teachers in at home						
5.	Physical interaction is suspended in my school						
6.	My school is no longer conducting assembly because of COVID-19						

Measures and intervention in addressing COVID-19 during teaching and learning

S/N	Statement	Items	SA	A	D	SD	UD
1.	Educational community always Provide the school with comments, opinion and suggestions on how to address COVID-19 pandemic in our school						
2.	The school operates on shift system to reduce overcrowding						
3.	The school always sensitize staff and pupils on immediate action to be taken in class during lesson						
4.	The school have running water and several points for hand washing						
5.	Government / community embarked on constructing new classes / halls in the school to help in reducing overcrowd						
6.	What other knowledge you have on COVID-19 pandemic prevention protocols?						
7.	Do you have any opinion on how to improve ICT integration during COVID-19 pandemic?						
8.	How does learning materials be utilize during COVID-19 pandemic?						
9.	What other challenges faced in the interaction between teachers and learners during Covid-10 pandemic?						
10.	What other measures do you think necessary in addressing COVID-19 pandemic during teaching and learning?						

APPENDIX III: Interview guides for Teachers

Interview guide schedule for teachers

a) Background information

Category of zone

Gender of respondent; Male [] Female []

Age of Respondents 25-35 35- 45 45- 55 55 Above

Please tell me about yourself (Probe in relation to academic qualification, working experience).

b) Knowledge of Covid – 19 pandemic

1. How can you identify a person with Covid – 19? Probe.....
2. How does Covid -19 virus spread? Probe.....
3. How can we protect ourselves from Covid -19? Probe.....

c) Application of ICT integration during Covid -19

1. How does your school integrate ICT in teaching and learning in the context of COVID-19? (Probe for the ICTs used and how, model of e-learning used)
2. What do you like about how you integrate ICT in teaching and learning?
3. What challenges do you face in relation to ICT integration in teaching and learning in the context of COVID-19?(Probe for competency of students and teachers, availability of ICTs, affordability etc) Utilization of learning resources during Covid -19 pandemic

1. On what capacity school have enough classes and Desk for social distance to be observed? Probe.....
 2. How do you utilize the halls and playground field during break and games? Probe.....
 3. Tell me about the use of outdoor / ventilated environment for teaching and learning in this school? Probe.....
- d) Challenges in the interaction between pupils and teachers
1. How has the outbreak of Covid -19 affected classroom pedagogy in this school? Probe.....
 2. How do you handle practical lessons in this school? Probe.....
 3. How do pupils solve group tasks in the class? Probe.....
 4. How parents are helping the pupils to learn at home? Probe
- e) Measures and interventions addressing classroom teaching and learning during Covid – 19
1. What suggestions have you received from educational community on measures of addressing COVID-19 during classes probe.....
 2. How does the school operate to reduce the overcrowding during COVID-19? Probe.....
 3. Do school sensitize the pupils and staff on immediate actions to be taken in class during lesson? Probe.....
 4. Does School have running water for hand washing in school? Probe.....
 5. Does school dis-infect the classes regularly?.....
 6. Do you have any other thing that you wish to tell me about Covid -19 prevention protocol and teaching and learning?.....

APPENDIX IV Focus Group Discussion

Schedule for focus group discussion (FGD) for primary pupils

a) Knowledge on Covid – 19

- 1 What can you say on COVID-19?
- 2 How can you protect yourself from contacting COVID-19
- 3 What are “dos” and don’t” rules created by school in respect to Covid – 19 prevention. Probe.....
- 4 What does school do to ensure that COVID-19 is not spread through objects and surfaces before usage? Probe.....
- 5 Application of ICT integration during Covid -19
 1. Tell me how ICT is used for learning in regard to COVID-19 prevention in this school? Probe.....
 2. Do you have computers for E-Learning?
Probe.....
- 6 Utilization of learning materials during COVID-19
 1. How do you understand social distancing
 2. How social distancing is applied in the classroom in this school?
Probe.....?
 3. Many pupils sit in a desk? Probe
 4. What do you do to the books and pens you borrowed from your friends?.....
 5. How do you conduct morning assembly?
Probe.....

7 Challenges in the interaction between pupils and teachers during Covid -19

1 How do you contact group work during lessons? Probe

.....

2 How you interact amongst yourselves during practical lessons? Why?

Probe.....

3 How do you get your face mask? Probe.....

8 Measures and intervention in addressing COVID-19 during teaching and learning

1. What measures taken by teachers in addressing COVID-19 during teaching?,,,,,,,,,,,,, probe

2. In the absence of hand sanitizer what other means do you use to clean your hands?probe

3. How frequent do you sanitize your hands during school hours?probe.

4. Does your school check your temperature?probe.

5. Apart from face mask and sanitizing what other measures of addressing COVID-19 you know?..... probe.

6. How many sanitizing point you in this school? Probe.

APPENDIX V: Observation schedule

Things to be observed and rating schedule on the COVID-19 prevention protocol and classroom teaching and learning

	Good	Fair	Poor	Remarks
Correct way of wearing facemask				
Hand washing / sanitizing. How many points				
Over crowding Observing the spacing				
Availability of ICT equipment				
Availability of stable internet				
Availability of power supply				
Availability of classrooms. What ratio are students to a class				
Sharing of books, pen and other materials				
Team work				
Practical classes				
Information cards				
Guide personnel				
Physical hygiene				

APPENDIX V: Approval to Conduct an Academic Research



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UBEB/QA/261/VOL.I/127


28/02/2022

Yusuf Bakari Ph D (Inview),
Department of Educational Foundations,
Kenyata University, Nairobi Kenya.

APPROVAL TO CONDUCT ACADEMIC RESEARCH

With reference to your letter dated 14th February, 2022, on the above subject matter, I have been directed to convey to you management approval to conduct a research work titled (Covid-19 Pandemic Management Protocols and Classroom Teaching and Learning in Public Primary Schools in Adamawa State, Nigeria)

The Board wishes you successful research work.


AMINU IBRAHIM
For: Executive Chairman.

APPENDIX VI: Introductory Letter



ADAMAWA STATE UNIVERSAL BASIC EDUCATION BOARD

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ADSUBEB/QA/261/VOL.I/127


28/02/2022

The Education Secretary,
..... LGEA,
Adamawa State.

INTRODUCTION LETTER INRESPECT OF YUSUF BAKARI PhD (Inview)

With reference to your letter dated 14th February, 2022, on the above subject matter, I have been directed to introduce to you a PhD Student *Yusuf Bakari* from Kenyatta University Graduate School who is carrying out a research work titled **(Covid-19 Pandamic Management Protocols and Classroom Teaching and Learning in Public Primary Schools in Adamawa State, Nigeria)**

The Board urged you to give him all the necessary cooperation and assistance that he may require for the success of his research, please.


AMINU IBRAHIM
For: Executive Chairman.

APPENDIX VII: Hand Washing Point





POLITE NOTICE

**PLEASE KEEP
1.5M
DISTANCE**

APPENDIX IX: Teacher Washing His Hands after Teaching



APPENDIX X: Guide for COVID-19 and Childhood Vaccinations

NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY

GUIDE FOR COVID-19 AND CHILDHOOD VACCINATIONS

STEP 1: RECEPTION AT THE HEALTH FACILITY

- Handwashing or use of hand sanitizer
- Temperature check

STEP 2: HEALTH TALK

- Listen to the health talk continuously

STEP 3: SCREENING AND REGISTRATION

- Screening of clients (age, vaccination status, etc)
- Registration for COVID-19 Vaccination: Paper-based and electronic (Electronic Management of Immunization Data - EMID)
- Registration for childhood vaccination (in the vaccination register)

STEP 4: VACCINATION

- COVID-19 Vaccination
- Childhood Vaccination
- Schedule next vaccination appointment
- Remind client about potential adverse events following Immunization
- Administration of Vitamin A (Children 6 - 59 Months)

STEP 5: VALIDATION OF COVID - 19 VACCINATION

- The client's photograph is taken by the validator
- Synchronization of photograph with COVID-19 vaccination record on the electronic platform. (EMID)

STEP 6: OBSERVATION/WAITING AREA

- Wait for 15 minutes for observation
- Depart after observation

NPHCDA
www.nphcda.gov.ng

For Questions/Concerns on COVID-19 Vaccine, Kindly call 07002201122

#YesToCOVID 19Vaccine

APPENDIX XI: Researcher and head teacher during research work



APPENDIX XII: Notice at the Entrance of classroom

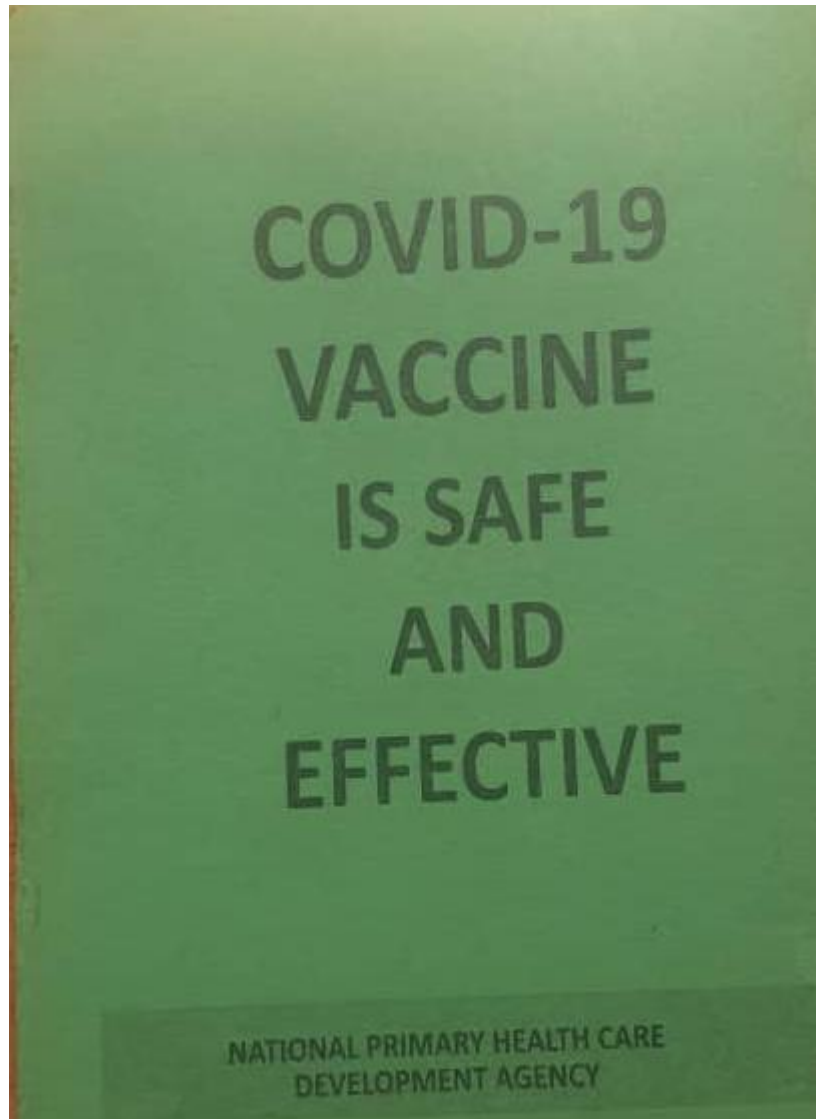




POLITE NOTICE

**PLEASE WEAR
YOUR FACE
MASK**

APPENDIX XIII: Notice on Covid 19 Vaccine



APPENDIX IX: Social Distance Adherence



APPENDIX X: Student Working in Group



APPENDIX XI: Researcher and Teachers



APPENDIX XII: Students in a class







APPENDIX XIII: Map of Adamawa State (Study Area)

