An Investigation of Senior Secondary School Teachers Utilization of ICT: An Example of Anambra State, Nigeria

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ABSTRACT

This study evaluates how secondary school teachers in Anambra State, Nigeria utilize Information and Communication Technology (ICT based on their gender, age, teacher's grade level, ICT general knowledge, and their usage of ICT. Due to the nature of this study, the study was carried out using quantitative research and survey method while ICT Utilization (ICTU) scale was data collection tool in this study. On the other hand, this research consists of two hundred and five (205) participants of actively employed teachers during the 2019–2020 academic session in both private and public secondary schools. Data analysis was conducted using frequency (f), percentage (%), mean ($\bar{X}$) and descriptive data analysis techniques while T-test and One-Way ANOVA was used result validation. The results demonstrated a strong sign that a greater number of the teachers demonstrated reasonable ICT utilization skills in terms of general knowledge and usage. On the hand, no major distinction could be found between ICT utilization and age, gender and grade level orientation.

The results also showed that there is great competence in the skills of teachers to make use of ICT effectively, at least on a technical or basic level. There remains a considerable gap between acquiring these skills and using them in the educational setting. Beside this, there is some acknowledgement and support of the benefits connected with usage of ICT, and there are some secondary school teachers who identify the significance of ICT in developing more productive techniques in the classroom.

Keywords: ICT utilization, secondary school, teachers, Anambra State

ÖZ

Bu çalışma (çalışma) Nijerya Anambra Eyaleti'ndeki ortaokul öğretmenlerinin Bilgi ve İletişim Teknolojisini (ICT) nasıl kullandıklarını değerlendirmeyi amaçlamaktadır. Değerlendirme cinsiyete, yaşa, öğretmenin sınıf seviyesine, BİT genel bilgisine ve BİT kullanımına yönelik dayanmaktadır. Bu çalışmanın doğası gereği, araştırma nicel araştırma ve anket yöntemi kullanılarak yürütülürken, bu çalışmada BİT Kullanım (ICTU) ölçeği veri toplama aracı olmuştur. Öte yandan, bu araştırma, hem özel hem de devlet ortaokullarında 2019-2020 akademik oturumunda aktif olarak çalışan öğretmenlerin iki yüz beş (205) katılımcısından oluşmaktadır. Veri analizi frekans (f), yüzde (%), ortalama ($\bar{X}$) ve tanımlayıcı veri analizi teknikleri kullanılarak yapılırken, T-testi ve Tek Yönlü ANOVA sonuç doğrulama kullanılmıştır. Sonuçlar, daha fazla sayıda öğretmenin genel bilgi ve kullanım açısından makul BİT kullanım becerileri sergilediğine dair güçlü bir işaret ortaya koydu. Öte yandan, BİT kullanımı ile yaş, cinsiyet ve sınıf düzeyi yönelimi arasında büyük bir ayrım bulunamamıştır.

Çalışma sonucu ayrıca öğretmenlerin BİT'i en azından teknik veya temel düzeyde etkili bir şekilde kullanma becerilerinde büyük bir yeterlilik olduğunu göstermiştir. Bu becerileri edinme ve eğitim ortamında kullanma arasında önemli bir boşluk var. Bunun yanında, BİT kullanımıyla bağlantılı faydaların bazı kabulleri ve destekleri vardır ve sınıfta daha üretken teknikler geliştirmede BİT'in önemini belirleyen bazı ortaokul öğretmenleri vardır.

Anahtar Kelimeler: BİT kullanımı, ortaokul, öğretmenler, Anambra Eyaleti

DEDICATION

To all the victims of COVID-19 and all the health workers all over the world who are fighting the pandemic day and night for good of all I dedicate this thesis.

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Chapter 1

INTRODUCTION

The dynamic changes and advancement in Information and Communications Technology (ICT) has led to a remarkable movement in the area of communication and information dissemination, which contributed in making the world more interactive. This created a ground and platform for transactions to occur between persons or group of people who their paths may never cross. Also, it can be said that ICT is cheap and easy to acquire throughout the world. Certainly, this sets a basis for an instant and interaction between people all over the world (Ogbomo & Ogbomo, 2008).

Education is central in the survival and growth of human being as individual and as society, each with its own ways and means of educating and socializing its members, as dictated by the societal culture. Every culture has a mechanism that adjusts and accommodates new developments happening within and outside the society which ensures continuity and effective transmission of the culture of the society from generation to generation and safeguard the survival and development of the society (Utomo, Florentinus, Rohidi, & Ganap, 2020).

Improper handling of changes taking place inside and outside the society may have huge impact on the culture of the society. The effects may come inform of backwardness, uncertainty, acculturation, or even total destruction of the society

(Lingenfelter, 2019). According to Baraldi and Corsi (2017), an educational system is developed for each society based on their culture, norms, tradition, and values. This will be suitable to their environment and generation and provide current and future development needs and ambitions. Consequently, as a result of development in ICT, diverse ideas and cultures interact are interwoven, as such, new knowledge, ideas, cultures and values, are transferred from one place to another.

No doubt, teaching and learning has been changed by Information communication technology (ICT) on a global scale. And many nations are capitalizing on the advantages presented by ICT to develop their educational sector. Although Nigeria on the other hand is making a great effort to tap into these advantages presented by ICT, but these efforts seems unproductive. As ICT based laboratories are largely found wanting in the many secondary school all over the country. And where they manage to exist, these laboratories are empty barely operational. Owing to this negligent from the government, academic stakeholders and other factors, including outdated curriculum, corruption, ill-motivated teachers, and academic sluggishness on the students and teachers' part, the nation is not performing well in academically. As a result of this, government and stakeholders should join hand in providing basic ICT based teaching aid to help in lifting the nation's educational system to a reasonable standard.

Consequently, ICT academic impact on any developing country especially Nigeria and in Anambra State secondary school cannot be over stressed. It is very important to note that ICT technological improvement has thrown light to the dark situation of teachers and students all over the world. As part of the ICT curriculum, teachers are inspired to

consider ICT as tools to be used in areas of their teaching careers. More precisely, they need to utilize multimedia technologies in their daily academic communication.

ICT utilization has unique significance within the educational system all over the world. The use of information and communication has brought about enormous enhancement in the ways of teachers and students' operation together with other members of the entire institutions (Kapur, 2019). The utilization of ICT within the teaching and learning processes in secondary school and instructional approach has an encouraging effect within the educational system. That is to say, teachers and other members of the institution can carry out their academic duty effortlessly and in an ordered and manageable manner. Nigeria on the other hand, a favorable learning environment is been promoted by utilization of ICT. In Anambra State, in well encouraging learning environment, teachers and students are capable to delivering acceptable participation and work in partnership and integration with other teacher, student and other schools in order to achieve desirable academic goal. In addition, multimedia usage in academic environment makes teaching and learning lively and enabling to suite the requirement of both teachers and students (Kaur & Nanak, 2015).

Also, according to Tella, Tella, Toyobo, Adika, and Adeyinka (2007), the manner by which secondary school teachers in Anambra State Nigeria usually glue themselves to ICT, by means of different kinds of devices, and for a considerable proportion of their time is never unconnected with the availability and affordability of the devices in the country in recent times . Accordingly, the worry here is about what the teachers are doing on these devices whether they fully understand the usage of them. Guan and Subrahmanyam (2009) in their studies revealed a huge patronage of the ICT devices among adults and youths, while other studies revealed that the effect tends to have

partly negative and partly positive inclination on the youths. For instance, youths are becoming more and more overwhelmed by programs available on the ICT, which in turn facilitate or erode their learning inclination and improve or retard their educational development.

Guan and Subrahmanyam (2009) study attributed some negative behaviors such as being too much attached to the internet making one to be exposed to sexually harmful information leading to cyber abuse. These reasons along with the government intention of further developing education in the country by means of ICT prompted the research to assess the utilization of ICT on secondary schools in Anambra State. In this regard, schools were selected based on location; urban/rural, and gender; male/female. This is with a view to find out whether there are similarities or differences in their knowledge and usage of the ICT and its impact on their educational development.

1.1 Statement of Problem

ICT utilization in secondary schools presents enthusiasm and fun and also uncertainties and concerns. Giving the fact that massive money, effort and time are put into establishing these ICT tools. Consequently, it should bring equal or more amount of educational value for teachers and students to validate its worth and cost. A lot of research has been carried out in ICT utilization (Yunus, Hashim, Embi, & Lubis, 2010; Kyakulumbye, Olobo, & Kisenyi, 2012). Nonetheless, because it is mainly utilized, it has not been extensively studied. Considering the fact these ICT tools are to a greater extent available in conventional classroom settings, knowing teacher's awareness of ICT apparatus at the secondary school level is important, as this will allow educational stakeholders to accurately determine the essential technological ICT tools to deploy in various secondary schools.

Teachers and students are said to be the fundamental focal point at the consideration of instituting secondary schools, even before gaining teaching employment, these modern-day teachers are more or less experienced at the utilization of certain ICT tools. For that reason, it is essential to make available all those basic ICT tools that will be utilized by such teachers upon gaining employment in such academic settings. In this case, it will be problematic if these teacher's general knowledge and usage of ICT tools is not established at the early stage before including ICT based curriculum or syllabus and instructional material for students.

These are the problems that this research study tends to address, because the results obtained will be valuable to educational stakeholders, teachers, parents and government ministries. For if the ICT utilization of these teachers are further recognized, then it becomes simpler to identify the necessary ICT tools preferred by teachers and the level of their utilization. Without identifying this, the problem remains unsolved in the educational sector.

1.2 Aim of Study

The aim of this study is to examine how senior secondary school teachers in Anambra State in Nigeria assess and utilize information and communication technology according to their grade level, age and gender.

1.3 Research Questions

The purpose of this study is to provide answers to the following research questions:

1. What are the senior secondary school teacher's ICT utilization in respect to their knowledge and usage of ICT?

2. What is the relationship between senior secondary school teacher's ICT utilization and their age?

3. What is the relationship between senior secondary school teacher's ICT utilization and their gender?

4. What is the relationship between senior secondary school teacher's ICT utilization and the grade level they teach?

1.4 Significance of the Study

Taking into consideration the increase in ICT utilization, it is thus essential to conduct a quantitative research on the significance in educational establishment (senior secondary schools). It is important to examine the teacher's utilization of ICT tools in teaching and learning in Secondary schools in Anambra State Nigeria. The supposed important of utilization of ICT must be examined; when teachers do not recognize value in ICT utilization, then adoption of ICT in schools me be investigated or teachers might require additional training on ICT usage. In this study, readers will know the importance of ICT utilization in secondary schools because wrong utilization is liable to problem and it is important to able to ascertain teacher's ICT utilization according to their age, gender and grade level. It is appropriate to correctly establish if ICT utilization has been influenced by teacher's age, gender or grade level they will teach. This will additionally facilitate the correct assignment of a particular teacher to the right grade level for effective utilization of ICT for teaching, learning and class activities, without which the problem continues to linger.

1.5 Limitation of the Study

Time was major problem this study faced especially during COVID-19 pandemic rampaging the whole world. This made physical contact with participant impossible and we had to rely on online questionnaire. As a result of that, not enough anticipated participants took part because some don't; have the resources like internet and smart phone to participate in the survey.

1.6 Important Terms

- **Information and Communications Technology (ICT):** This is the network infrastructure and its components that make modern computing possible. Although, there is no universal ICT definition, it generally means all peripherals, applications and network components that combined to allow people to communicate together (Rouse, 2019).
- **Secondary school:** This is intermediate school between primary (elementary) school and university and usually offering student opportunity to acquire vocational and technical skills (Sharfman, 2010).
- **Teachers:** A secondary school teacher is a person who teaches vocational, technical, academic or specialized subjects at private or public secondary schools. The subject taught could be language, English, mathematics, art, history, music or drama (Lanier, 1997).
- **Anambra State:** A southeast state in federal republic of Nigeria. The name Anambra was derived from the original Anglican version “Oma Mbala”, a typical native name of Anambra River. Awka as its capital and have other major commercial cities like Ekwulobia, Onitsha, and Nnewi (Ezenwaji, Awopeju, Otti, & Eduputa, 2014).

Chapter 2

REVIEW OF RELATED LITERATURE

This chapter focuses in reviewing related literature as it concerns this thesis. Conceptual review defines and explains the concepts embraced in the study encompassing the views of different researchers and authors. Additionally, the related research section unveils the findings and results of previous related researches which are found to be relevant to this study.

2.1 Conceptual Review

2.1.1 ICT Utilization

With information and communication technology, the world can be perceived as a small community. The influence of the media and telecommunications have transformed all facet of our lives ranging from education, economy etc. ICT make use of lot of information gateways these are – internet, intranet and extranet. Information and communication technology is a system which ensures efficiency in transmission, collection and storage of information using the various computer gadgets in any destination of the globe (Adelabu & Adu, 2016).

Lawrence (2018) said that the positive influence information and communication technology has in teaching and learning method used in world educational system is quite obvious. However, there is massive disparity in the levels of investments among various academic institutions located in the country. While some schools have adopted ICT fully into their curriculum enabling them to embrace wider scope of learning,

some schools are still quite reluctant to embed ICT systems in their learning process. In addition to that, a few schools (secondary) are still in their infant stage of ICT system installation, implementation, and usage.

There is a sharp increase in the availability and utilization of ICT facilities in many schools. Effort has been continuously inputted by the government to ensure the acquisition of ICT amenities for the enhancement of teaching process in various schools. ICT can be regarded as effective instruments used by the teachers and lecturers for the enhancement of teaching efficiency and learning process. Ogunlade (2015) expatiated that students are cognizance of the proficiency of ICT equipment in stimulating independent and self-governing learning by students and ensure self-improvement the instructors. He further emphasized that ICT amenities captures the attentions of the students because of it's fascinating nature, hence, ensuring teaching effectiveness. Ololube (2007) elaborated that the introduction and enhancement of ICT which we are experiencing today introduced a fresh chapter in the education system.

Researchers have emphasized that standard of education in secondary schools and institutions of higher learning can be enhanced my fully adapting ICT into our various educational systems. Thus, it's imperative for students to start getting used to the ever-changing trends and demands of the ICT age.

2.1.1.1 General Knowledge of ICT

This is an attempt targeted towards ascertaining the general computer knowledge of teachers. The survey is conducted because of the teachers' general knowledge of computer invariably determines the nature of behavior (whether positive or negative) and usage of ICT for instructional purposes. Kasimu (2015), from the findings of his

study revealed that, both urban and rural students are practically the same when comparing their ICT knowledge and usage levels.

2.1.1.2 Usage of ICT for Instruction

Khan, Bhatti, and Khan (2011) defined ICT usage at the utilization of various set of ICT technological tools and available resources to communicate, create, distribute, manage and store information. Also, Teo and Lee (2010) said that ICT usage can be said to be the utilization of the computer network along with internet, email, World Wide Web, search engines in the creation and sharing of information. OECD (2017) defines ICT usage as the act of determining ICT potentials, ICT skills of users and the effectiveness of these skills to the economy and society. The study conducted by Kolikant (2010) shows that there is minimum usage of ICT in educational establishments, and there are concerns and suspicions on possible bad effect of ICT usage. Despites the fact that ICT offers abundant benefits in academic environment, many teachers appears to be cautious in information and communication technology (Van Acker, Van Buuren, Kreijns, & Vermeulen, 2013). The modern generations of students are actually very adept at utilizing ICT tools; therefore, school stakeholders and teachers need to work on modifying the curriculum in order to contain their ICT requirements (Jordan, 2011).

The introduction of Information and Communication Technology into the education system of Nigeria has given rise to fresh forms of perceptions in teaching and learning procedures, managing courses, management and administration of the institution. It has also transformed the roles played by stakeholders, teachers, and students in the educational sectors (Umeagukwu & Ngozi, 2014).

Due to new development in Anambra State educational sector as a result of ICT introduction, there have been obvious changes in the sector that requires that students, teachers, and stakeholders to follow the trend by developing and obtaining the ICT knowledge in order to meet up the rest of the globe.

2.1.2 ICT and Education

Education has remained anchor factor inspiring the growth and development of any society. Thus, due to the instrumental role played by education in any given society, anything that constrains it, will wreck noticeable havoc to the societal development and economy at large. The level of education remains an important element in determining the degree of development in any given society. However, nowadays, where intense strife and competition is existing among countries, education remains very pivotal in strengthening societies to standout amidst competition. In the current world standpoint, ICT has become a meditative element enabling educational progress globally. Hence, the inability of any country or society to adopt and establish effective ICT systems will lead the citizenry to experience awkward educational backwardness.

Volman (2005) expatiated that the use of ICT is generating productive result in the learning efficiency of students. The study further observed that the academic institutions in the developed counties have invested significantly on ICT facilities over the last two decades enabling their students use computers and larger range of applications more often. The study of Mikre (2011) exposed that most of the teachers employing ICT facilities exhibit effective teaching skills in contrast to those who don’t.

The growth introduced into Nigerian educational sector by Information and Communication Technology is here to stay; its significance has been transformed into

massive potentials in terms of constructive outcomes. Though investments made in ICTs in Nigerian educational sector have not produced must in comparison with related investment made in telecommunication (Atureta, 2011).

According to Ololube (2007), introducing ICT utilization and integration in Anambra state educational sector has started new era in the sector, thus, it has drastically changed the conventional approach of information delivering to the students and modern learning experience to both teachers and students.

2.2 Utilization of ICT in Education

Utilization of ICT in education entails the adoption of universal apparatus of information and communication technology in useful way in teaching and learning in educational establishment (Watson, 2006; Voogt & Pelgrum, 2005). Today, ICT has more and more become a very important component for companies to develop and compete. Ajayi (2008) study emphasized that the modern world is perceived as a global village by utilizing ICT in diverse sectors like education, economy, politics and social. More or less in every circumstances or jobs, we stumble on incorporation and usage of ICT to solve problems. Consequently, potential teachers need to prepare and accustom themselves with ICT skills and knowledge in order to utilize it teaching and learning (Voogt, Fisser, Pareja Roblin, Tondeur, & van Braak, 2013).

Today, the restrictions presented by COVID-19 all over the world and Nigeria have been rescued by technology (Ozili & Arun, 2020). A teacher can have many students connect from different part of Nigeria or all over the world virtually. With the use of smart phones, Zoom, Skype, WhatsApp and other hardware and software alike, teachers and students can effortlessly get connected without physical or location

barriers making teaching and learning possible. With the situation of Nigerian today, it is not easy if not impractical to address educational sector without making reference to ICT. ICT is regarded as one of the building blocks upon which excellent education for everyone can definitely become a certainty, because of its distinctive ability to connect the world together, not even the most disadvantageous and remote villages in Nigeria will be exempted (Ndongfack, 2015).

With the introduction of ICT in secondary schools in Anambra State and learning process which was driven by COVID-19 forces that are beyond individual school decision making (Achimugu, Oluwagbemi, & Oluwaranti, 2010). The extension of ICT technologies across a broad range of areas not excluding secondary schools, universities, collage of education and other educational institutions came with major objective of enhancing teaching and learning setting (Al-Qahtani & Higgins, 2013). From the unset, the establishment of ICT in educational sector in Anambra State was to change the teaching and learning approach from the conversional instructional teacher centric approach to a student centric approach with both teacher and student actively participating (Voogt & Pelgrum, 2005).

2.3 Education in Nigeria

Educational is a requirement for man and society to survive. It presents skills, virtue and valuable knowledge for the development of the society (Amadi & Precious, 2015). It is an active instrument designed to meet and please the ambitions of the people and the society that is intended to serve.

Nigeria operates 6-3-3-5 system of education and was introduced with sole purpose to accomplish educational needs in this 21th century. Which such system of education,

with excellent implementation and real state of the art classroom, upholds quality education. The reason was that the academic curriculum was designed to cater for every student's educational wellbeing which made it a good democratic system of education. Current educational system curriculum put more emphasis on academic education, ICT and other learning technique that is needed to meet up with educational needs of the teachers and students in this technological driven generation. This made this system of education a versatile process as it incorporates scientific, economic, technological, political, and social-cultural as of life. These are the learning experience needed to attain academic success in this present world, mainly because its structure for teaching and learning is coherent in nature (Abbey, 2012).

Unfortunately, in Nigeria many challenges which exist that prevent a society like Nigeria from taking full advantage from education. Education in Nigeria has experienced major delay, great difficulty, and total disconnection as a result of national strike, insecurity, political instability, and all manners of dilapidated institutions and mostly poor educational standard. In line with the above mentioned, Amadi and Precious (2015) in their study express grief that industrial action from unions in form of demonstrations and strikes have become a business the day. Certainly, these unnecessary instabilities have led to under-development, total neglect and backwardness of the entire educational system and social structure.

Nwogu (2015) observed that inadequate resources and fast increase in child population present a big difficulty of who gets educated in the society and does not. This, of course brings about the element of disproportion in opportunities present in Nigeria educational sector.

Equally, Eddy and Akpan (2009), stated that poor preparation, insufficient funding, lack of experienced teaches, population increase, and poor execution are among the serious difficulties that have collectively limit Nigeria form capitalizing the profits of universal basic education. Similarly, Eddy and Akpan (2009) reported that poor planning, inadequate funding, lack of qualified teachers, population explosion and poor implementation constitute serious challenge that have combined to limit Nigeria from maximizing the gain of Universal Basic Education. In the same way, Okoh (2002) also express grief about inability of state and federal government to successfully maintain the educational funding shows signs of poor planning.

2.4 Education in Anambra State

Anambra State is located in southeast Nigeria, its population stand at 4.7 million with undisputed huge number of entrepreneurs and infinite investment potential. The present-day Anambra State was established August 27, 1991 from old Anambra State which in 1976 was created. The states' literacy level is rated high among other states in Nigeria. In 2010, the number of young students who registered in the state's Early Education Centers (EDC) was 131,363. The state educational census showed that there were 249 secondary schools (senior and junior) and 1,041 primary schools. Udeh, Okoye, and Obaze (2018) conducted a review in Anambra State covering (2006-2016), and their study showed that registration in Anambra State schools were among the highest in Nigeria, irrespective of corresponding huge number of children not attending school in Nigeria (Olaniyan, 2011). In the same review, Udeh, Okoye, and Obaze (2018) explained that the state had 193,891 registered Junior Secondary School (JSS) students while 731,141 were registered primary school pupils. Is also reported that registration among Senior Secondary school (SSS) student were high.

The decay in Nigeria educational sector was persistent, mainly after the civil war in the country. The difficulties which include but not limited to poor funding and poor academic curriculum, were additionally worsen by takeover of secondary and primary schools in early 1970s by East Central State Government. During Nigeria military rule, the educational sector had experienced a great degradation. Unavoidably, Anambra State bequeathed the educational shortfalls common in Nigeria. The system was in awful state and aimless.

The most harmful of the already worsen situation experienced under civilian rule was under Chiwoke Mbadinuju as the Governor of Anambra State (1999 to 2003). Then, secondary and primary schools were closed for one academic year as a result of non-payment of teachers' basic salaries. After years of civil war in Nigeria, educational systems in Anambra State like many states was in terrible crisis, but that was extremely transformed during Peter Obi as the Governor of the state from 2006 to 2014.

Mindful that holistic improvement has a significant connection to education, Gov. Obi, who on March 17 2006 was sworn in as the Governor (Familusi, 2012), made educational sector his one priority of his administration. Record has it that before his administration, Anambra State educational system was in a very bad state. School buildings were decaying and school children study in dirty and unhealthy environment (Ezegwu, Ewemooje, & Aiyede, 2011). Also, record shows that before Obi's administration no single science laboratories were properly equipped or functioning in any public school. The situation did not fare better in the area of Information and Communication Technology (ICT) in public schools, as the word computer is almost unheard of (Igbasi, 2019). Since then, things have changed for good in the area of

education and ICT especially thanks to one-man Governor Peter Obi and his administration.

2.5 Related Research

It is quite important to affirm that a host of researches has been channeled on unraveling the contribution of ICT utilization. Several studies targeted towards unraveling the degree of ICT utilization, acceptance and effectiveness by both teachers and their students. The goal of this section is to review related researches and their findings on ICT utilization level.

Tezci (2009) in his work examined teachers' effect on ICT use in education: Using 154 respondents made up the participants with the goal of finding out the knowledge, usage and behavior of secondary school teachers towards ICT. The findings showed that the greater number of school teachers were familiar with email, word processing, and internet while the behavior of teachers was overly positive. The study also discovered that levels of experience and knowledge of teachers plays a key role in shaping their behavior.

Wasif, Munir, and Shad (2012) evaluated the usage and effect of ICT in educational establishment; Pakistan as a case study. Data from 429 respondents from five different universities and colleges were used for the study while they deployed convenient sampling technique. Data for the study was sourced from 429 respondents from 5 colleges and universities while a convenient sampling technique was employed in the study. The study result indicated that knowledge and learning skills of student were improved as a result of availability and usage of ICT which proved that presence of ICT in institutions can enhance educational efficiency among teachers and students.

Ezeobi (2016) investigated in Awka Anambra State, Nigeria the availability and use of ICT resource in teaching and learning of biology in secondary schools.In this research, descriptive survey research design were employed while the sample comprised 120 senior secondary school biology teachers drawn from a population of 228 teachers from four out of six education zones in Anambra state. For data collection, a structure questionnaire was used by the author as the research instrument while in data analysis, mean ($\bar{X}$) standard deviation (SD), percentage (%), descriptive statistics frequencies (f) were used as well by the author At the end of the research, it was revealed that schools lacked some important ICT resources necessary for teaching and learning of biology in secondary schools.

These two authors Uzoechina and Oguegbu (2016) conducted another survey study on ICT awareness, utilization and their challenges in secondary school management in Onitsha, Anambra State Nigeria deploying descriptive survey in carrying out their research study. The research population stand at 80 respondents and they comprised of 48 computer science teachers and 32 school principals in secondary school in Onitsha Anambra State. The authors deployed structured questionnaire as instrument of data collection. These data were analyzed using their mean. The result of the showed the many principals to a greater extent are conversant with the ICT facilities used in the management of the school but utilization was on the low side.

Anaekwe (2016) on the research studied the significance of ICT in teaching and learning as seen by various Anambra States secondary school students. Also, the authors used in this study a descriptive survey and purposive sampling and population of the study was gotten from all public secondary schools' students studying computer science but from Junior Secondary Schools 2 students in Awka Anambra State Nigeria.

The study used a total of 156 sampling to carry out the research and it consists of 10% of the selected public schools in educational zone in Awka. The get response from respondents, the researchers used questionnaire as means of data collection and analyzing the data, standard deviation (SD), mean ($\bar{X}$), and T-test. The analytical result of the study indicated that ICT could go a long way to help students to get accustomed to basic computer appreciation skills primarily for their independence and employment after school. The study also shows that such ICT skills help boost students' desire and career prospect in area like been a computer scientist and computer technologist.

Nwana, Ofoegbu, and Egbe (2017) in their work investigated if there are enough ICT resources in teaching computer education in secondary schools in Anambra State, Nigeria and whether they are been utilized. The population of the student study was gotten from secondary school computer teachers and 450 participants participated. 40 self-developed questionnaires were used in data collection. Specialist were used in validating the instrument and they got reliability coefficient of 0.79 was obtained. Frequencies and percentages were used as tools for data analysis. The research result showed that there are not enough ICT based resources available for computer science teachers for their initialization. They study also revealed that even the little available ICT resource present at various secondary schools are not been unitized by teachers.

Ogbuabor, Okafor and Jesuwunmi (2019) carried out a study in Enugu and Anambra States tertiary institution to evaluate if ICT is been utilized in accounting education. The study participants stand at 229 generated from poll of university lecturers while questionnaire was utilized to elicit data from the respondents. Meanwhile, the data collected was analyzed using Univariate-ANOVA. Inadequate availability of ICT resources tertiary institutions in both Enugu and Anambra States were discovered in

this study which lead to poor utilization of ICT in the institutions. Also, the study shows that there are great similarity in the difficulties both institutions are facing when it comes to availability and initialization of ICT resources.

Basri, Alandejani, and Almadani (2018) in their study in Saudi university examined effect of ICT adoption on students' academic performance. The authors used quantitative research method to carry out the study and a sample size which comprised 1000 students were used for the study while data. The validity of the data was ascertained using structure equation modeling. In their data analysis, they employed Moment Structures (AMOS) are tools for the analysis. Their finding showed that a great association exists between academic performance and adoption of ICT in the universities. It further revealed that female students outperformed male students when ICT is adopted in their teaching and learning.

Ezenwafor, Soneye, and Okeke (2018) carried a study in south west of Nigeria to perform assessment of ICT resources utilization for quality in business education. Their study participant consisted of 550 respondents which comprised of 52 lecturers and 498 final year students of the institution while they used purposive sampling technique to get the required sample size of 302 which accommodates all 52 lecturers and just 250 students. That research showed a little degree utilization of ICT resources have based on status, subject, and institution ownership which significantly influenced the respondents' mean ratings but gender did not.

Ezekwe (2019) studied also the availability and utilization of ICT but this time on university undergraduate library users of Anambra State University, Nigeria. Author adopted an exploratory survey research design wherein questionnaire was employed

for collecting data in the study. A reliability test was conducted using kurdar Richardson correlation (KRCC) formula which the outcome was statistically significant at 0.96. The research population of 378 was divided into strata and applying stratified and proportionate sampling method, 370 copies were returned valid and thus were utilized for the purpose of the study. Data ware analyzed using Pearson Product Moment Correlation (PPMC) and descriptive statistics. The study showed that there are positive connection between availability and utilization of ICT resources and student library users in the institutions. During the study, it was discovered that many computer peripherals were present in the university library was used under the constraints. Also, it was discovered that students did not derive full satisfactory services from the usage of ICT owing to these constraints.

Chapter 3

METHODOLOGY

This particular section is designed at concentrating on the research method used while conducting the research and the sampling technique used while collecting data. The section also includes information about the research participants, tools used in collecting data, how the collected data were analyzed, validated and reliability checking.

3.1 Research Method

Due to the nature of this research design, quantitative research method and Survey approached Quantitative research design uses specific statistical technique to analysis numerical data in order to answer questions like; what, who, how many, how much, how and when. Also, it is a phenomenon of explaining certain issue or question by collecting data in numerical form (Apuke, 2017). Authors, Aliaga and Gunderson (2000), suggested that quantitative method implies making use of numerical data sourced from surveys and questionnaires. A survey research approach was defined by Ponto (2015), as collection of data from individual participants with similar goal through their replies to small questions. The survey was carried out through the use of a questionnaire in other to assess the utilization of ICT by senior secondary school teachers of Anambra State.

3.2 Population and Sample

This research was intended to cover all actively full time employed teachers; on the other hand, there was a lot of restraint partly due to COVID-19. As a result,

convenience-sampling method was used limiting the participants to only 205 who volunteered to take part in the survey.

Convenience sampling can sometimes be referred to as random sampling or opportunity sampling. Convenience sampling was defined by Dörnyei (2007) as those sampling that has unknown probably of selection. The main reason many researches normally fall back to convenience sample technique is because it makes getting the required sample easy. The reason researchers use convenience sample is because they are easy to get. This process consists of participants been selected on the bases of their availability. Also, in this sampling technique, a number of the target population is chosen while others are rejected simply because of their unavailability when the study sample is gathered. As a result of this, there is some element of bias when convenience sample methods are been used (Saumure & Given, 2008).

3.3 Participants

The research participant consists of all fully employed secondary school teachers in Anambra State during 2019 – 2020 academic session in both private and public secondary schools, which included Grade 1, Grade 2 and Grade 3 level teachers.

Secondary schools in Nigeria are normally in two groups, 3 years of Junior Secondary School (JSS), and 3 years of Senior Secondary School (SSS). Participants of this study are selected from teachers that teachers' students in SSS classes since they are the group like to use ICT in teaching and learning.

Table 3.1: Participants according to sector

Sector	Percent (%)	Frequency (n)
Public	58.5	120
Private	41.5	85
Total	100	205

As illustrated in Table 3.1, it was revealed by the survey that 205 teachers participated in the investigation. Specifically, 41.5% (85 teachers) teaches in private secondary school while 58.5% (120 teachers) teaches in government secondary school.

Table 3.2: Participants according to gender

Gender	Percent (%)	Frequency(n)
Female	52.7	108
Male	47.3	97
Total	100.00	205

As illustrated in Table 3.2, it was revealed by the survey that 205 teachers participated in the investigation. Explicitly, 52.7% (i.e. 108 teachers) of the research participant are female while the remaining 47.3% (i.e. 97 teachers) of the participant as male.

The high personage of female teachers can be attributed to the fact that female teachers normal dominate in numbers in primary and secondary schools in Nigeria. But this is in contrast with similar study carried out by Amasuomo (2014).

Table 3.3: Participants according to age range

Age Range	Percent (%)	Frequency(n)
20-25	26.3	54
26-30	23.4	48
31-35	32.7	67
36 and above	17.6	36
Total	100	205

From Table 3.3, the data gathered shows that 26.3% (i.e. 54 teachers) of the participant were beneath the age range of 20-25, 23.4% (i.e. 48 teachers) were in the age range of 26-30 years, 32.7% (67 teachers) were 31-35 years and 17.6% (i.e. 36 teachers) were above the age of 35.

Most secondary school owners in Nigeria prefer to employ young and inexpensive teachers due to financial reason because they cannot afford older and graduate with Nigerian Certificate of Education (NCE) which can be seen greater percentage among young teachers. This was backed up by a similar study by Aina (2012) which showed that most schools use young and inexperienced teachers.

Table 3.4: Participants according to their grade level

Grade level	Percent (%)	Frequency(n)
Grade 3	20.5	42
Grade 2	38.0	78
Grade 1	41.5	85
Total	100	205

Information in Table 3.4 is the research data collected according to teaches grade level, which shows that out 205 of the population 41.5% (i.e. 85 teachers) are in Grade 1, 38% (i.e. 78 teachers) are in Grade 2, while 20.5% (i.e. 42 teachers) are in Grade 3.

Table 3.5: Teachers active years of teaching

Years of Experience	Percent (%)	Frequency(n)
1-5	26.8	55
6-10	47.8	98
11 and above	25.4	52
Total	100	205

Table 3.5 shows information of research participants' according to teachers' number of active teaching experience. Upon examination, the survey showed that 26.8% (i.e. 55 teachers) have 1-5 years active teaching experience, 47.8% (i.e. 98 teachers) have 6-10 years active teaching experience while 25.4% (i.e. 52 teachers) have 11 years and above active teaching experience.

Table 3.6: Participant attendance of any ICT training course(s)

Attendance of ICT Training	Percent (%)	Frequency(n)
No	23.4	48
Yes	76.6	157
Total	100	205

As it is shown in Table 3.6, 76.6 % (i.e. 157 teachers) agreed that they have in the past attended ICT based course training on the other hand, 23.4% (i.e. 48 teachers) said they have not attended any ICT training course.

3.4 Data Collection Tools

There are two aspects of the survey used: the demographic aspect and the ICT Utilization (ICTU) scale. The researcher developed the demographic section of the survey and consists of overall questions concerning respondents (such as age range, gender, grade level, etc.). The second part of the survey, ICT Utilization (ICTU) adapted the instituted by Alharbi (2014), scaling from 5-Strongly Agree (SA), 4-Agree (A), 3-Indifferent (I) 2-Disagree (DA) and 1-Strongly Disagree (SD) that is according to 5-point Likert. It consists of 13 affirmative question types. The questionnaire was sub-divided into two and they include: (i) teachers' general knowledge of ICT (i.e. 7 question items), (ii) teachers' usage of ICT for instructional purposes (i.e. 6 question items).

The teacher's general knowledge of ICT which contain 7 questions aim at measuring teachers' knowledge of basic operation of personal computers and performing simple task on it. The second question, teachers' usage of ICT consisting to 6 questions, test the advanced ICT usage among teacher for instructional purpose.

3.5 Data Analysis

The entire data gathered for the study was examined using descriptive analysis method with the use of IBM SPSS Statistics, version 23 software. One-Way ANOVA, Percentage (%), Frequency (f) and T-test were used to analyze collected data. Frequency and descriptive analysis were used to demonstrate the obtained result in reference to individual research question variable. On the other hand, T-test was used to analyze study data that consists of only two variables while two or more variable was analyzed using one-way ANOVA.

3.6 Validity and Reliability

Original research finding conducted by Alharbi (2014) was determined to have Cronbach alpha value greater than 0.70 which indicated that the ICTU scale was very valid also indicating that the items in this scale were reliable as well. Though, for this research study, an inner consistency test on the reliability coefficient of the ICTU scale (i.e. 13 items of Cronbach alpha value) was administered and 0.994 was determined as its result. This is considerably high value and can be said to be approximately 1, therefore demonstrating that the values in the ICTU scale are consistent.

Chapter 4

RESEARCH FINDINGS

The analyzed data were presented in this fourth chapter. The information presented here shows the teachers' ICT utilization according to age, gender and grade.

4.1 ICT Utilization by Senior Secondary Teachers with Respect to Knowledge and Usage for Instructional Purposes

Table 4.1 shows the senior secondary school teachers' ICT utilization for instructional purposes in regards to their knowledge and usage.

Table 4.1: ICT utilization by senior secondary school teachers of Anambra State

Sub-Dimensions	SD	Mean	N
General Knowledge of ICT	9.06	24.51	205
Usage of ICT for Instruction	6.96	18.88	205

As it can be seen in Table 4.1, the general knowledge of ICT subdivision has 7 items; and usage of ICT for instructional purposes has 6 items. However, the entire items were appraised using Likert Scale with a weighting value ranging from 1 to 5 where the value of 1 represents the minimum (strongly disagree) and 5 represents the maximum (strongly agree).

The general knowledge of ICT and usage of ICT for instructional purposes have an average mean for each division as 14 and 12 respectively. Furthermore, if in any case the value of the mean ($\bar{X}$) is seen considerably higher than the average mean ($\bar{X}$)

midpoint; it indicates that the obtained values of the mean are moderately high. Hence, if the value of the mean is noticeably highly when compared to the midpoint of the average mean, it is an indication that the obtained mean ($\bar{X}$) values are quite extremely high.

Additionally, the mean ($\bar{X}$) values of the general knowledge of ICT, and usage of ICT for instructional purposes were 24.51and 18.88. The general knowledge of ICT has a standard deviation value of 9.06; while usage of ICT for instructional purposes has a standard deviation value of 6.96. The general knowledge of ICT and usage of ICT for instructional purposes have mean values which showed that they were comparably high.

4.1.1 Teachers' General Knowledge of ICT

In regards to the ICT utilization by teachers, the teachers' general knowledge of ICT illustrates the confidence level of teachers in performing basic computer operation that showcases their general ICT intelligence on the basis of seven (7) items.

Table 4.2: Teachers basic knowledge of operating personal computer

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-1	Strongly Agree	31.7	65	1.38	3.45
	Agree	21.5	44		
	Indifferent	18.5	38		
	Disagree	17.1	35		
	Strongly Disagree	11.2	23		

According to Table 4.2, it can be observed that most of the teachers are very motivated in operating a PC. This reflected by 53.2% (109 teachers) agreeing to have a great optimism in using a PC. On the contrary, 28.3% (58 teachers) were against the idea as they lacked proficiency in performing the basic operation of a PC. The remaining

18.5% (38 teachers) were uninterested. Consequently, values of 3.45 and 1.38 for mean and standard deviation respective convey that teachers are utilizing ICT facilities.

In conclusion, the basic knowledge of operating PC results is in line with the result of Egbri (2012), which agreed that teachers will be greatly handicapped in discharging their duties effectively without sufficient and thorough knowledge of ICT. Perhaps, this gave rise to the result that most teachers can perform the basics of operating PC.

Table 4.3: Teachers knowledge of searching for data on computer hard disk

	Statement	**Percent (%)**	**Frequency (n)**	**Standard Deviation**	**Mean**
ITEM-2	Strongly Agree	24.9	51	1.29	3.37
	Agree	22.9	47		
	Indifferent	27.3	56		
	Disagree	14.1	29		
	Strongly Disagree	10.7	22		

As can be observed from Table 4.3 above, most of the teachers with their knowledge level of ICT are eager in searching for data saved on their personal computer hard drive. This led to 47.8% (98 teachers) confirming their ability is searching for a saved data in a computer hard disk. However, 24.8% (51 teachers) opposed the notion as they have a poor ability in performing the task. Finally, the rest to the tune of 27.3% (56 teachers) were not convinced on their standpoint.

In addition, the mean and standard deviation values of 3.37 and 1.29 are an indication that a host of the teachers can explore and find saved files in a computer hard disk. This proves that most teachers have adequate general knowledge of ICT and are very comfortable utilizing ICT packages. Finally, the findings of this study concurred with

the study of author Nwana et al. (2017) which showed that the necessary ICT resources required by teachers for effective teaching and learning of computer education are most of the time not available for them leading to a decrease in the percentage of teachers who have knowledge of ICT.

Table 4.4: Knowledge of Using Microsoft Programs (such as Word and Excel Spreadsheet)

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-3	Strongly Agree	21.5	44	1.33	3.25
	Agree	25.4	52		
	Indifferent	23.4	48		
	Disagree	16.1	33		
	Strongly Disagree	13.7	28		

As displayed in Table 4.4, a huge proportion of the teachers are very comfortable using Microsoft programs such as Word and Excel Spreadsheet. Due to this fact, 46.9% (96 teachers) showed a great optimism in the usage of Microsoft programs as a tool for preparing documents in a standard format (96 teachers). Meanwhile, 29.8% (48 teachers) were of the notion of being unable to operate Microsoft programs. Hence, 23.4% (48 teachers) were not sure of their standpoint.

Also, in Table 4.4, the mean value of 3.25 and a standard deviation value of 1.33 shows the comparative optimism that teachers have when it comes to employing ICT packages to present documents in a standard format.

Table 4.5: Knowledge of Managing Files (Delete, Move etc.)

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-4	Strongly Agree	33.2	68	1.4	3.5
	Agree	23.9	49		
	Indifferent	15.1	31		
	Disagree	15.6	32		
	Strongly Disagree	12.2	25		

In Table 4.5, it is quite clear that a host of the studied respondents believe on their ability to manage files in a computer. This made 57.1% of the teachers to demonstrate a meaningful optimism in their skill of being able to manage files (such as moving or deleting an item) in a PC. However, 57% of the teachers disapproved while 15.1% were not sure of their standpoint.

Also, in the same Table 4.5, with standard deviation value of 1.4 and a mean value of 3.5 which explains that degree which teachers view the function of managing files in a PC comparably great. In summary, it can be identified that the slight difference between the positive and negative responses was as a result of the gap between teachers in urban location and ones in rural location. This may be because of easier accessibility to internet, technology, electricity, and enlightenment etc. of urban occupants when compared to rural occupants.

Table 4.6: Knowledge of Editing Pictures, Animation and Videos

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-5	Strongly Agree	22.4	46	1.33	3.31
	Agree	28.8	59		
	Indifferent	18.5	38		
	Disagree	18.0	37		
	Strongly Disagree	12.2	25		

Table 4.6 displayed that 51.2% of teachers depict high level of confidence in editing pictures, animation and videos. 30.2% of the teachers showed that they are not optimistic in doing that while 18.5% of the teachers don't really know where they stand. A mean and SD of 3.31 and 1.33 respectively, proved that majority of the teachers are capable of employing ICT facilities to edit pictures, animation and videos which however unveils their general knowledge in leveraging from ICT facility.

Table 4.7: Knowledge of Searching Information and Downloading Files from the Internet

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-6	Strongly Agree	43.4	89	1.3	3.85
	Agree	25.9	53		
	Indifferent	10.7	22		
	Disagree	12.7	26		
	Strongly Disagree	7.3	15		

From Table 4.7 it can be observed that 69.3% of teachers to a great degree displayed their magnitude of proficiency in searching information and downloading files from the internet. 20% didn't concur to this notion. However, the remaining 10.7% were not sure of any choice. A mean and SD values of 3.85 and 1.3 respectively evidenced that teachers are greatly comfortable with using the internet as it always aids them in actualizing their goal of sufficiently impacting the students. However, it's important to note that the level of teachers' knowledge concerning the internet made them to support this notion.

Table 4.8: Knowledge of using emails (sending and receiving)

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-7	Strongly Agree	36.1	74	1.23	3.77
	Agree	28.3	58		
	Indifferent	17.6	36		
	Disagree	12.2	25		
	Strongly Disagree	5.9	12		

As displayed in Table 4.8 above, most of the teachers indicated that they are capable of sending and receiving emails to the tune of 64.4%. Contrary to that, 18.1% outlined that they are unable to perform that operation. Lastly, 17.6% of were not sure of their standpoint.

The values 1.23 and 3.77 for standard deviation and mean respectively suggest that most of the teachers are very proficient in leveraging from email system. This is a great indication that teachers demonstrate a significant degree of expertise in employing ICT facility which invariably aids them in having sufficient know-how on how to use email system.

However, it should be noted that there is need for teachers to get themselves equipped and familiarized with thorough basic knowledge of computer functions so that they can easily master ICT facilities to enhance teaching efficiently. The results obtained concur to the findings of Tezci (2009), who revealed that word-processing, e-mail, and internet usage are well known and commonly used by secondary school teachers. Additionally, the author suggested that there is generally positivity towards computers and the Internet by teachers' ICT utilization. In addition, Egbri (2012), affirmed that lecturers, instructors and students cannot do much without adequate knowledge of

ICT, hence, the need to the high degree of adequate knowledge of sending and receiving email.

4.1.2 Instructional Usage of ICT by Teachers

In respect to ICT utilization by teachers, instructional usage of ICT by teachers for educational purposes illustrates the ability and capability of teachers to directly use ICT skills for instructing the students effectively.

Table 4.9: Presentation creation by use of different resources

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-8	Strongly Agree	16.6	34	1.18	3.17
	Agree	22.9	47		
	Indifferent	27.3	56		
	Disagree	26.8	55		
	Strongly Disagree	6.3	13		

According to Table 4.9, 39.5% of the teachers believe that can be able to combine sound or video files to create presentations. Similarly, 33.1% of the teachers demonstrated lack of confidence in their ability in combining different resources to create presentations. However, 27.3% were not sure of their standpoint. A mean and SD values of 3.17 and 1.18 conveys that most of the teachers are enthusiastic of mixing sound and video files to create presentations that would ensure greater teaching efficiency.

Table 4.10: Social media usage in educating students

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-9	Strongly Agree	42	86	1.23	3.92
	Agree	30.2	62		
	Indifferent	12.7	26		
	Disagree	7.8	16		
	Strongly Disagree	7.3	15		

Table 4.10 revealed that most of the teachers (72.2%) can easily utilize chat rooms and forums such as Facebook, WhatsApp and Twitter for instructing students. it shows the high levels of optimism achieved by teachers in using chat rooms and forums (Facebook, WhatsApp, Twitter etc.) for instructing students. 15.1% of the teachers had different opinion while 12.7% were not sure of a particular selection. A mean value of 3.93 and a standard deviation value 1.23 show that a host of the teachers were enthusiastic of using online chat rooms to instruct students.

Table 4.11: Publishing a personal blog to enhance students' online learning engagement

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-10	Strongly Agree	10.2	21	1.24	2.74
	Agree	17.1	35		
	Indifferent	27.8	57		
	Disagree	26.3	54		
	Strongly Disagree	18.5	38		

Table 4.11 conveys that a big proportion of the teachers (34.8%) studied were pessimistic of their knowhow in publishing personal blog to enhance students learning and online engagement. 27.8% were not sure of their standpoint. Also, a mean value of 2.74 and a standard deviation value 1.24 are quite moderate values explaining the teachers' poor knowhow in publishing a personal blog to enhance students' online learning engagement.

Table 4.12: Using show data basis on PC as a projection tool to facilitate learning

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-11	Strongly Agree	12.2	25	1.17	3.02
	Agree	20	41		
	Indifferent	38	78		
	Disagree	17.1	35		
	Strongly Disagree	12.7	27		

Table 4.12 revealed that 32.2% of the teachers show great belief in using show data basis on PC as a projection tool to facilitate learning. 29.8% total disagreed while 38% of had neutral viewpoints. Also, from Table 4.12, a standard deviation value of 1.17 and a mean of 3.02 indicate that majority of the teachers are comparatively enthusiastic in employing show data basis on PC as a projection tool to facilitate learning.

Table 4.13: Producing learning software to stimulate students' understanding

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-12	Strongly Agree	12.7	26	1.22	2.97
	Agree	19	39		
	Indifferent	36.1	74		
	Disagree	17.1	35		
	Strongly Disagree	15.1	31		

Table 4.13 exposed that only 31.7% of the teachers studied are able to produce learning software. 32.2% of the teachers disclosed their inability while 36.1% of the respondents were not sure of their standpoint. The values 2.97 and 1.22 for mean and standard deviation respectively from Table 4.13 expose inadequate abilities among teachers to produce educational learning software' to stimulate students understand. Conclusively, it can be deduced that most teachers are average computer operations because producing learning software requires computer knowledge which is slightly above average.

Table 4.14: Using PowerPoint software to communicate essential points

	Statement	Percent (%)	Frequency (n)	Standard Deviation	Mean
ITEM-13	Strongly Agree	13.7	28	1.17	3.07
	Agree	22	45		
	Indifferent	30.7	63		
	Disagree	24.9	51		
	Strongly Disagree	8.8	18		

Table 4.14 revealed that 35.7% of teachers were very comfortable with using PowerPoint software to communicate essential points to the students. 33.7% of the respondents signified that they are unable to use PowerPoint software to communicate essential points while 30.7% of the teachers had no viewpoint. The mean and SD values of 3.07 and 1.17 respectively shows that a huge portion of the teachers can use PowerPoint software to communicate essential points to the students. It can be concluded that teachers show a relative high usage of PowerPoint software to effectively communicate essential points to the students.

4.2 Relationship between ICT Utilization and Age of Teachers

In this study, a one-way analysis of variance (one-way ANOVA) was carried out for the purpose of determining and measuring the effect secondary school teachers age has on their utilization of ICT resources in respect to their various age groups (20-25, 26-30, 31-35, and 36+). Nevertheless, the utilization of ICT resources did not differ significantly for the different age brackets in all 13 items ($p>0.05$).

In summary, the result derived from this finding indicate that the age group of Secondary school teachers is not considered as a significant determinant of their ICT utilization. Therefore, no correlation exists between ICT utilization and age bracket of secondary school teachers within this age group (20-25, 25-30, 31-35, 36+). Additionally, the results gotten from this study is in line with researchers Mahdi and Al-Dera (2013) study which shows that teachers' age and experience did not change how they utilize ICT. However, the findings from Merillo and Domingo (2019), and Albion, Jamieson-Proctor, and Finger (2011), indicate otherwise. Albion et al. (2011) study revealed that there were few significant disparities in ICT usage and confidence according to age, and Merillo and Domingo (2019) later study affirmed that both

teachers experience and age as profile variables have a huge relationship with ICT usage and integration in teaching.

It can be concluded from this finding that general knowledge and usage of ICT are not been impacted by their age group (20-25, 26-30, 31-35 or 36+). This can be attributed to the fact that a greater percentage of secondary school teachers in Nigeria are young. They normal make use of fresh and good secondary school graduate as their since they cannot afford to pay well education university graduate.

4.3 Relationship between ICT Utilization and Gender of Teachers

In order to determine the connection between senior secondary school teacher's gender and ICT utilization, an independent samples t-test was used in order to contrast ICT utilization in female and male genders.

There is no significant difference of teachers' gender on ICT utilization for all the 13 items. Furthermore, the results derived indicates that secondary school teacher's gender has no effect on ICT utilization, hence, no relationship exists between ICT utilization and gender. Elsaadani (2012) research, supports the result of this study when the findings of the researcher showed that no significance difference exists between male and female secondary school teachers as regards to ICT utilization. Also the works of Fomsi and Orduah (2017), is in support of the findings of this research when the finding of their research discovered that there is no meaningful difference between male and female teachers in ICT usage. However, the findings of Mahdi and Al-Dera (2013) study which showed that there is a significant disparity between male teachers and female teachers in ICT utilization.

In summary, the findings of this research proved substantial by unraveling that no reasonable variation was present between ICT utilization and both genders. That is to say, teachers' gender is not viewed as a strong force or core factor in predicting the ICT utilization level of teachers.

4.4 Relationship between ICT Utilization and Grade Level of Teachers

In this study, a one-way analysis of variance (one-way ANOVA) was carried out for the purpose of determining and measuring the effect senior secondary school grade level has on their utilization of ICT resources in respect to the various grade levels (Grade 1, Grade 2, and Grade 3). Nevertheless, the utilization of ICT resources did not differ significantly for the different grade levels in all 13 items ($p>0.05$).

In conclusion, the result derived from this finding indicate that the grade level of Secondary school teachers is not considered as a significant determinant of their ICT utilization. Therefore, no correlation exists between ICT utilization and grade level of secondary school teachers within this grade level (Grade 1, Grade 2, and Grade 3). However, after reviewing the literature, the findings of Sangrà and González-Sanmamed (2010), and Hsu (2011) disagree agree with the findings of this research, with their results indicating that there is a significant relationship between teachers ICT utilization and grade level whereby their ICT utilization level tends to increase (Hsu, 2011), or decreases (Sangrà & González-Sanmamed, 2010)depending on the grade level they are teaching which is a great contrast.

It can be concluded from this finding that ICT utilization are not been impacted by their grade level (Grade 1, Grade 2, and Grade 3).

Chapter 5

CONCLUSION

The focus of this research work was to assess ICT utilization of teachers in Anambra State and demonstrate the variation in terms of age, gender and grade level. Quantitative research and survey method ICT Utilization (ICTU) Scale were employed to serve as tools for eliciting the necessary data sourced from both private and public secondary schools in Anambra State, Nigeria. The study sample includes 205 actively employed secondary school teachers within 2019 – 2020 academic session who willingly made themselves available. The entire data sourced for the purpose of the study was analyzed with the aid of one-way analysis of variance (one-way ANOVA) test, percentage, descriptive analysis techniques and T-test. Presentation and assembling of the collected data was analyzed descriptively in an understandable format to aid other analyses.

On the other hand, one-way analysis of variance (one-way ANOVA) test and T-test was used in this study to examine data that has to do with two variables such as the relationship among the ICT utilization level and teachers' gender. More so, T-test was used to ascertain the correlation that existed among variables exceeding two such as in the case of divergent age bracket and ICT.

The discovery generated from this research unraveled that majority of the teachers demonstrate a great enthusiasm level towards the utilization of ICT with reference to their general knowledge and usage for instructional purposes.

As stated in this research, teachers' ICT utilization level does not vary in terms of age of the teachers, hence proving that age cannot be viewed as a significant determinant controlling the utilization level of ICT by teachers.

Furthermore, the research also proved that there is no variation between ICT utilization level and gender of teachers, thereby proving that the divergence opinion if the respective gender (male and female) does not have strong correlation with ICT utilization level by teachers.

In addition, the research findings suggested that ICT utilization does not vary in terms of the grade level of teachers. The study showed that secondary school teachers' grade level does not have meaningful relationship with their ICT utilization.

In conclusion, the findings of this research uncovered those secondary school teachers (both private and public) in Anambra State, Nigeria have reasonable level of ICT in reference to their level of general knowledge and usage, and that there is no strong interaction between age, gender and grade level with the ICT utilization of teachers.

The study therefore recommends that government should institute interesting ICT training programs and provide greater user-friendly ICT facility/packages/environment that would enable an optimum utilization of the potential in ICT to ensure better teaching efficiency.

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APPENDICES

Appendix A: Demographic Survey

The Teacher Questionnaire

Dear Participants,

To answer the question in this section please tick in the appropriate box that best suits the answer you have selected. Note, only one answer can be selected for a question.

Sector one: Background Information.

1. **Sector**

- ☐ Public
- ☐ Private

2. **Gender**

- ☐ Male
- ☐ Female

3. **Age**

- ☐ 20 – 25
- ☐ 26 -30
- ☐ 31-35
- ☐ 36 and above

4. **What grade do you teach?** (Tick only one of the following. If you teach different levels, tick the level you teach most often)

- ☐ Grade 1
- ☐ Grade 2
- ☐ Grade 3

5. **Number of years in teaching .....(Year(s))**

6. **Have you attended any ICT training courses?**

- ☐ Yes
- ☐ No

Appendix B: ICT Utilization Scale

The following questions stated below will be answered with the given 5 point Likert scale, with 5 specifying that you strongly agree (SA), 4 specifying that you agree (A), 3 specifying that you are indifferent (I), 2 specifying that you disagree (D), 1 stating that you strongly disagree (SD) with the idea.

		SA	A	I	D	SD
		5	4	3	2	1
1	Basics of operating PC (using keyboard, mouse… etc.).					
2	Searching for saved date on hard disk or compact disk					
3	Using Microsoft programs (such as Word and Excel Spreadsheet)					
4	Managing files (delete, move etc.)					
5	Editing pictures, animations or movies.					
6	Searching information and downloading files from the internet					
7	Using emails (sending and receiving)					
8	Combining files from different resources (sound or video files) to create presentations					
9	Using chat rooms and forums (Facebook, WhatsApp, Twitter etc.) for instructing students					
10	Publishing a personal blog to enhance students online learning engagement					
11	Using show data basis on PC as a projection tool to facilitate learning					
12	Producing learning software to stimulate students' understanding					
13	Using PowerPoint software to communicate essential points					

Appendix C: Consent Form

Dear participant,
Please take a few minutes to read the following information on this research carefully before you agree to participate. **If at any time you have a question regarding the study, please feel free to ask the researcher who will provide more information**.
This study is being conducted by Asogwa Ugwumsinachi Valentine under the supervision of Prof. Dr. Ersun İŞÇİOĞLU. It aims to investigate the utilization of information and communication technology in secondary schools in Anambra state Nigeria. The study should take no more than 10 minutes to complete.
Of course, you are not obliged to participate in this research and are free to refuse to participate. You may also withdraw from the study at any point without giving any reason. In this case, all of your responses will be destroyed and omitted from the research. If you agree to participate in and complete the study, all responses and questionnaires will be treated confidentially. Your name and identifying information will be kept securely and separately from the rest of your questionnaire. Data will be stored for a maximum of six years after the study. Once the data is analyzed, a report of the findings may be submitted for publication.

To signify your voluntary participation, please complete the consent form below.

CONSENT FORM
Research Title: Assessing the Utilization of information and Communication Technology in Secondary Schools in Anambra State Nigeria
Name of Researcher: Asogwa Ugwumsinachi Valentine ,valentine.asogwa@yahoo.com

Please tick the boxes to confirm that you agree to each statement.

1. I confirm that I have read and understood the information sheet for this study and have had the opportunity to ask any questions. ☐

2. I understand that my participation is voluntary and that I may withdraw from the study at any time without explanation. ☐

3. I agree to take part in this study. ☐

_____ _____
Date Signature

If you have any concerns about the ethical conduct of this study, please inform Prof DR Hasan Simsek, Ethics Committee member at Faculty of Education Eastern Mediterranean University, in writing, providing a detailed account of your concern (hasan.simsek@emu.edu.tr).

Appendix D: Approval Letter from Ethics Committee

Doğu Akdeniz Üniversitesi
"Erdem, Bilgi, Gelişim"

Eastern Mediterranean University
"Virtue, Knowledge, Advancement"

99628, Gazimağusa, KUZEY KIBRIS / Famagusta, North Cyprus, via Mersin-10 TURKEY
Tel: (+90) 392 630 1995
Faks/Fax: (+90) 392 630 2919
E-mail: bayek@emu.edu.tr

Etik Kurulu / *Ethics Committee*

Sayı: ETK00-2020-0034 31.01.2020

Konu: Your application for ethical approval.

Re: Asogvva Valentine Ugwumsinach (18500173)

Faculty of Education.

EMU's Scientific Research and Publication Ethics Board (BAYEK) has approved the decision of the Ethics Board of Education (date: **29.01.2020**, issue: **2020/64**) granting Asogvva Valentine Ugwumsinach from the Faculty of Education to pursue with his/her MA thesis work titled **"Assessing the Utilization of Information and Communication Technology in Secondary School in Anambra State Nigeria"** supervised by Prof. Dr. Ersun İşçioğlu.

Prof. Dr. Yücel Vural

Chair, Board of Scientific Research and Publication Ethics - EMU

YV/ns.

www.emu.edu.tr

Appendix E: Turnitin Originality Report

Turnitin Originality Report

Thesis_V06 by Valentine Asaogwa

From valentine (SCHOOL OF COMPUTING AND TECHNOLOGY)

- Processed on 06-Aug-2020 14:21 +03
- ID: 1366539322
- Word Count: 14500

Similarity Index
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14%
Publications:
5%
Student Papers:
16%

sources:

1 1% match (student papers from 16-Aug-2019)
Class: SCHOOL OF COMPUTING AND TECHNOLOGY
Assignment: Maryam_Saed
Paper ID: 1160555699

2 1% match (Internet from 13-Nov-2008)
http://www.carshalton.ac.uk/governors/minutes/minutes_audit_17Nov05.pdf

3 1% match (student papers from 02-Apr-2015)
Submitted to Eastern Mediterranean University on 2015-04-02

4 1% match (student papers from 15-Jan-2019)
Class: SCHOOL OF COMPUTING AND TECHNOLOGY
Assignment: Bolouere Kikanwa Afenfia
Paper ID: 1084352449

5 1% match (Internet from 01-Jul-2018)
https://repository.cardiffmet.ac.uk/bitstream/handle/10369/5675/Eid%20Al-Harbi%20Thesis.pdf

6 < 1% match (student papers from 12-Apr-2019)
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http://www.globalacademicgroup.com/journals/academia/EUCHARIA_IKWUANUSI.pdf

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https://mpra.ub.uni-muenchen.de/95150/1/MPRA_paper_95150.pdf

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http://jite.org/documents/Vol12/JITEv12ResearchArticles.pdf