OUTCOME OF INFORMATION COMMUNICATION TECHNOLOGY LITERACY TRAINING ON NURSE EDUCATORS' ADOPTION AND USAGE OF MULTIMEDIA TEACHING AIDS IN OGUN STATE SCHOOLS OF NURSING

BY

Clara Olufolake LAWAL
MATRIC. NO.: 14489

A Thesis inthe Department of Nursing
Submitted to the Faculty of Clinical Sciences College of Medicine in Partial Fulfillment of theRequirements for the Degree of
DOCTOR of PHILOSOPHY
of the
UNIVERSITY OF IBADAN

SEPTEMBER, 2021

CERTIFICATION

I hereby certify that this research was carried out by Lawal Clara Olufolake in the department of nursing, Faculty of Clinical Sciences, University of Ibadan, Ibadan.

…….

Professor OyeninhunAbimbolaOluwatosin,

RN, RM, BSc, MSc, PhD (Nursing),

University of Ibadan.

DEDICATION

This project is dedicated to God Almighty, the One who knows all things, and to my late father Nathaniel Olusakin Bright (of no common integrity) who kept the fire of continuous learning burning in my heart.

ACKNOWLEDGEMENTS

I acknowledge the help of God the Father that enabled me to get to the final stage of this study despite many challenges. I give glory to Jesus, the Alpha and Omega, the beginning and the end. Thank you, Holy Spirit.

I wish to thank Professor O. AbimbolaOluwatosin, my supervisor, words cannot express my appreciation but I will still say thank you very much and I pray that the highest peak in Nursing is yours in Jesus name. The glory of the Lord will be with you and you will live to declare the glory of God in the land of the living.

I am very grateful to the head of department, Dr.. Beatrice Ohaeri, and to all the lecturers in the department, I say thank you. Thanks to Professor Prisca. Adejumo, and to Dr F. A. Okanlawon for all his wonderful counsel. Thanks to DrTola. Odetola, your reading of my proposal helped me a lot. Late DrModupe.Oyetunde, you were there at the beginning, continue to rest in peace. Dr RoseIlesanmi thank you and to the fantastic, post graduate coordinator DrChisomNdikom thank you very much. The adage that says he that looks at the injury to the axe will not succeed is so true. To every office worker, I say thank you and a special one to Mrs. CatherineOlaimolu who works closely with students.

I wish to thank Babcock University Management for the opportunity given to me to go back to school. I am forever grateful to Professor E.O. Ajao who continuously encouraged me. I thank the following people who helped to review my work giving their time and making useful suggestions, Dr. D. O Kester, DrAdekunbi. Farotimi, Dr. S Atulomah, Prof. J.O. Aina and Mr. T. Olajide. Members of School of Nursing Babcock University for your cooperation and words of encouragement I say thank you. I wish to thank the statisticians, Dr. O. Ayodele and Mr T. O. Olusanya, for being there for me; many thanks.

To educators in schools of nursing in Ogun State who were my study participants, accept my unreserved thanks. You were ready to answer my lengthy questionnaire and listen to my lectures. God bless you all.

To my Pastor and church members for your prayers, especially Dr S. Oyedokun who continuously encouraged me, Godblesses you all.To my husband I really thank you for everything and God shall reward you. To my God given children and grandchildrenyou shall do great in all your endeavors. To my extended family and friends I thank you all for supporting me in prayers. God's blessings will never elude you all.

ABSTRACT

Information Communication Technology (ICT) is rapidly evolving globally especially in teaching and learning. Judicious use of ICT is ensured by the addition of multimedia teaching aids during teacher-learner interactions. Available report shows that the use of multimedia aids enhances teachers' skills and students' retention. However, nurse educators in Schools of Nursing (SON) still use their old traditional teaching methods and do not adopt ICT in teaching. Little is known about the effects of literacy training on nurses' adoption and usage of ICT in teaching. Therefore, this study was designed to assess the outcomes of ICT literacy training on nurse educators' adoption and usage of multimedia teaching

This quasi-experimental study was conducted in the four SON in Ogun State. Sacred Heart Abeokuta and Ilaro were assigned by balloting into the Experimental Group (EG n=20), while Ijebu-Ode and Abeokuta were categorised as Control Group (CG n=20).(Total enumeration).Structured questionnaire was used to collect data. At Pre-Intervention (P1), availability, Perceived Skills (PS), Perceived Ease of Use (PEoU), Adoption and Usage (AU) of multimedia aid were assessed in the EG and CG. At intervention, EG received ICT training using researcher designed training aid consisting of three modules: information technology, nursing informatics and PowerPoint presentation. Three modules lectures for the EG were given weekly for four weeks, while CG had a review of traditional teaching methods as the EG. Post Intervention data (P2) was taken at the end of intervention. Frequency count was used to assess availability of ICT. Using a 56-point scale, PS was categorised as highly skilled ≥43 and no skill ≤14. Using an 11-point scale, PEoU was categorised as high ≥9 and low ≤.3. Using 11-point scale, AU was categorised as high ≥ 9 and no adoption ≤4. Attitude was categorised as negative < 30 and positive ≥30. For PEoU and AU, mean scores per group were obtained and compared. Hypotheses were tested using student's t-test at $\alpha_{0.05}$

Majority of the participants were female (EG =80%, CG= 85%), at nurse educators' cadre (EG= 65%, CG= 80%). Computer and projectors were the most available. Computer EG=100%, CG=90%; projector EG=100 %, CG=95%). There was significant increase in perceived skills in EG (Mean score in ICT at P1=24.5 ± 9.2 and P2=43.3 (±5.5), but not in CG (Mean score in ICT at P1=24.9±6.3 and P2=22.3±5.1), suggesting an increase in skills as a result of the ICT training. At P2, PEoU was significantly different (EG= 9.6±1.3 and CG= 6.1±1.4). There was a significant change in attitude in both groups (At P1 and P2, respectively, EG= 21±1.7 and 23.2±2.1; CG= 20.6 ±2.8 and 21.5±1.8). There was also a significant increase in the mean score in AU (At P1 and P2, respectively, EG= 7.5±1.0 and 10.5 ±1.9; CG=6.4±1.8 and 7.2±1.50) suggesting improved usage of multimedia aids

Information communication technology literacy training improved the adoption and usage of multimedia teaching aids by nurse educators in Ogun State

Key words: Information communication technology; Multimedia teaching aids; Nurse educators; Literacy training

Word count: 477

TABLE OF CONTENTS

CHAPTER THREE: METHODOLOGY

CHAPTER FOUR: RESULTS AND DISCUSSION

LIST OF TABLES

LIST OF FIGURES

APPENDICES

CHAPTER ONE

INTRODUCTION

1.1. Background to the study

Nurse educators over the years have been alleged not to be using multimedia teaching aids in their teaching in the schools of nursing therefore the need to update nurse educators about the newest technology and computer techniques. This will enable them to integrate updates into teaching- learning methods (Puckree, Maharaj and Mshunquane 2017).Technologies are evolving and nursesmust be proficient to key into technology as soon as possible. New proficiency then enables nurses to be more skilled in the care of patients. Literacy in computer is indispensable as it enhances teaching-learning process in all disciplines including nursing.

Information Communication Technology (ICT) entails combining telecommunication and computing technologies for information processing and circulating information. If nursing higher education programmes are to conform to other education sectors, integrating ICT and computer literacy into nursing education is very vital. The introduction of nursing informatics; a combination of nursing science, computer science and information science is germane to nursing profession (Hebda and Czar 2021). It has been proven that the informatics-competent educators and ICT enablers will be required to educationally prepare students through effective teaching-learning who will be able to apply informatics and ICT in day-to-day nursing practice (Button, Harrington and Belan, 2014).Good personality traits and good character is commendable in nursing but ICT proficiency is vital at the present time. Some nurses like the researcher did not learn computer while in school and have had to become computer literate on their own. There may however be some of this group who may still need to become computer literate.

In the classroom, ICT as a tool is capable of changing the teacher based classroom into an interesting collaborative learning classroom. The teaching staff members are central to this paradigm shift. Actually, teachers need relevant

information and resources for effective teaching; innovative research and knowledge acquisition and experience for expert service delivery in the schools. By this, teachers will be able to produce graduates who will become professional future leaders (Ntui and Udah (2015). The embracing of ICT in schools has been observed to improve students' performance (Buabeng-Andoh and Issifu 2015).This is achieved using audio visual aids which are part of the evolving technology. The use of audio visual aid has been known to save time globally and finally the integration of ICT methods in schools has resulted in improved educational outcomes globally (Zulfaqar, 2015) therefore it is necessary to integrate ICT knowledge into nursing schools so that both the teacher and student will fulfil the changes on-going globally (Bindu 2017)

In 2001, ICT was built into the Nursing and Midwifery Council of Nigeria (NMCN) curriculum for nursing programme. The approval to incorporate ICT into curriculum of all schools with nursing programmes was granted by the Federal Executive Council; hence, the establishment of the National Information Technology Development Agency (Dankor, Irinyang and Haruna 2015). The responsibility now lies on nurses who had graduated before 2001 to learn ICT at their leisure. As novel trends are emerging in clients/patients care, the nursing profession must keep pace with the global IT explosion. In the past few decades, ICT use has remained a major tool in the healthcare service delivery with great impact similar to what is obtained in other sectors. Besides, ICT gave rise to tele-health, tele-medicine, e-health, health informatics, and many others. Therefore, nurses must be adequately prepared for the obvious but unavoidable challenges.ICT is a promising tool for transformation of home healthcare delivery completely as well as helping in designing plans to deal with upcoming health problems. One of the inherent benefits of home healthcare service is the promotion of self-care. The delivery of nursing care is increased through technology and the possibility of cooperation of health service across bordersis also increased (WHO, 2018). Today, so many people access information on management of various diseases online via patient information systems designed by expert health professionals.

New networks of communication are created in form of the global information system capable of providing access to extreme health needs that may require nursing contribution in a significant way in order to achieve the health for all. Advanced ICT have increased case-finding and moving across borders, thus collaborating health care (Hu and Za 2020). Initially, the acceptance and use of computer-based aids may be

challenging in the care of patients. Nurses however have taken it upon themselves to initiate the use of technology using electronic health records and tele-health. These were found to improve patient's safety and effectiveness of patient care. Therefore every nurse must key into this technology based approach to client/patient care. (Bowles and Dykes 2015).

In the early 20th century the new media that made sensation all over the world was the television and the term 'multimedia' was used to describe the assemblage of various devices used as teaching aids. Currently, the term refers to computer-based audio visual aids, which include compact discs, scanners/digitizers, digital cameras and cyber space, World Wide Web, the internet, virtual world, white boards and many others. Computer systems are needed for the coordination and incorporation of these AVAs into teaching-learning exercises (Udhaya, 2016). In Nigeria in recent times, multimedia are popular tools for efficient teaching-learning in the educational system. Thus, the information communication can be achieved in a more effective way (Yushau and Nannim 2018). The internet is an important multimedia tool based on its currency, easy accessibility, and scope within and outside classrooms. These characteristics make the multimedia aids teaching-learning activities interesting, appealing and easier to diverse learning styles. Largely, students depend on the teachers in obtaining current and standard education in measuring up with the knowledge explosion of the 21st century. This forms the basis for using the recent and relevant teaching aids to achieve the societal expectations from the teachers. Numerous multimedia teaching aids with more flexibility that enhance the traditional teaching method are available for use (de Sousa, Richter and Nel 2017).

According to Puckree et al. (2017), most educational institutions in Africa including schools of nursing, rarely fund the training of staff in ICT compliant teaching-learning methods. Thus, when there is no staff development in ICT-based education, it will not be easy to integrate ICT methods in nursing training; thereby making it inconsistent with global standard. The authors further noted that, despite the evidence of student nurses being willing to use IT platforms, the nurse educators are still unwilling to integrate and imbibe ICT methods in teaching-learning because of lack of technical-know-how. Therefore, they were of the view that until nurse educators start to use ICT methods in and out of the classrooms, learning will be unappealing to the students. Further,Akpabio and Esiemamoh (2016) stated that majority of nurses do not want new technological advancement due to feeling of

perceived negative implication on the profession or their jobs. Technology cannot be separated from new knowledge and skills which comes by training on the use of technologies by nurses. Hence, inaccessibility of nurses to computer training will impede the effective usage of electronic-driven teaching-learning methods. Perhaps, the situation described earlier might be the reason for advocating that all nurses be competent in the use of informatics and ICT and that all reluctance have been discarded (Cipriano and Hammer, 2013). On this premise, most stakeholders in the healthcare industry were of the view that nurses who are reluctant to embrace new technologies need to be encouraged as well as equipped to use ICT methods in teaching-learning medium, through training.

Attitude towards as well as actual use of educational technologies may be from ignorance in new developments in such technologies (Puckree, et al. 2017). Of course, the responses of the users of the technology (either positive or negative) are influenced by emergence of new technology. One of the general negative responses may be that once some people become computer literate, the rest may become redundant and may be asked to leave their jobs. At the same time this may likely occur as stakeholders need the best for their enterprises.Therefore, it was recommended that, nursing officers be exposed so as to be ICT compliant for the improvement of healthcare delivery. Currently, many nurses are clamouring for ICT training as reported in the study by (Adeleke, Salawu, Achinbee, Anamah, Zakai et al., 2015).The nursing profession is dominated by females and in the nursing profession, experience and age contribute immensely to nursing actions. Experience is said to be the best teacher and makes good fast and necessary decisions that can save lives. Usually, women encounter diverse social barriers regarding the ICT use. Some of these barriers are rooted in environments, traditional and cultural norms. Thus, gender, age and experience were found to influence attitudes toward ICT (Bindu 2017).

Obviously, teaching in higher education institutions requires information communication everywhere in the world, Nigeria inclusive. Manystudies in Nigeria focused on teachers in general schools and not nurse educators in schools of nursing precisely. There were many studies carried out among secondary school teachers assessing if they were computer literate and used the skills in teaching-learning activities, also in Federal college of Education Abeokuta they examined if inadequate technical knowledge in teaching-learning activities was rooted in the underuse of ICT

in teacher's education (Oyediran and Dick 2017). Another study akin to the earlier mentioned was done which looked at ICT as tools for youth empowerment in Ogun State (Oyediran andOmoare, 2014). All the foregoing were studies focusing on ICT among secondary school teachers. Recently, however there was astudy among medical students which assessed if ICT-based instructional materials are available and accessible in the College of Medicine Babcock University (Nwosu, John andAkorede, 2018). None of the studies referred to above addressed the ICT situations in nursing schools. Therefore, the researcher asked the following pertinent questions:Are nurse educators skilled in ICT use? Do they use ICT-based instructional materials in teaching-learning activities? What can enhance the use of multimedia or ICT for teaching-learning in schools of nursing in Ogun state? Can the integration of ICT literacy be a useful solution? Consequent upon these mind boggling questions, this study was proposed to be conducted in schools of nursing in Ogun State Nigeria.

1.2. Statement of the problem

Gross lack of multimedia instructional materials has been observed across all the schools of nursing in Ogun state. This has been implicated for tediousness of the teaching-learning tasks experienced by the teachers who depend on mere conventional teaching methods characterized by sale of hand-outs to students, dictation of lesson notes, and writing on the black/white boards (Puckree et al, 2017). When multimedia materials are not available, it is also not accessible for use. This is not acceptable as it leads to the use of conventional methods.

These conventional methods are limiting in that they do not necessarily enhance teaching-learning compared to the use of modern multimedia tools. Globally,the performances of students under conventional teaching methods are far below international best practices (Eze and Olusola 2013) For example, although few projectors were supplied by the governing body or state government the leadership of the schools keep this computer-based equipment in stores orlocked up in cupboards because of fear of damage or theft. Thus, the educators are not enthusiastic to use the ICT tools for teaching. A positive attitude is important for nurse educators to develop enthusiasm in the use of these ICT tools (Omotosho, et al,2015).

The NMCN listed methods of teaching (mostly multimedia) in the nursing curriculum for both nurses and nurse educators. In addition, the NMCN established the

mandatory continuous professional development program (MCPDP). This program cut across all the specialty areas in nursing and many courses are included. However, inclusion of the use of multimedia ICT teaching aids has been omitted in the programme and to teach during the MCPDP programme itself, multimedia aids is necessary. This study is interested in literacy ICT training to meet needs as necessary and will be providing evidence based results. Therefore, this study was done.

1.3. Objectives of the study

General Objective

This study aims at evaluating outcome of ICT training on nurse educators' acceptance and use of multimedia teaching tools in schools of nursing in control and intervention groups in Ogun State.

Thespecific objectives were to

1. Assess available multimedia teaching tools in schools of nursing in control and intervention groups
2. Assess if multimedia teaching tools are accessible to nurse educators in both groups
3. Ascertain the perceived skill in the application of multimedia teaching tools amongst educators in nursing schools in both groups.
4. Assess the perceived ease of use of multimedia teaching tools among educators in nursing schools in both groups.
5. Assess the attitude of nurse educators towards the application of multimedia teaching tools in both groups.
6. Identify adoption and usage of the multimedia teaching tools by the educators in both groups

1.4.Research questions

From the objectives identified the following research questions were asked.

1. Are multimedia teaching tools available in nursing schools?
2. Are multimedia teaching tools accessible to nurse educators?
3. Are nurse educators skilled in the use of multimedia teaching tools in experimental and control groups?
4. To what extent do nurse educators use multimedia tools in teaching?

5. What is the attitude to adoption and use of multimedia teaching tools in nursing institutions before and after experiment?
6. Will nursing instructors adopt and use multimedia teaching tools in teaching?

1.5. Significance of the study

This study utilised ICT modules for ICT literacy training for Nurse educators inOgun state. Findings post intervention showed the module developed has shown the participants adoption and usage of ICT. The module that was used can be used to train educators in ICT. Regular continuing education is necessary therefore needs to be done regularly.

Findings of the study indicated that resources are not adequate hence policy may be required to ensure provision of these resources in required proportion. Furthermore findings also show that whenICT are not accessible for use hence the stakeholder especially the state governmentwould then been involved in the planning, provision of resource for continuing education for the nurses working in the schools. Provision of adequate infrastructure would occur after the school authority is shown the challenges identified by the educators.

The Nursing and Midwifery Council of Nigeria should make the use of ICT compulsory in schools this policy will encourage educators to use ICT. The training module used inthis study has been shown to be effective hence it could be used by the continuing education unit of the Nursing and Midwifery Council of Nigeria for nurse educators training.

Finally the findings of this research has enhanced knowledge and provided evidenced based information on use of ICT by nurse educator in school of nursing in Ogun State.

1.6 Operational Definitions of Terms

Information Communication Technology (ICT) Training

Information technology training for this studyis defined as the use of planned information using specific devices to teach a group of people with the intention to change behaviour.

Multimedia Teaching Aids

For this study, from the lists of multimedia aids, the following were used: computer and equipment, projector, video tape, internet, digital camera, slides, scanner electronic-mail (e-mail), Microsoft applications including Microsoft word, Microsoft excel, PowerPoint and web publishing. Mostly used in teaching and learning. The researcher developed a training package for this study.

Multimedia Teaching aids Adoption and Usage

Adoption for this study is the ability to identify and be able to choose and have the intention to use the multimedia aids selected for this studyand Usage is the ability to put the intention into action. The multimedia aids will be used to actually teach the students in the school of nursing.

Nurse Educators/Tutors

Graduate nurses that are registered as educators with the Nursing and Midwifery Council of Nigeria which is the registering body for nurses in Nigeria. They are employed to teach in schools of nursing,

Ages

Age is divided into two parts: 20-40 (young adult) and 41-60 (older adult)

CHAPTER TWO

LITERATURE REVIEW

2.0 This chapter presents a review of literature under the following subheadings:History of multimedia**;** The significance of multimedia teaching aids; Available multimedia teaching aids in schools of nursing; ICT in nursing; ICT in nursing education; ICT learning theories in nursing education; Skills in ICT and competencies of nurse educators; Ease of use of ICT and multimedia aids use in nursing education; Educational uses of the Internet and the WWW ; Approach to adoption and usage of ICT; Acceptance and use of multimedia teaching tools in nursing education issues: important aspects ,vantage points and difficulties; Tutoring and acquiring mixed media teaching tools in IT literacy tutoring; The adoption/usage and gender of the multimedia teaching aids.

2.1. Concept of multimedia

2.1.1 History of multimedia

Multimedia as the name suggests is made up of several devices working together it can also be referred to as mixed media.This multimedia approach has been around for some years and it is a learning style where information is offered in numerous styles employing a combination of media materials (Chu, et al, 2019). In Nigeria ICT started in 1999 with the African Information Initiative (AISI) known as National Information and Communication Infrastructure (Ibara 2014). A federal government approval of a policy was then enacted in 2001. This gave rise to a few necessary organization to feed ICT: National Information Technology Development Agency (NITDA). The Education Trust Fund (ETF) and School Net Nigeria were all inaugurated. (Damkor, Irinyang, Haruna, Manasseh, 2015) with the inauguration of these organisations a lot of hardware was supplied such as computers, mobile phones, the internet and software into some colleges and universities. In sub-Saharan Africa

multi-media started and are spreading at the rate of 60%. In the nursing profession, with development of technology and automation, the nursing profession begin to diversify beyond hospital training and more into colleges and universities and utilising multimedia in the education of nurses as well as in the care of clients. The nurses view technology as a phenomenon that should remain applicable to the society and to health care changes. The development of ICT to assist nursing education is to be +viewed as an indispensable scheme to the viability and realization of nursing education globally (Akpabio and Esienumoh 2016).

2.1.2 Advantages of Multimedia

The term Multimedia as previously defined is the combination of computer with other components to transmit information and used in teaching and learningEmploying multimedia for learning purposes makes activities more motivating. It encourages adaptability and fosters efficiency especially when compared to conservative teaching approaches. Several advantages to using multimedia approaches are evident because it allows the use of both pictorial and textual forms of communication. Learning through multimedia includes a verbal illustration that describes steps or visual illustration and many other additions that make learning easy and pleasurable. For example, making inanimate objects appear to move and stimulate learners in several other ways different from the usual traditional methods. An essential finding from cognitive psychology to practical questions on learning, teaching and communication was employed (Mayer, 2014). Mayer created effective visual and verbal contexts with a PowerPoint presentation that showed how a well-designed multimedia method enhances more profound learning. Other advantages to using multimedia PowerPoint, in teaching and learning is the use of pictorial outline employed for lecture preparation as well as addition of video clips that helps create a sophisticated appearance. Multimedia PowerPoint helps students to remain engrossed on animation, when used and can easily be publicised on the internet and finally it can be disseminated as an email attachment. Mayer deduced that using the multimedia approach in teaching reinforces learning, ensuring that learners understand concepts better using both texts and pictures. (Mayer 2014)

Sadoski, McTigue and Paivio (2012) employed the automatic information processing in reading, looking at the dual coding theoretical model. Looking at visual and verbal

pathways, these authors discovered that the two paths could be joined in a way that produced the dual-coding theory that Pavio initially introduced in 1986 and subsequently used by Mayer (2014) and his colleagues in the multimedia approach. Students consequently are able to learn using multimedia instructions, mainly when it includes animation and consistently includes narration. Recently, in the health sector, Chu, et al, (2019) developed a simulated scenario instruction which is multimedia assisted teaching program in nursing for the assessment of pain by newcomer nurses to facilitate their ability to evaluate pain.

There are many advantagesbut there may be some limitations when learning with multimedia. Many devises are usually needed in schools and in facilities; one major limitation is in the cost of these devices. These devices are expensive and will require a bigger budget than if conventional methods are used. Stakeholders may not be able to make these available. In Nigeria, a developing country, many infrastructures are deficient, and the major problem is the availability of electricity. ICT used in teaching is reinforced by the presence of computers, internet, broad band and mobile telephones. Despite the NUC insistence that all colleges and universities must have the ICT facilities it is still not available for teaching purposes. Yishau and Nannin(2018) recently informed that, the National University Commission (NUC) in Nigeria, is insisting that these ICT facilities must be present in the colleges and universities if they have to continue as a university. (Alabi and Mutula 2020).

2.2. The significance of multimedia teaching aids

"Multimedia teaching aid" means the assemblage of different ICT tools to enhance teaching and learning approaches. Multimedia is divided into three parts . These parts include: One, the hardware, examples include computer screen, audio speaker or television; Two, is text or pictorial presentation. Three, this is concerned with the sensory presentation which can be auditory or visual. The presumption is that discussions made in text and pictures as opposed to text or pictures only improves the learner's understanding (Mayer, 2010).

Generally, teaching is a multimedia activity, as educators have given expressions to drawn pictures and employed illustrations for the learners' best interest. The shift that has happened in the 1960s or 1970s is the availability of technology for information combination and delivery. Instructors who began teaching almost certainly may recall

learners' excitement when modern innovative devices for example, photocopies, illusory slides, audio-visuals, and incredibly full motionv16-millimetre films were launched. In the 1980s, as the improvement of classroom technology persisted,this meant the establishment of overhead transparencies and videotapes. Technological improvements in the 1990s began with the initial emergence of videodiscs and subsequently CD-ROMs, the internet, and lastly the development of Microsoft Office applications (Atkinson, 2013).This technological development brought about the establishment ofprojectors in many classrooms and dormitories in most institutions of higher learning, CD-ROMs or DVDs are included. The presence of installed high-speed Internet connections for classroom use for instructors and wireless for learners with access to internet enabled gadgets into the classroom environment (Tella, 2011)

According to D'Souza, Karkada, and Gastro (2014) learners acquired substantial fulfillment from subjects presented using multimedia approaches; film and television constitute another source of learning. Moreover, stories offer ideological step by step information upon which new knowledge is organized, thereby supporting the learning process. These technologies enhance learning due to multiple media use in the presentation of information. Television and film use the combination of optical and aural media to deliver a memorable watching encounter. Numerous documented evidence specify that ICT teaching multimedia approaches can enhance knowledge and recollection in contrast to using conservative teaching methods (Mayer, 2010).Next, the video, sound and images are combined, and this interactivity is used in computer-based instruction. Incorporation of the audio-visual modalities in unlimited ways results in many learning techniques. Audio can be employed with verbalised words or to back musical reactions. It is possible to employ the resonance from sound when emphasising a point. A single picture has more value than a multitude of expressions and multimedia offers an inexhaustible amount of pictorial imagery. This single-dimensional teaching strategy has led to the spread of learning. Nonetheless, nowadays, ICT based education tend to go beyond audio to prompting the learner to perform tasks, refining thinking, and ability to demonstrate understanding. The possibility of this is a result of multiple modalities (audio, visual).

These modern media approaches have been embraced to a certain extent. Each in technological advancement became available (in many cases with the supportoftextbook publishers).Educators have promptly integrated modern devices

recognising the entertainment value it provides to learners. Research on procedures based on evidence has revealedthat multimedia approaches have its origins in rational theory and fact finding. This advancement ascribed to bilingual dual coding, has facilitated an improved understanding of learning in classrooms. Better accomplishment of material recollection occurs during final testing. It is established that the value of multimedia presentations is demonstrated when varied media approaches are used as opposed to using a single approach (Sadoski, McTigue and Paivo 2012). The above reasons made the researcher pursue multimedia to achieve this result in the nursing schools in Ogun State. Training in the use of multimedia aids would be very appropriate.

2.3. Available multimedia teaching aids in schools of nursing

The availability of multimedia aids is essential to using them. If there will be expertise in the skilful use of multimedia aids, then they must be accessible. Several studies have emphasized the importance of availability and accessibility of multimedia teaching aids in enhancing the teaching and learning process. A recent empirical research with 429 respondents from colleges and universities from Pakistan is insightful.The research demonstrated that ICT availability and application enhanced learners'' knowledge and learning skills (WasifNisar, UllahMunir and Alishad2011).Furthermore,Hulela, Rammolai and Mpatane (2014) in their study identified decreased knowledge and skills of student teachers because of unavailability and inaccessibility of computers. Through in-service training, short courses and workshops, they learn how to use computers. However, these authors deduced that pre-service curriculum improvement was crucial to facilitate competence in using advanced technology to enhance student teachers learning. As a result, the successful ICT incorporation in teaching and learning relies heavily on the availability of ICT infrastructure (Tedla, 2012).

According to Tella (2011) the accessibility and application of ICT in southwestern Nigeria Colleges of Education, showed a decrease in the usage of ICT gadgets because ICT equipment was scarce. The slow application and integration of ICT caused the respondents to be unhappy. Investigation on the level of availability of ICT facilities in schools, the capacity for using ICT facilities for teaching and learning, the perceived benefits and the problems associated with their adoption was carried out by Asaolu and Fashanu (2012). The study revealed the unavailability of ICT facilities.

There could have been some advantages accrued if there were ICT facilities. It could have been used as standards for measuring effectiveness. All the above were information from general schools there is little or no data on using ICT in nursing schools.

However, Adeoye and Popoola (2011), lamented that teachers in nursing do not widely apply the generation of valuable information from health research. Teaching, research and community services that instructors and educators provide rely on the quality of information and the sources available to them. For this reason and so that students can learn very well, instructors in schools of nursing are obliged to apply ICT techniques.Okolije (2015) research is beneficial in buttressing this point.He explained how although educators had significant ICT knowledge, the difficulties with funding and irregular power supply was particularly concerning. His conclusion was the need for subsidization of ICT tools and teaching to reinforce use in tertiary learning. Umar, Lulah, Umar, Idris, Ruqayya et al. (2017) echoed this point by identifying difficulties with using ICT use among nursing learners in Tanta University in Egypt. These authors found that because ICT devices were inadequate, they were inaccessible to the students.Therefore, since there is a shortage of information on the sub-topic availability and accessibility of multimedia teaching aids in nursing schools, this study aims to add to the body of literature on this sub-topic.

2.4. Information Communication Technology (ICT) in nursing

As previously informed in the introduction, the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a microelectronics-based combination of computing and telecommunications is the definition of Information communication technology (ICT). ICT encompasses extensive spheres, receives data which could be audio or visual, it is processed into information subsequently becoming knowledge, ICT technology can be learnt through ICT literacy training. This process is necessary in the health sector where a lot of information should be processed into knowledge in the care of clients.

The use of digital technology, communications tools, and networks to access, manage, integrate, evaluate, and create information to function in a knowledgeable society is called ICT literacy. Nurses were surveyed to find out if they were ICT literate. When nurses have an e-mail and use the Internet to form an integral part of their studies they

are classified as 'integrated nurse'. Many nurses were found not to be integrated, the way out as postulated by Skiba (2009) is to get involved in informatics and it should be applied to the nursing curriculum. Information and computer technology are intertwined with the role of the modern clinical nurses, and this will form an integral component in the health sector. Competencies and skill in ICT will enable work fulfilment and satisfaction by nurses and student nurses in challenges in both education and the workforce from the rapid and uncertain societal changes.

For productivity and efficiency, one cannot overemphasise that ICT training is of utmost necessity. The use of virtual worlds as an innovation in facilitating learning for health personnel in their training for ICT is necessary. A virtual world is a technology based programme that imitates reality used for practice instead of using live patients. Many users can be using the virtual world, communicating and participating together in whatever is being taught or practiced. Classrooms and procedures can be set up for example an operating theatre where student nurses learn to hand instruments during operations. Virtual world are safe and authentic. To ensure all participants attain learning outcomes, educators can use competency-based assessment and evaluation. Compulsory training and retraining for all students were recommended by Omotosho, et al, (2015) to improve ICT skills in a Nigerian university for distance learning. Therefore the need for ICT literacy training has been highlighted.

2.5ICT and nursing education

One of the essential needs of individuals and society is education. Knowledge is said to be power. Education is the totality of the processes, skills, and values a learner achieves for himself; during a learning process. ICT is significant from the educational perspective. In the past few years a lot of tools have been used in teaching but since the coming on board of computer there has been s lot of changes in education (Aduwa-Ogiegbaen and Iyamu 2008). These results from using the computer was achieved because it made us of the combination of audio, visual and tactile aspect of teaching and learning moving into ICT. This resulted in student-centered learning. ICT is becoming more critical in the world accelerating into digitalisation**.** This will continue in the 21st century and onward (Noor-Ul-Amin 2013). Information Communication Technology has been given a substantial role in development and globalization because it has developed rapidly since the mid-20th century. In all areas of human activity, ICTs have a significant effect (Yusuf, Afolabi

and Loto 2013). The aspect of nursing education, which takes place in the clinically is highly complex. It involves many policies, out of which is the policy for competence in ICT(Wilkinson, Roberts and While 2013). Information Communication Technology have a currently unrealized ability to accelerate, enrich and deepen skills, motivate and engage students, help relate school experience to work practices, create economic viability for tomorrow's workers, and strengthen teaching and learning (Yusuf, 2011).

Information communication technology (ICT) is a tool to educate and learn in the schools of nursing to achieve more excellent research and evidence-based practices. Electronic technologies used for information storage and retrieval are Information and communication technologies. Information is therefore vital in nursing education and client care. The introduction of Informatics in nursing as previously analysed was recognized as a speciality. There are positive advantages to patient care delivery outcomes if informatics is taught to students. There are many terminologies and classification involved in the use of informatics by nurses as follows:

1. Nursing Process
2. Client care
3. HACC - home care
4. NIC- Nursing intervention
5. NOC- Nursing Outcomes
6. CDSS- Clinical Care

ICT is linked to science and evidence-based improvement practices. In nursing, for example, Clinical Decision Support Systems (as above) in use would be a staff nurse having access to health care information which she uses to recommend care for her client. Computer software applications that match patient characteristics with a knowledge base to generate specific care recommendation are clinical decision support systems. As practice guidelines to support nurses' decision-making inpatient care delivery, this recommendation can be used (Hebda and Czar 2013).

Kolback (2015), observed that nursing student who did not have adequate skills in ICT were hesitant in accepting ICT. Administrators in charge of nursing schools did not also realise that nurses needed ICT for their clinical practice. Therefore nurses were no infrastructure available for training the nurses therefore the nurses had

negative attitude to the learning of ICT.It was reported that Swedish health care wanted to use ICT in nursing practice. It was to be used to have quality, secured and efficient nursing care. Nurses, however, disagreed that the use of ICT would be completely useful in the care of patients. This was because ICT cannot be exchanged with a physical presence. Nurses view nonverbal communication cues, which may be missed when ICT tools are utilized (Fagerstrom, Tyvesson, Axelsson and Nilsson, 2016).

In another study, however, by Rouleau, Gagnon and Cole (2015), nurses use ICT. Four types of ICT used by nurses include the management system, Communication system, Information system, and computerized decision support systems. In conclusion, this is the time that ICT is very important as it is having effect globally as part of educational curriculum. ICT is currently used in educational planning (Nisar, Muner, and Alishad 2011). ICT has affected the field of education, which have affected teaching, learning and research. Therefore ICT is very relevant in the education of nurses.

2.6. ICT, learning theories in nursing education

Concepts and propositions are knotted together by learning theories, and teachers repeat them often. Concepts and propositions; statements of the relationships between concepts are taken and tie together to describe the reason for learning and prediction of circumstances they learn. Behavioural and cognitive theories are the main learning theories that guide research and practice today. The law of effect was postulated by a prominent behavioural theorists, namely Thorndike (1911) from which the stimulus response theory of learning was deducted while the Operant Conditioning was proposed by Skinner (1940)Although the behaviourists did not deny thought processes, they believed them to be the result of stimulus-response activities. From the late 1950s till date, behaviourism has hardly been recognised.On the one hand**,** operant conditioning occurs when consequences are employed to change situations and behaviours. It employs reinforcement/punishment to change an action-outcome association. On the other hand, classical conditioning involves continuously joining an unconditioned stimulus, which generally would not trigger a response (Murtonen, Gruber, &Lehtimen, 2007).

Educators in nursing institutionswho are behaviourists may emphasise the importance of drill, practice and memorisationto attain behavioural goals (De-Young, 2009). The cognitive theory focuses on mental activities that involve behaviour and its meaning rather than behaviour alone. The formal cognitive approach to education involves a rigorous process that allows the student to convey meaning established on the previous world's knowledge and perception. General cognitive terms include learning, intelligence, metacognition, memory and transfer. Modern narratives in behaviourist theory reinforces comprehension and knowledge rather than repetitive instruction. Cohen (2018), in his book, '*How the child learns and develops,*' believes that the developing child does not use one theory but uses a combination of theories.

Another cognitive theory that is well known for decades is constructivism. The theory postulates that a person learns by actively constructing his/her learning based on their previous knowledge, experiences, and interaction with his/her environment (Atherton, 2014). Learners build the understanding that synchronises with the existing scheme and assists in making sense of incoming stimuli. Constructivism theory believed that new information must tie into existing beliefs, knowledge, and values so that learning could occur. However, the learner is seen as a passive object by the behaviourists. In constructivism, the learner learns through active information manipulation. Differences are presented below:

- **"Cognitive** constructivism" is about how the individual learner comprehends things, in terms of developmental stages and learning styles, and
- **"Social** constructivism" emphasises how definitions and understandings grow out of social encounters (Atherton, 2014) Constructivist and social constructionist views of teaching claim that student-centered teaching approaches influence the quality of teaching (Aypay, 2011).

Modern technologies, especially ICT based multimedia teaching strategies rely on individual learning.In addition, these ICT based teaching approaches need scholarship to explore modern ideas on education. Although teaching concepts focus on an individual student, the majority of these learning approaches are adopted by the classroom teacher.Most times, the individual student is pressurised by other students, the physical environment and the instructor's presence. Each of these factors may influence the individual learner.

Shneiderman's engagement theory proposed that students must be involved in meaningful learning activities through interaction with others and worthwhile tasks for learning to happen. In delivering a credentialed qualification that also presents learners with a profound learning environment through interaction. Technology tends to be used by an individual alone; some experts question the effectiveness of learning in isolation; others believe that technology can facilitate engagement in ways that are difficult to achieve otherwise. To help educators incorporate technology into their teaching, faculty members have used various behaviourist, cognitive, and constructivist theories. They will be motivated to learn this way if the material is relevant to their lives and the students feel they are producing something meaningful.

Kearsley and Shneiderman continued the engagement theory of learning as cited in Charlieberger (2012) and argued that engagement theory attempts to formulate problems of the natural world that students solve collaboratively. Consequently, students are exhibit inward motivation to learn due to the encouraging nature of the learning environment and activities. Moreover, students carry out project-based assignments by finding solutions to the problems of actual reality through teamwork, problem-solving, and individual's explorative inquiry through online components. They are willing to keep on learning based on proper motivation to do so. The role of technology, in theory, is to facilitate all aspects of engagement. The extent and ease of interaction among participants and access to information are increased meaningfully by email, online conferencing, web databases, groupware, and audio/videoconferencing. The students accomplish complex and sophisticated tasks due to various software tools meant for analysis, design, planning, problem-solving, and presentations. Technology promotes an electronic learning environment that brings about creativity and communication necessary for nurturing engagement (Rees, 2010).

Health care providers are already using distant monitoring equipment to monitor pacemakers and other pieces of equipment. It is rational to speculate that upcoming nurses will provide knowledge to the client at home. Presently questions can be answered, and information is given through email. Chat rooms can provide group support and information sharing without learners having to travel from their homes; they also offer a sense of autonomy and openness that may encourage questioning. Intervention to change health-related behaviours typically has a modest effect and

may be more effective if grounded in appropriate theories that emphasise capabilities and motivation (Davis, Campbell, Hildon andMichie 2014).

2. 7. Skills of ICT and Competencies of Nurse Educator's in Schools of Nursing

The use of ICT has progressively improved in nursing and all aspects of life. Nurses are expected to have skills in ICT, mainly in computer and all aspects of its use. Nursing education is in three domains, namely: first, the knowledge, secondly, attitude and thirdly, the skills meaning cognitive, affective and psychomotor, respectively. Skills are taught by teachers using many methods. The most efficient ways are achieved using multimedia aids, including virtual worlds and models. In research that includes publication, there is a need to be skilled in web publishing. The skills needed in a particular task is known as competence. In the process of being competent, it is essential to gain skills. When personal ideals, values, attitudes, and nursing knowledge are combined with skill, it makes up competence (Lipke, 2014).

Educators can incorporate ICT in their teaching if they have acquired computer competence (Bordbar, 2010). The technical abilities to use the computer and other ICT devices are known as ICT skills. These skills involve booting a computer, accessing the internet, website logging, reading and sending an email, logging on to web applications and data collection tasks [(Courtney, Pratt, Cummings, Turner, Cameron et al. 2012)]. Educators deficient in the requisite ICT knowledge and skills demonstrated negative or lackadaisical mindsets towards incorporating new computer based approaches when teaching and learning (Bordbar, 2010).

Studies investigate the impact of ICT expertise on educators' capability to conduct set tasks. For instance, using findings from two Nigerian tertiary institutions demonstrated no significant difference in the level of ICT competence between men and women(Akpan, 2014). Compared to lecturers with moderate or low ICT skills, lecturers with high ICT competence were exceptional in classroom teaching, research and publication. Therefore, it is clear that teachers must be adequately skilled in ICT; ICT is imperative in teaching and learning (Aktaruzzaman, Shamin and Clement, 2011)

ICT is moving into all healthcare research areas (Umar et al., 2017). Care givers must be proficient to successfully use ICT in their schooling and application to the care of clients and be fulfilled in their work. However, some challenges were identified and

included: inert and inadequate internet speed access, shortage of facilities, difficulties getting the required information and exorbitant internet subscriptions. These identified challenges may prevent nurses from acquiring competence.ICT is a means for enhancing educational quality, particularly in countries in the Global South (Irinoye, Ayamolowo, and Tijani, 2014). Yet, research has shown that many nurses do not participate in online computer-based training programmes. These nurses do not have formal computer training and do not own personal computers. Multiple reasons could be advanced for this situation, including the fact that ICT equipment and techniques are not properly founded in Nigeria.According to Adoni and Kpangban (2010), approximately 40 percent of Africans live in places with limited telecommunication services.This situation means that tertiary institutions in these places would encounter difficulties with ICT connection. Other difficulties include scarcity of computers, secondary devices and ICT components resulting from low funding, restricting ICT use by instructors. Therefore, these authors doubted whether adopting and using ICT, especially in nursing schools is achievable for teaching based activities (Adoni and Kpangban, 2010).

Educators' participation in computer-based instruction is essential. Yet instructors' readiness to incorporate education technologies would determine its value. The instructors' mindset would significantly impact how ICT is adopted and incorporated into teaching approaches.According to Martin and Parker (2014), teachers used virtual classrooms for several reasons, including their availability in the schools, their ability to strengthen their learning, record and document conference gatherings. They encouraged interactions through webcams and text-based chat rooms. Thus, it was evident that the virtual classrooms reinforced interaction and community building to reach targeted student populations in different places.

2.8. Ease of use of ICT and Multimedia Aids in Nursing

The use of ICT and multimedia increased in every area of life, including health care and nursing education. ICT in health covers items like the Internet, including Short Message Service, Multimedia Messaging Service simply abbreviated as SMS and MMS respectively, video conferencing phones, computers and tablets. These devices are used to send messages like appointment dates, drug reminders and many others. The question then arises to find out the ease of use because when there is the ease of

use, then there is usefulness it becomes easy to adopt such a device. Many other devices are used in nursing care, like pusoximeter, digital sphygmomanometer, thermometers, X-ray machines. These devices are enabled by technology but are not classified as ICT because they are not connected to a hardware or software that allows management of data and communication (Bath 2010; Lewis, Synowiec, Lagomarsino, and Schwelter (2012). The concepts of effectiveness and ease of use and usefulness that significantly affect technology use and performance have been tested several times. Higher perceived ease of use led to higher effectiveness and ultimately greater intensity of use of the technology. This will determine how this technology might be used more effectively.

People are using technology to connect through phone, computers using email and the Internet, especially younger age individuals. The researcher wishes to explore the acceptance of technology and multimedia teaching aids by the user. An investigation carried out on perceived use on a patient portal page by Dasantila (2018) with the conceptual framework of technology acceptance model found out that impact on portal usage (The portal being a web-based application which allured patients to access their health information and can even send an email message to their provider) and perceived usefulness and perceived ease was not significant; showing people did not bother about their health. In a study, it was discovered that if the participants have ease of use, then there is the likelihood that they should adopt and use multimedia (Yu-fang, 2014).

In Nigeria at present technology is controlled by the National Information Technology Development Agency (NITDA) this agency was established in 2007. This is available to all who are interested in making use of the available resources. NITD is the part of the government of Nigeria wishing to be used to establish ICT for the whole country. The digitalisation of Nigeria is the portfolio of this agency. NITD is part of the Federal Ministry of Communication of the Federal Republic of Nigeria, the functions allocated to NITD is to plan, research and from the outcome implement and evaluate the digitalisation of the system that has to do with technology. They are to monitor and regulate all activities that concerns technology. The programme is to empower all Nigerians to develop relevant technological skills to be assertive and creative in challenges facing the country. Many contractors are employed for this project and one can register on the registration portal at iicp.nitda.gov.ng to provide relevant services

towards this project. Available scholarship for postgraduate study to promote efficiency in ICT is available. It is however limited to two persons per state and one person from each geo-political zone. The ultimate is to actualise the vision of Nigeria becoming an information technology driven economy,

2.9. Educational uses of the Internet and the World Wide Web (www)

Theappearance of the Internet and growth of educational software have revolutionised teaching and learning. There are varieties of educational materials over the internet resulting in global change in ICT (Adeoye and Arome 2019). The internet is a connecting network and commonly portrayed as a worldwide information highway connector employed to exchange information with sites scattered globally. The internet is decentralised and consists of collecting independent computer systems that no individual or organisation owns. The internet has been compared to an umbrella because it consists of several areas and components. These components include electronic mail (email), the web and many characteristics that make the internet function. The internet components mentioned above has specific functions and tasks they accomplish.

The internet reinforces traditional instructional methods. Educators may require learners to identify particular websites where additional knowledge about a specific subject can be obtained to add and enrich the information from the lectures. The Internet as an ICT device, students can explore before a class a topic for informationfor diversification and different points of view this replaces convetional classroom lectures where all the lessons are loaded on the internet. Several courses are being developed in which portions of the course or the entire course was offered via the internet. The instructor may place course notes on pages, create a video recording of a live lecture for viewing on the internet, or use combinations of these ideas.

Studies were conducted to demonstrate how instructors in colleges of education in south eastern Nigeria use the internet in their day to day practices. These studies reveal that many staff members use the internet. According to the research, staff members received internet training through self-instruction,organised workshops and help from colleagues and friends.Other staff members benefited from the training offered by children/ spouse or were trained in ICT schools.The internet was mainly

accessed through individual'stablets with modems, mobile phones and centers using internet that are not supplied by the colleges (Onwuagboke, Singh, Fong, and Onwuagboke 2014)

Educators consider the internet an important information source and an essential complementary teaching device (Brandstrom, 2011). The internet encourages fun and interactive teaching methods and permits varied teaching approaches.Nonetheless, educators have identified four main difficulties with using the internet. These difficulties include**:** using the internet encourages learners' misconduct and can provide misinformation; technical challenges; and learners conducting extracurricular activities during learning.Instructors who use this medium should be aware of students' fear if they lack computer knowledge and, consequently, the internet. It should be reiterated that using the internet fosters student-teacher interaction, cooperation among students and active learning (Chickering and Gamson, 2018). In addition, internet use ensures prompt feedback, emphasises good time management skills, and expects a lot from students and esteemdifferent talents and learning styles.

2.10 Approach to adoption and usage of ICT

The success of educational technology in schools is contingent on the support and mindsets of the instructors. Teachers' attitudes and beliefs towards technology is one of the factors that influence the successful integration of ICT into teaching (Keengwe and Onchwari, 2008). Findings suggest that if instructors maintain a positive mindset towards educational technology, adoption and incorporation of ICT into teaching and learning approaches become easier. The negative perception of nursing students towards ICT coupled with poor ICT training was identified as challenges in implementing ICT in nursing education (Kolback, 2015).ICT was included in the nursing curriculum in 2001, but some nurses, as individuals, were computer literate, especially if it was needed to carry out their work.

Mingaire's (2013)'s study focused on difficulties educators face in the adoption and use of ICT in public secondary schools in Kenya. In this study, he showed teachers' general positive attitude towards implementing ICT approaches. Similar research on teachers' attitudes towards Geographic Information Systems (GIS) in Turkey showed similar results. For instance, the research showed that despite computer and the

operating system challenges, the positive mindset and approach towards GIS was crucial to the effective inclusion of GIS into geography lessons (Demici, 2009).

A survey was conducted on newly appointed teachers' attitudes towards computer use in a study the findings demonstrated that teachers were more optimistic about their attitude towards computers and intention to use a computer than their perceptions of the usefulness of the computer and their control of the computer (Teo, 2008). Also, a study was conducted on factors that influence the innovative use of ICT by teacher educators in the Netherlands. The study revealed that student-oriented pedagogical approach, positive attitude towards computers, computer experience, and personal entrepreneurship of the teacher educator directly influence the innovative use of ICT by the teacher (Drent and Meelissen, 2008). Research has shown that teachers' attitudes towards technology affect their acceptance of the usefulness of technology and its integration into teaching. Lecturers had positive attitude towards the use of ICT and were inclined to use it. (Olafare, Adeyanju and Fakorede 2017)

An evaluation was done on the difficulties that accompany the adoption and use of emerging technologies. Findings showedthat learners with optimistic mindsets towards the project benefited from teamwork and participated actively in the learning process. An important aspect of the learning was the availability and use of ICT tools. Approximately 90% of the learners had changed their attitude to ICT positively during the semester.An exploration of educators in the UK also showed how their optimism about the possible value of ICT was moderate as these educators started to doubt the advantages of ICT. Becta (2008) confirm how teachers' experience with ICT informs their attitudes. Put differently, it is clear that the greater the experience teachers demonstrate with computers, the greater the likelihood that they develop positive attitude towards computers.

An investigation into the value of ICT as a vehicle for teaching, learning, and research transforming educational development is reportedly hindered by what is commonly described as "technophobia. Technophobia refers to defiance and anxiety towards technology including a dislike for ICT tools (Ahmad, Kamba and Urman, 2012). Expensive devices, poor access, poor skills to use, inadequate financial capacity, poor internet services and low tele-density influence the digital divide and negative attitude towards ICT in Nigeria. Other factors that trigger the negative mindset to ICT include

deficient power supply, inadequate awareness coupled with low technical know-how and maintenance culture, unsuitable ICT policies, population explosion, weak execution of government policies, urban/rural disparities; weakened obligation to ICT education and phobia towards technology (Ahmad, et al 2012). The attitudes found by these researchers affect the use of technology.

On the one hand, the expectation is that introducing modern technology should mean improved expertise with equivalent boost in earnings (Onu and Agbo, 2013). While the organisation presenting the mechanisation wants to let some staff off and lower operation costs. Scaling down employees should be discussed before launching modern technology, which could trigger employees' defiance in Nigeria. Owing to the anxiety about potential job losses, and if the new technology triggers fear, anxiety, and negative attitude, the technology cannot be used; therefore, there is a need to train people and show them how they will use the new technology. It may be true, however, that there may be some reduction of staff in some instances. In nursing, where staff is not adequate, it is a welcome development to add technology. Therefore there is a need for this study where participants would learn the use of these beneficial devices.

2.11 Acceptance and use of multimedia teaching tools in nursing education: important aspects, vantage points and problems

ICT has progressed speedily in recent years resulting in unprecedented changes in the past few decades and, by extension, the state of present communities. ICT globally has become essential in every aspect of lives and also in the education sector. It is therefore needed by schools to teach the cognitive as well as skillsneeded by students for this century. This technologyinfluences students' attributes, learning quality and teachers' attributes and they result to student's accomplishment. (Youssef and Dalmani, 2010). There was a variation in students' performance related to ICT, and they observed that the variation seen in students' performances was associated with the effect of ICT. They recommended that the variation in education should result in giving solutions to the problems. All institutions should join in the use of ICT. Khaled (2014) studied the outcome of ICT in Jordanian Universities to find out the effect of ICT in their educational system. He found that there was effect on the use of ICT on teachers, students, including parents. Many governments all over the world now use

ICT, and spends enormous amount of money in ensuring that the programme does not fail. Examples include United Kingdomthat spends in 2008–2009, 2.5billion pounds (Nut, 2010), United States, spent between4.7 and 6 billion dollarsin 2009. New Zealandspends about 410 million dollars every year on technology devicesfor schools (Johnson, Calvert andRaggert 2009).

Nigeria as a country did not have an estimate but still, spends a lot of money through policies which provides computer and ICT accessories destined towards the improvement and availability to schools to aid education. Despite many laws and regulations ICT is still lacking in schools and in the higher education sector in Nigeria (Damkor, Irinyang and Haruna 2015). Rather the business sector is using a lot of money to set this up. Therefore there is evidence of presence of ICT in the business sector. It is also on record that every individual has a right to ICT as it is necessary to grow economies (The Economic Commission for Africa). However, several nations in the Africa are still lagging behind (Aduwa-Ogiegbean and Iyanu 2008). Theoretically, strategies exist on how to use online ICT tools to reduce the exorbitant textbooks costs considering that using multimedia approaches appropriately enhances learning. The National Policy of Education in the Federal Republic of Nigeria, identify the functions of ICT globally recognizes the prominent roles of ICTs in the modern world. Nigeria's authorities pledged to ensure the availability of crucial infrastructure and training. By this time, Nigerians would have been using these technologies all over the states if these had been done. There is dearth of information on nursing which have been affected due to no provision of fund and some other challenges.

Yussuf, (2011). Found that many challenges abound such as: decreased number of teachers, expensiveness of ICT materials diminished electricity supply, slow Internet connections and thieves/All these identified difficulties make the adoption and use of technology difficult. However some on –line schools survived due to institutional supports. Technology adoption will be affected by personal characteristics such as educational level, age, gender, educational experience, and experience with the computer for educational purpose and attitude towards computers can influence. Therefore, many efforts should be geared toward remediating the above situations. Many teachers should be training and carry out researches to bring to the notice of stakeholders the knowledge that will enable the adoption and use of technology.

Technology having been accepted by Nurses in Education as well as in the healthcare of patients/clients as in nursing, it has been found to reduce excess and increase effectiveness of work. In many ways technology is useful to the profession. Despite these, there is still underutilization of technology in nursing. In Ebonyi State in Nigeria, through technology is available it is not used in healthcare but used specifically for word processing in offices used by secretaries. In Kenya, Nairobi, technology has been present since 2013 yet it is not used by nurses but used in the preparation of bills for clients. Many nurses believe that an important area in nursing care is the human touch and there is no technology that has been identified to replace this. Nurses have identified that lack of support from other members of the health team was a challenges to the use of technology. Lack of training to acquire the skills necessary to use technology is not readily available in some institutions. The number of computers available due to the cost of computers was another challenge. Many times the available broad band connectivity may be off completely and not available for many months. (Omotosho, Ayegba, Emuoyibofarhe and Meinel 2019)

Nurses have also identified that there are certain procedures that technology cannot replace these include:

- History taking with further questions from clients response
- Health education and ability to recognize when clients do not understand
- Duty roaster rotation for staff
- Wards report on individual patients/clients

Nurses have long hours to work already and recently a lot of data is available to be used or analysed by the said same nurses. The new technology of electronic records requires new learning of skills which are immense responsibilities. (Florence 2021)

The latest challenge, concerns the closure of schools by the infection of Covid-19 epidemic. This resulted in disruption of schools and student studies where students have anxiety concerning their studies many schools then started on-line courses. This required special training as many schools were not ready for this surprise epidemic. Many nursing schools are recovering gradually. The next challenge came in the massive numbers afflicted by this virus which became a challenge in the working wards in the hospital to care for the whole populace. (Aggarwal et al 2021)

Some solutions were provided that could help solve some of the above challenges: one would be an all-inclusive training that puts the nurse on red alert with necessary modern equipment: two will be to put together plans or policies to address the situation and three would be that nurses are very resilient and have been trained and can learn all the time. (Challenges in Nursing, 2020). Nurses should go for MSc and PhD programmes to be equipped for this challenge.

2.12 Tutoring and acquiring mixed media tools in IT literacy tutoring.

Training in Information Computer Technology (ICT) encompassing the different parts, especially multimedia aids, is essential as one cannot give what one does not have. Training involves equipping with necessary skills, information and knowledge, and the result is the change in attitude and values of individuals.

Ali Ghani and Ali (2009) explored how Audio Visual Aids (AVAs) are used. This exploration involves how the different types of AVAs are employed, particularly the training of teachers for their effective use. This exploration also includes policy imperatives and the role of private and public schools in the adoption of AVAs in education in private schools in district Peshawar, KP province India. Data was collected from teachers of private schools through a close and open-ended questionnaire to achieve the study's objectives. Information was also derived from books, government's reports, published research and the internet. The results show that AVAs are used in all private schools in some form. There is no system to give formal training to teachers about the proper and effective use of AVAs. Chalkboard and whiteboards were the main AVAs used in schools, while sixty percentage of institutions employed multimedia tools. Recommendations to expand AVAs' use and to improve their efficacy in education are critical. For instance, Olokoba and Abdullahi (2014) in studying ICT's impact on the organization and functioning of secondary school educators in Kwara State discovered that educators do not use ICT mainly due to unavailability of the equipment and infrastructure, in the teaching of the students**.**

Educators in countries like Nigeria or Africa cannot regard the adoption and usage of ICT as complete as there are still many challenges, there are still many researchers showing attentiveness to this. Technology should stand alone to be used but it was discovered that in Nigeria and somenations for example, Turkey, technology applied

by educators is still under used to support traditional teaching methods. Nigeria like other countries especially Malaysia, the use of ICT is growing and should be applauded. What could be the reasons responsible for the situation in the developing countries? In literature some reasons advanced were inadequate scholarly research, scarcity of good research, shortage of practical data, time, training, including inaccessible equipment.

In Osakwe (2010)'s investigation, subjects were randomly selected using the stratified sampling technique in a sample of 135 lecturers. The researcher found that teachers were not using ICT for their lesson plans and no evidence were seen that student learned effectively from the teaching. There was also the lack of professional input.The majority of nurses, 83.3%, had never attended any online computer-based training programme; a majority 63:9%, had no formal computer training and did not possess personal computers, while 74:4% reported positive perception and attitudes towards using ICT supports in distance education (Irinoye et al. 2014). Mingaire (2013) found that to adopt and use ICT in schools in Kenya, the researcher facedmany challenges, the major one was that the teachers did not have ICT skill. He therefore provided solutions for them. He advocated training in ICT and inclusion into the schools' curriculum with adequate continuing education.

Another research carried out emphasizes the challenges and also provided solutions. The research explored public and privately-owned institutions in Lagos State Nigeria (Asaolu and Fashanu 2012) The authors exposed challenges to ICT use including: shortage of resources to purchase and preserve ICT tools, shortage of technical know-how and erratic electricity. The authors believed that adequate ICT training of educators would resolve the challenges. In addition, Neji (2016) found almost similar issues that has remained challenging but had not been fixed, lack of funds to buy computers and data for the Internet. He also identified the solution as training of staff and sending them for seminars and conferences, participation in seminars, conference. Training of teachers is, therefore, necessary to ensure that they employ technology in their teaching.

2.13 The adoption/usage and gender of the multimedia teaching aids

The adoption and usage may be affected by gender or the sex of an individual. Therefore, there should be a gender enumeration to find out if to use an ICT facility

depends on sex, especially if included in the national policy of a country. It has been documented that no country in the world has achieved gender equality (United Nations Development Program, 2012) Many women are poor as many were not sent to school they cannot get jobs as they have no qualification, they are under the control of their husbands and cannot make decisions on their own in the family in business nor hold political power. These factors affect the will of women to gain equally from opportunities offered by ICTs and contribute fully to shaping the development of the global knowledge, economy and society. That even for small businesses the women had only small hand phones for their use and no other elaborate ICT accessories. (UNDP 2012). Researchers found a correlation between the use of mobile phones and the success of women's businesses, In addition to having a positive impact on women's empowerment in general and on family well-being, their use of mobile phones helped lift barriers and provided increased opportunities. In a survey of ICTs in informal businesses in Africa, it was revealed that mobile phones were the only ICT widely used; the use of fixed lines, computers and the Internet was negligible.

Moreover, there appears to be a gender divide in developing countries using ICTs, mobile phones, and business. It was found in a recent study of African countries that a much higher share of male-owned than female-owned informal sector businesses used mobile phones. Although the number of microenterprises is steadily increasing, they are less likely to use the Internet except the few that deals with international clients. (UNDESA 2013)

In some studies involving female teachers it has been discovered that there can be lack of training in technology which may be the factor preventing the use of computers by the female. Sometimes they are not permitted to use ICT this can discourage women and result in losing interest. Other research studies show that male teachers may be using More ICT in instructing their students than their female counterparts (Kay, 2006). If in the nursing profession majority are females, then maybe there could be gender issues in non-acceptance of technology. Maleki, Majidi, Haddadian, Rezar and Alipour (2012), in their conclusion, maintained that in Nigeria, the female staff in their study scored a higher mean in the use of the Internet than their male counterpart.

2.14. Theoretical Structure

Some ideas explain the adoption of information technology and its use to teach and learn for educational reasons in institutions. These ideas define variables that affect the occurrence of adopting and using ICT encounter by those using it.There are various models and theories. Adapted for this research is the Technology Acceptance Model (TAM)

2.14.1 Technology Acceptance Model (TAM)

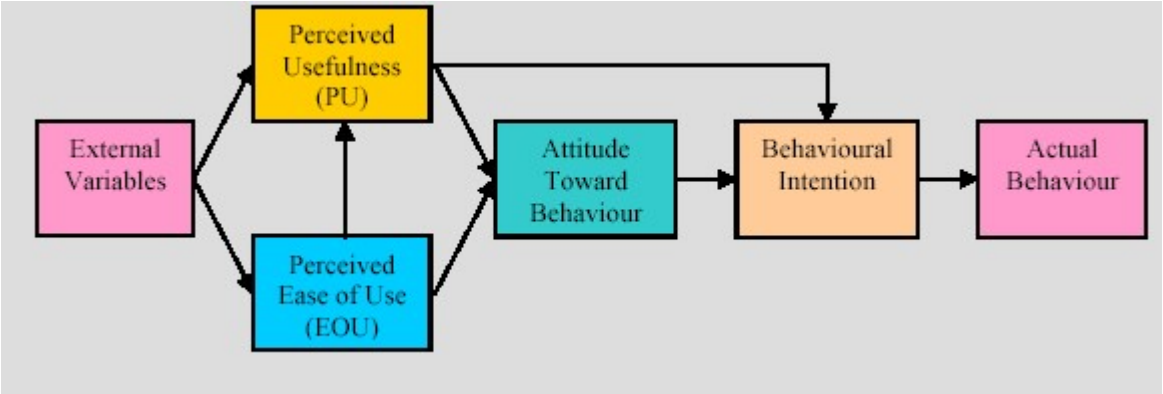


Figure2.1

2.14.2 Introduction: Technology Acceptance Model

Davis introduced the model, (TAM) in (1986) in his thesis at Slone School of Management, Massachusetts Institute of Technology. Many years later, it became accepted, in 1989 and TAM became well-entrenched and vigorous and is used to explain the use of technology. TAM used TRA as a theoretical framework giving the pivotal links between two central beliefs: it recognises that, if an item is useful and it is easy to use then it can be used. Other things to consider are the frame of mind, goal and ability to use. The frame of mind and recognition if item is useful and will control how the individual would behave. Frame of mind is controlled by the recognition if item is useful and if easy to use. Therefore TAM can be used to explain the reasons for IT acceptance. It explains the consumer acceptance across a broad range of behaviour.

Thebehaviour is based on predicting and explaining 'use' which focused on two abstract constructs: perceived usefulness and perceived ease of use, which were theorized to be fundamental factors of system use TAM theorized that the effects of external variables (e.g., system characteristics, development process, training) on intention to use are mediated by perceived usefulness and perceived ease of use. Perceived usefulness is also influenced by perceived ease of use because if other things are equal, the easier the system (technology) is, the more valuable it can be. One assumption made by TAM is that the usage of a particular technology is voluntary. Another hypothesis is that an individual's stated preference to perform the activity (i.e. behavioural intention) will, in fact, closely resemble the way they do behave, given sufficient time and knowledge about a particular behavioural activity. Moreover, TAM has vital behavioural elements; it assumes that they will be free to act without limitation when someone intends to work. There may be many challenges in living such as: reduced potential, time challenges, constraints with the milieu or oblivious practices limiting action (Davis 1989: Lai (2017)

2.14.3 Interpretation of the conceptual model (TAM) to the study

The adaptation of the model for the study is depicted in figure 2.2. The model explains the relationships among the dependent variables, independent variables and extraneous variables. The dependent variables are the perceived skill of using ICT, perceived ease of use, attitudes towards multimedia in teaching and adoption and

usage. The independent variable is ICT literacy training. Availability and accessibility are the extraneous variables to shed more light on the model. In the model adopted for this study, there is a well-established casual chain of beliefs and attitudes with intentions to use. Explaining believes that multimedia equipment is available and accessible and there is skill at using this equipment, based on these beliefs, an attitude is formed about this equipment. If the equipment is found to be valuable and easy to use, it emphasizes the intent to use concerning this equipment. The sole determinant of actual behaviour is the intention to use.

Adapting this theory to the educators, in this study it can be explained that the educators, who were participants in this study had training on information technology which gave hope of future use. If there is availability and accessibility of equipment, in the future, and they believed that this should happen. Having acquired skill they had discovered that multimedia teaching aid was not too difficult to use therefore there was a change in attitude when all these behaviour are present it could enable adoption and usage of multimedia teaching aid in their various schools. The attitude to multimedia when it is positive would enable nurse educators to use multimedia teaching aids. When equipment is easy to use, it directly influences and is helpful to adopt and use. Technology will be used when it is available, accessible and with the right attitude. Technology may then be adopted by nurse educators when it is advantageous and can be easily manipulated.

TAM has continued to be reviewed and modified empirically in various settings with various levels of success. All involved in the use of the elements in the theory of technology acceptance model which predicts intention to use and using it for projects should fully comprehend how it is applied and so may adjust or give opinion. TAM is considered to be well established and robust by Venkafesh, Doris and Morris (2007). Ahmad, Kauba and Usman (2012), in their publication, believed that they also added to TAM when they added availability and anxiety as part of extraneous factors in the model.

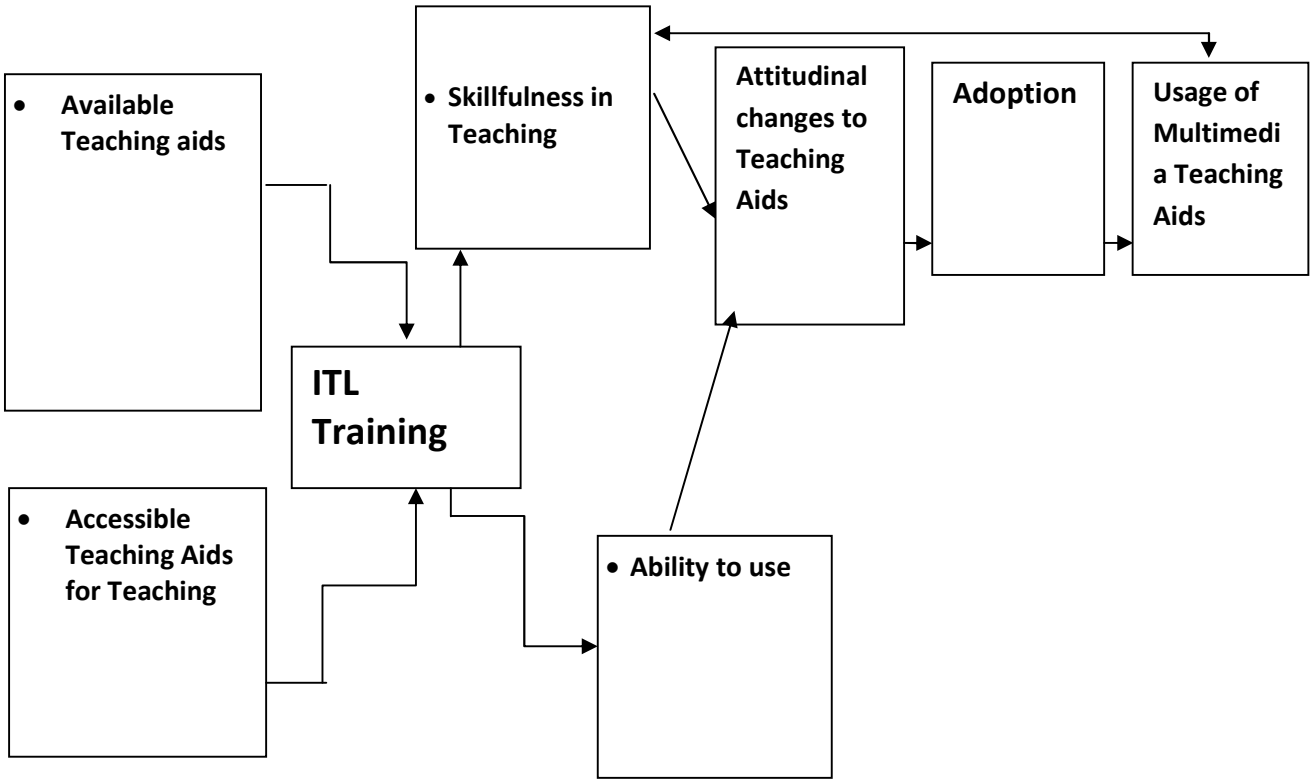


Fig. 2.2 Adaptation for the study of Technology Acceptance Model (TAM).

Key: ITL- Information Technology Literacy

2.15 Summary of Literature Reviewed

This chapter analysed and reviewed existing literature on the concept of multimedia aids and its significance in teaching and learning in nursing schools in Ogun State. Drawing on theoretical and conceptual frameworks such as the 'Awareness Gap' theory and the 'Technology Acceptance Model (TAM), this chapter engaged in a thorough analysis and review of existing literature on key issues focusing on the availability, accessibility, adoption and ease of use of multimedia aids in nursing schools in Ogun state,

To do this, the chapter began with exploring existing literature on the definition of the concept of multimedia. In offering a definition of multimedia, it examined the history, significance, functions and advantages of using multimedia aids in teaching and learning in nursing schools globally and particularly in Nigeria. Drawing from existing literature, the chapter discussed the importance of available and accessible multimedia teaching aids in enhancing the teaching and learning process. However, it also recognised widespread difficulties to accessing multimedia aids in nursing schools in Nigeria.

To understand the importance of multimedia aids, the chapter traced the origins of Information Communication Technology (ICT) in nursing. Specifically, it discussed how essential ICT is in nursing education, the educational uses of the internet and ICT and identified critical ICT learning theories in nursing education. The findings showed that because information is vital in nursing education and client care, ICT as an educational and learning tool would ensure excellent research and evidence-based practices are achieved in schools of nursing. In emphasising ICT's skills and competencies of nursing educators, the chapter revealed the three domains of nursing education namely: first, knowledge, second, attitude and third, the skills meaning cognitive, affective and psychomotor, respectively. It exposed how although skills are taught by teachers using many methods, the most efficient is achieved using multimedia aids, including virtual worlds and models. In doing this, the chapter showed ICT as a means for enhancing educational quality, particularly in countries in the Global South.

Furthermore, the chapter questioned the ease of use of ICT and multimedia aids in nursing schools. This question was significant considering that effectiveness and ease of use has a considerable impact on technology use and performance. The chapter also examined the approach to adoption and usage of ICT. This discussion was particularly important given that existing literature had established how positive attitudes towards educational technology, adoption and incorporation of ICT enhances teaching and learning methods and approaches as opposed to negative attitudes.

Interestingly, gender was identified as a critical factor in the adoption and use of ICT and multimedia aids in nursing schools. The impact of gender digital divide was underscored.

Relying on existing literature, the chapter also highlighted difficulties and challenges to adopting and using multimedia aids in nursing schools. In drawing conclusions from the discussions in this chapter, it was evident that compared to conservative and traditional teaching methods and approaches, engaging multimedia aids in teaching enables both learners and educators to be more effective and efficient.

2.16. Hypotheses

The following hypotheses were tested at 0.05 level of significance.

H_{01}: There is no significant difference in the skill of the use of multimedia teaching aids in experimental and control groups post intervention.

H_{02}: There is no significant difference in the perceived ease of use of multimedia aids in teaching in control and experimental groups' post intervention

H_{03}: There is no significant difference in attitude towards multimedia teaching aids use between experimental and control groups post-intervention

H_{04}: There is no significant difference in the adoption and usage of multimedia teaching aids in control and experimental groups post-intervention.

CHAPTER THREE

METHODOLOGY

This section deals with the methods used in carrying out the study with particular focus on research design, study setting, the population, the sample and sampling procedure, instrumentation, administration of instruments, data collection procedure and methods data analysis.

3.1. Study Design

This study employed the pre-test-post-test quasi experimental design. Quasi experimental research design encompasses observation of the effect of manipulation of independent variable on the dependent variable. Quasi experimental is usually designed to establish causality (outcome of manipulated independent variable in dependent variable) when it is not possible to assign the subjects to groups randomly for various reasons. This design enabled the researcher to determine ICT training outcome on multimedia teaching tools adoption and usage by educators in nursing schools in Ogun State.

3.2. Study Setting

This study was conducted in all nursing schools situated in Ogun State. Ogun state fondly referred to as “Gateway State” is situated in the southwestern zone of Nigeria, with the capital in Abeokuta. It shares borders with: Lagos state to the southward, Oyo and Osun States northward, Ondo State eastward and the Republic of Benin westward. It covers approximately an area of 16,980.55sq kilometres and it has twenty-one local government areas. The schools of nursing in Ogun State, total four schools which include schools of nursing in Ijebu-Ode, Ilaro and two schools in Abeokuta. All schools of nursing, where students study basic nursing courses were selected. These schools are state government and private owned

The school of nursing in Ijebu-Ode is situated at OmoOwo area of Ijebu-Ode, a few kilometres from the General Hospital. The school of nursing Ilaro is situated at Ijanna Road in Ilaro, Ogun State. School of Nursing Abeokuta is situated within the Federal Medical Centre, Abeokuta. Sacred Heart School of Nursing, Lantoro is a privately owned institution by Catholics situated in the centre of the town close to the annexe of psychiatric hospital.

3.3. Study Population

Nurse educators teaching in the schools of nursing in Ijebu-ode, Ilaro and Abeokuta formed the population for this study. This study centered only on nurse educators where the problem for this study was observed and their curriculum was available. The researcher could not control others trained for other courses who were also working in the schools

Inclusion Criteria

The participants:

1. Nurse educators duly registered and licensed by the Nursing and Midwifery Council of Nigeria (NMCN)
2. Nurse educators willing to participate voluntarily at all stages of the research

3.4. Sample and Sampling Techniques

The samples for the study were forty nurse educators from schools of nursing in Ijebu-Ode, Ilaro and Abeokuta. A number of educators were on leave and on maternity leave and were not available as at the time of this study.. There were four schools of nursing in Ogun State. Two of the selected schools of nursing namely: the Sacred Heart School of Nursing Abeokuta and the School of Nursing in Ilaro were the treatment group, while the other two schools, namely: the Abeokuta School of Nursing and the Ijebu-Ode School of Nursing were randomly selected to the control group by balloting. All available nurse educators in the selected schools were selected for the study by total enumeration because of the small number of the population of the educators. Below is a table that shows the number of nurse educators available for the study in Ogun state.

Table 3.1: List of Nurse Educators

S/N	Ogun State Schools of Nursing	Number of Nurse Educators		
		Total	**Control group**	**Experimental group**
	School of Nursing, Abeokuta.	10	10	
	School of Nursing, Ijebu-Ode.	10	10	
	Sacred Heart School of Nursing, Lantoro.	10		10
.	School of Nursing, Ilaro.	10		10
	Total	**40**	**20**	**20**

3.5. Sample Size Determination

The sample size for the study was calculated using the formula proposed by Charan and Biswas (2013) for cohort studies with qualitative outcomes.

$$\text{Sample size} = \frac{2\,(Z_{\alpha/2} + Z_{\beta})^2\, P(1-P)}{(P_1-P_2)^2}$$

Where:

$Z_{\alpha/2}$ = Standard normal deviation corresponding to 2 sided α level of 0.01% = 1.96

Z_{β} = Standard normal deviation corresponding to a β error of 20% (Power of 80%) = 0.8416

P_1-P_2 = Difference in proportion of outcomes in two groups = 0.22 – 0.52 = -0.30

P = pooled prevalence

= {prevalence in experimental group (P_1) + prevalence in control group(P_2)}/2

= (0.22 + 0.52)/2 = 0.35

$$\text{Sample size} = \frac{2(1.96 + 0.84)^2\, 0.35(1-0.35)}{0.3^2}$$

$$= \frac{15.68 \times 0.23}{0.3^2}$$

$$= 40.1$$

3.6. Research Instruments

Instrument designed for this study was a structured questionnaire and checklist developed from literature review. Extensive review of literature was conducted on the variables, implementation and application of multimedia teaching tools among nursing instructors and teachers in the development of the data collection instruments. Some of the questions were adapted from the questionnaire of Souza, et al (2014); Adeoye, et al (2013).

3.6.1. Questionnaire

A structured questionnaire was administered for data collection from the participants in this study. The questionnaire consists of six sections shown below:

Section A: consists of responses from the participants on eight demographic characteristics, which include age, sex, marital status, religion, years of teaching experience, level of nursing education, and field of specialty.

Section B: comprises, information on availability of multimedia teaching aids in the schools surveyed. The research items measured were computer, projector, internet broad band, digital camera, scanner, video equipment, slides, film strips, electronic notice boards, radio/tape recorder; totalling ten items. This section provides data for answering research objective, number one.

Section C: consists of information on accessibility of multimedia teaching aids in the schools surveyed. Seven research items were raised to measure accessibility using the scales with strongly agree(4) agree(3)disagree(2)e and strongly disagree(1) responses. This provides information for answering specific objective number two.

Section D: consists of information on the skill of nurse educators on the use of computer, keyboard, Microsoft office software such as Microsoft word, Microsoft power point, Microsoft excel, web publishing, projector, video tape, internet, e-mail, informatics, adobe acrobat, and others. This section provides data for answering research objective number three.

Section E: Eleven questions measured the perceived ease of use of multimedia aids. This section provides data for answering research objective number four.

Section F: consists of ten questions on information on the attitude towards adoption and use of multimedia teaching aids. The research items were raised to measure attitude using 4-point Likert scale with strongly agree, agree, disagree, and strongly disagree responses. This section provides data for answering research objective number five.

Section G: consists of information on adoption and usage of multimedia aids in the schools surveyed. Eleven research items were raised to ask if participants would adopt

and use computer, projector, internet, digital camera, scanner, video, and slide. This section provides data for answering research objective number six. Appendix 1

3.6.2. Observation Check List

The observation check list was developed to corroborate findings from the responses obtained from the questionnaire on the actual adoption and usage of multimedia aids. The check list consists of fifteen items, designed according to the pattern of Objective Structured Clinical Examination (OSCE) which is meant to assess ability to competently apply skills and knowledge (Appendix 2).

3.7. Validity

The instrument ability to measure what it is purported to measure was ensured by allowing experts in the educational technology department to view the content. The questionnaire was also ensured to have content validity as the questionnaire was viewed and corrected by the project supervisor. The content was compared to instruments used by researchers who carried out researches in this area of study to ensure construct validity. It was also ensured that all the items of the topic to be taught were covered. Nursing experts also offered suggestions and corrected misconceptions in all the items.

3.8. Reliability

In order to subject the questionnaire to reliability test, the instrument was administered on ten nurse educators who did not form part of the min participants of the study in School of Nursing, Lagos State University Teaching Hospital, Igando. The collected data were used to evaluate the reliability of the instrument using the Crombach's alpha for each of the scales used in this study. Table 3.2 presents the results. The checklist was validated by screening by the researcher's supervisor and one of the reviewer at pre field.

Table 3.2: Reliability Analysis of Sampled Scales

S/N	Variables	No of items	Cronbach's alpha
	Multimedia aid availability	10	0.94
	" Accessibility	7	0.86
	Skills of multimedia aids	14	0.71
	Perceived ease of use of multimedia aids	11	0.71
	Attitude towards adoption and use of multimedia	10	0.93
	Adoption and usage of multimedia aids	11	0.74
	Overall	63	0.89

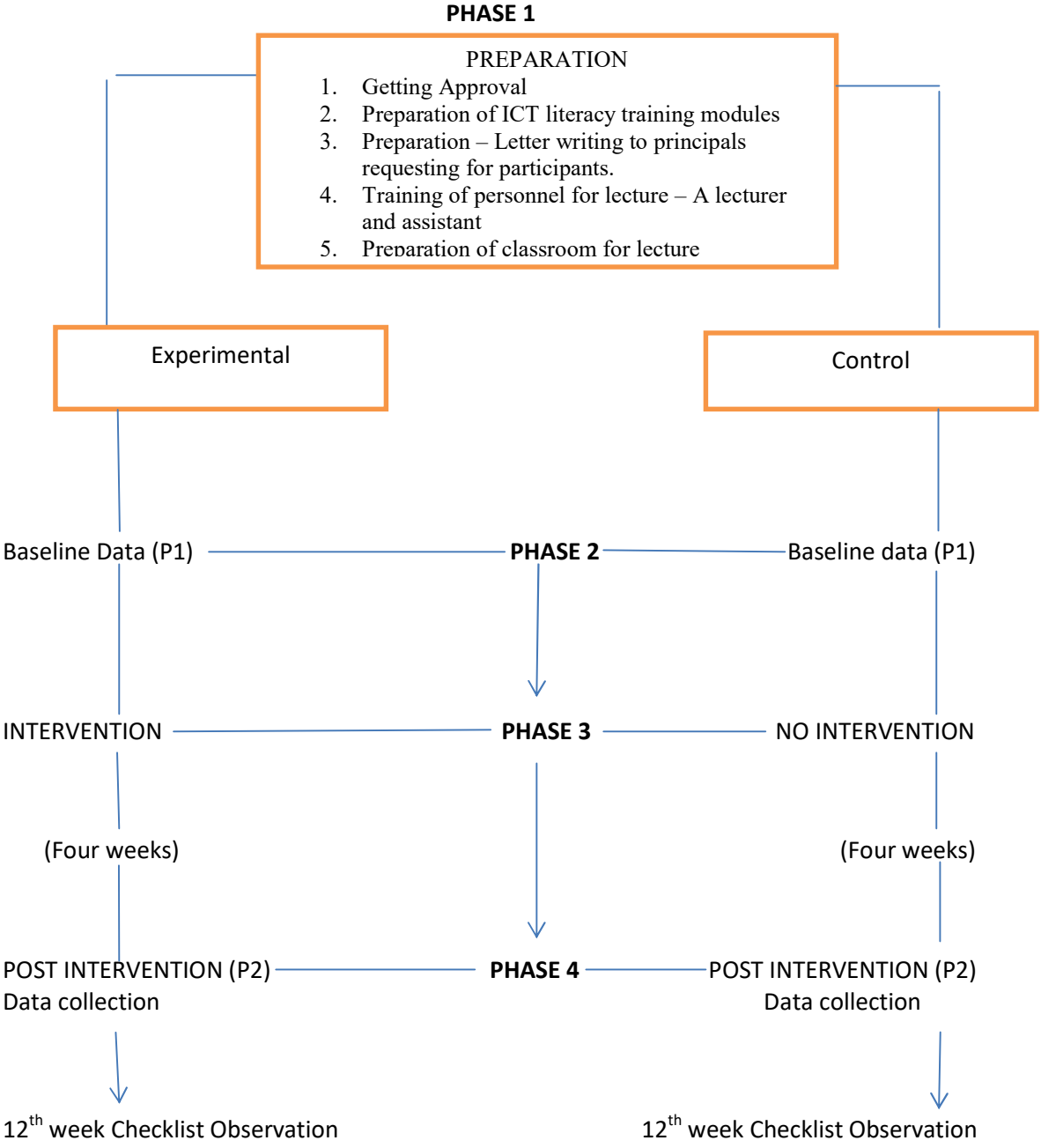
3.9. Ethical considerations:

The proposal was submitted to ethical review committee in the Ministry of Health, Ogun State and approval was given (HPRS/381/226) Letters were written to the principals of schools of nursing for the use of the school facilities and were approved. Permission was sought from each institution whose educators were the participants for this study and approval was given. A letter of introduction from the department of nursing, University of Ibadan, was also presented. The confidentiality of answers to the questionnaire was ensured and was communicated to all participants at the start of the research. The principals who were also assured that the names of the schools would not appear in my publication without first seeking permission were further reassured.

3.10. Procedure for data collection:

The procedure was in phases for the experimental group as well as the control group. There were four phases:

Fig. 3.1: RESEARCH DESIGN FLOW CHART



Phase 1

Preparation

1. Getting approval from Ministry of Health
2. Development of the training modules for the experimental group and selection of usual lectures for the control group.
3. Letters to Principal of Schools of Nursing
4. Identifying the participants.
5. Deciding on the venue
6. Training of assistant and request for a lecturer from the computer department to assist with the lectures and demonstration.

The research commenced with approval by the Ministry of Health Ogun State next the emergence of the training package. The training package was developed by the researcher. It consists of three modules. The first module consists of lectures on information technology, the second on Nursing Informatics and the third on preparing PowerPoint, using multimedia-projector. Web publishing, Microsoft excel, Word and adobe acrobat practical were included.

Letters were dispatched to the two experimental and the two control schools and quickly followed by the researcher to book appointment to see the principals. The meeting of the school administrators were successful in that they approved of the use of the classroom and the computer rooms. After the approval by the school administration, two research assistants were enlisted from the department of computer science, Babcock University, to assist in data gathering. They were trained as assistants to ease the burden of data collection for the researcher. Together we looked at the lectures and what the questions were sking was explained in order to be able to answer participant's queries. Lectures took place in the classroom in the two schools, from the beginning and to the conclusion. The participants were together at the same venue for the lectures to prevent double lectures and introduction of bias.

Phase 2

Collection of Baseline Data (P1)

On the first day of the commencement of the research the questionnaire was administered to the two groups in their various schools this took place in Sacred Heart School of nursing on Tuesday and in School of Nursing, Ilaro. On Thursday the questionnaire was administered to School of Nursing Abeokuta and School of Nursing Ijebu -Odeand the research continued immediately afterwards.

Phase 3

Intervention

Weekly Lectures Arrangement.

The experimental group was trained using the specially prepared training modules while the control group had their usual traditional teaching methods. The weekly lectures for the experimental group took place on Tuesday and Thursdays. The training took place as follows for the experimental group for the first four weeks:

. The lecture for that first day continued in Sacred Heart School of Nursing for all participants. Participants from Ilaro joined the other group in Abeokuta.Some participants live in Abeokuta before preceding to Ilaro for their daily work it was convenient for the participants and the researcher. The researcher took advantage of this and consequently lectures continued at Sacred Heart School of Nursing classroom. Some joined the group from Otta (a nearby town) and were compensated. . Throughout the lecture weeks, the researcher and the management of Sacred Heart Hospital provided the researcher with their generator and diesel to enable the lectures to be given whenever there was power failureThe lectures for the experimental group were as follows:

Information Technology Module 1
Week One

Lectures were given on Tuesday and Thursday on the different aspects of information technology in the first week. The participants had a quiz administered at the end of each day.

How to prepare Power-Point Module 2

Week Two

Lectures were given on Tuesday and Thursday on how to prepare Power Point. Prior to this, participants were observed using PowerPoint to teach. The check list was used in the observation.

The participants continued to practice using they developed Power Point to teach during the week.

Nursing Informatics Module 3

Week Three

Lectures were given on Tuesday and Thursday on historical perspectives of nursing informatics, informatics as information technology, web publishing, and practical section on Microsoft Excel. The participants were given a quiz at the end of the last day.

Week Four

The fourth week the participants had revision and were given time to continue reading. They were given assignments and a CDROM that contained all the lectures. The researcher promised to be back in four weeks to see the participants.

The Control group

In the next four weeks the researcher visited the control group ensuring they were still aware that the research was still on-going, they were visited once a week for the next four weeks. The educators continued their teaching for the same four weeks and their usual lectures on methods of teaching was reinforced. This was necessary so as not to lose the participants. The researcher informed participants that she would be back to see them soon and they should continue with their lectures.

Phase 4

Post Intervention Data Collection (P2)

The researcher returned on the 8th week and administered thesame questionnaire administered at pre-test as thepost-test in each school of the experimental group at Sacred Heart School of Nursing and Ilaro School of Nursing. The same questionnaire was administered to the control groups in their various schools in Abeokuta School of Nursing and Ijebu-Ode School of Nursing. Every data collected that were collated and sent to the analyst working together to analyse the results.

After another four weeksof the research the researcher arriving unannounced at the four participants schools and observed the participants who were using the multimedia to teach. The checklist was used for this observation. After the post test was completed the control group were given the CDROM that contained the three modules lecture that was used for the research to make up ethically at the end of the research.

Methods Used in Teaching the Experimental group

1. **Power-Point**

   All the lectures for the modules were prepared using Power Point presentation which was projected. The participants equally prepared lectures using Power Point and this was projected by the participants for practice.

2. **Internet**

   As part of the practice session for module III, the participants were instructed to search for the topic on internet using search engines and nursing informatics was downloaded from the internet using participants' personal modem. Participants were also given practical session on Web publishing and Microsoft Excel.

3. **CD Rom**

   All the lectures were burnt on a CD Rom which was distributed to the participants. This is to ensure that participants continued to study as the researcher would be back after four weeks to administer the questionnaire again. Participants were also communicated by e-mail and internet when the researcher was away and the participants were encouraged to practice the use of multimedia aids in their teaching.

Methods of teaching by the Control Group

The methods of instruction were, lecture, lecture discussion and role play. In this group, hand-outs were given at the end of the lectures.

3.11. Method of Data Analysis

The data was analysed with frequencies, percentages and mean (statistical package for social sciences version 20), chi square and t-test.

- Objective 1: Evaluate the availability of multimedia tools in nursing institutions. Questions 9-18 addressed this section. This was analyzedusing frequency counts and percentagesfor both groups, if ≥50% of the participants agreed that the item was available, it was categorized as"Available" and "Not available" when < 50% of the participants indicated that the item was available

- Objective 2: Assess the accessibility of multimedia teaching aids to the educators. Questions 19-25 statements were used by participants to strongly agree (4marks) and agree (3marks) or to disagree (2mark) or strongly disagree (1 mark). This was analyzed using frequency counts, percentages and mean. The questions were negatively skewed and therefore the scores were reversed. Highest score was 28 and lowest score was 1, thus score of 1-14 was categorizedas accessible while scores above 14 to 28 was considered inaccessible. This was used to compute the summary. However frequency and percentages were used for each question.

- Objective 3: Assess the perceived skillof the use of multimedia aids among nursing educators pre and post intervention.

Questions 26-39 participants answered if highly skilled, 4 fairly skilled 3, and skilled 2 or have no skill 1. This was analyzed using frequencies, percentages and means for both groups. Highest score obtainable was 56 high skilled is ≥43, fairly skilled: 29-42, skill: 15-28 and no skill was ≤ 14. The data was further categorised into Good skill and poor skill using the ≥ 75^{th} percentile as good skill and < 75^{th} percentile as poor skill because these are professionals.

- Objective 4: Assess perceived ease of use and experience in the experimental and control groups.

Questions 40-50 participants answered yes or no. Yes = 1 and No = 0. This was analyzed using frequency count, percentages and mean for both groups. The maximum score is 11 while the lowest is 0 categorised as perceived ease ≥ 9, 4-8 as moderate ease of use and not easy to use as ≤ 3.

- Objective 5: Evaluate the attitude to the application of multimedia teaching tools by instructors in experimental and control groups.

  Questions 51- 60 for this section using the Likert scale. Five questions were positively worded while the other five were negatively worded. In analyzing this section, all the five negatively worded items were reversed. Scores were allocated thus: Strongly agreed attracts 4 points, agreed = 3 points, disagree = 2 points, and strongly disagreed = 1 point. Total obtainable score is 40 points, and categorised as ≥ 30positive and≤29 as negative

- Objective 6: Identify the acceptance and useof the multimedia teaching aids by instructors in control and experimental groups. There were eleven items, 61-71 participants to answer yes or no was analysed using frequencies, percentages and means for both groups. Total obtainable score is 11; ≥ 9 is high adoption and poor adoption is ≥4

Analysis of hypotheses

H_{01}: There is no significant difference in the skill of the use of multimedia teaching aids in experimental and control groups after intervention. Using the mean scores obtained from objective 3, this stated hypothesis was tested using t- test to show the significance of mean difference in the two groups; 0.05 being the level of significance for the study. Chi square was used for the categorisation

H_{02}: There is no significant difference in perceived ease of use of multimedia teaching in control and experimental groups post intervention. The mean scores from objective 4, were used to test the stated hypothesis using the t-test to show whether the mean difference was significant or not; 0.05 being level of significance for the study. Chi square test was used for categorization.

$Ho_{3:}$ There is no significant difference in the attitude towards multimedia teaching aids in experimental and control groups. The mean scores in objective 5 were used for

testing the stated hypothesis using t-test statistical tool to show significance in mean difference; 0.05 being the level of significance. Chi test was used for categorisation

H_{04}: There isno significant difference in the adoption and usage of multimedia teaching aids in experimental and control groups post intervention. This hypothesis was tested using the mean scores obtained in objective 6, using t-test to test level of significance of the mean difference; 0.05 being the level of significance. Chi test was used for categorization.

Three (3) months later, checklist was used to observe usage by the participants of the multimedia aid. The OSCE like observation utilized the t-test to conclude on the usage.

CHAPTER FOUR

RESULTS AND DISCUSSION

Chapter four discusses the results and interpretation of findings. This was followed by the discussion of findings. Specifically, the study provided answers to the research hypotheses earlier generated. The statistical t-test was used for testing significance of stated hypotheses.

4.0 Presentation of Results

4.1 Socio demography of Respondents

The demographic data of populations in both groups (experimental and control) is presented in table 4.1.

Most of the participants in this study were females. In the experimental group (16) 80% were females and in the control group, (17) 85% were females respectively. Age is in two distinct divisions of young adults 20 – 40 years and older adults 41 – 60 years. 14 (70%) young adults were inthe experimental group, while 18 (90%) were in the control group. While the older adults in the experimental group were 6(30%) but in the control group there were only 2 (10%) According to the status of the participants, 4 (20%) senior officers were in the experimental group, 2 (10%) of them were chief nurse educators, 1(5%) assistant and 1(5%) principal nurse educator. No senior officers of these cadres were found in the control group 0(0%). Whereas in the lower cadresimply called nurse educators, 16(80%) were in the control group but 13(65%) were in the experimental group. Years of experience: there were more participants in the 1 – 5 years in the control group 13(65%) than in the experimental group 8(40%). The experimental group had more participants in the 10years and above 4(20%) than the control group 3(15%). Level of education: Most of the participants have Bachelor of Science in Nursing, experimental group 16(80%) while control 15(75%). 1(5%) had Master's degree in the experimental group and 3(15%) in the control group. Most of the participants had nursing sciences as their field of study 16(80%) in the experimental group and 18(90%) in the control group.

TABLE 4.1: Participants' Socio-demographic Characteristics

Variables	Experimental Group F (%)	Control Group F (%)
Sex		
Male	04 (20)	03 (15)
Female	16 (80)	17 (85)
Age		
20-40(young adult)	14 (70)	18 (90)
41-60(older adult)	06 (30)	02 (10)
Marital status		
Married	13 (65)	15 (75)
Single	07 (35)	05 (25)
Religion		
Christianity	16 (80)	20 (100)
Islam	04 (20)	0 (0)
Status		
Chief nurse educator	02 (10)	0 (0)
Asst. Chief nurse educator	01 (05)	0 (0)
Principal nurse educator	01 (05)	0 (0)
Senior nurse educator	03 (15)	02 (10)
Nurse educator	13 (65)	16 (80)
Years teaching experience		
1-5 years	08 (40)	13 (65)
6-10 years	08 (40)	04 (20)
10 years and above	04 (20)	03 (15)
Level of nursing education		
Certificate	0 (0)	01 (05)
Diploma	03 (15)	01 (05)
Bnsc	16 (80)	15 (75)
Msc	01 (05)	03 (15)
Field of study		
Nursing	16 (80)	18 (90)
Health education	04 (20)	01 (05)

4.2 Objective 1: To evaluate if multimedia teaching tools are available.

The availability of the mixed media tools in nursing institutions is shown in Figure 1. In the experimental group, participants were of the opinion that out of the listed multimedia aids, only computer, projector and videotape recorder were available. In the control group equally, participants agreed that computer, projector and scanner were available. The percentages for these items in the experimental group, (100%, 100%, and 85%) and the control group, (90%, 95% and 80%) This high percentage showed that these items only were available.The availability of multimedia aids in control and experimental groups is shown in figure 4.1.

4.3 Objective 2: To assess the educator's accessibility to available multimedia teaching aids in control and experiment groups.

Twenty two (53%) of participants had inadequate knowledge about multimedia although it is available to them for use, twenty three (57.5%) said they lack the confidence to use this multimedia facility, larger proportion twenty seven (67.5%) had an inadequate experience of the use, while thirty one (77.5%) agreed that the school find it difficult to pay for air time used for multimedia aids. Twenty eight (72%) agreed that electricity supply is absent, Interestingly, most of the participant Twenty nine(72.5%) agreed that the multimedia devices accessible in their school can be needed by two people at the same time and then twenty five (62%) of them agreed that the equipment is expensive to purchase. The summary was developed using the scores.

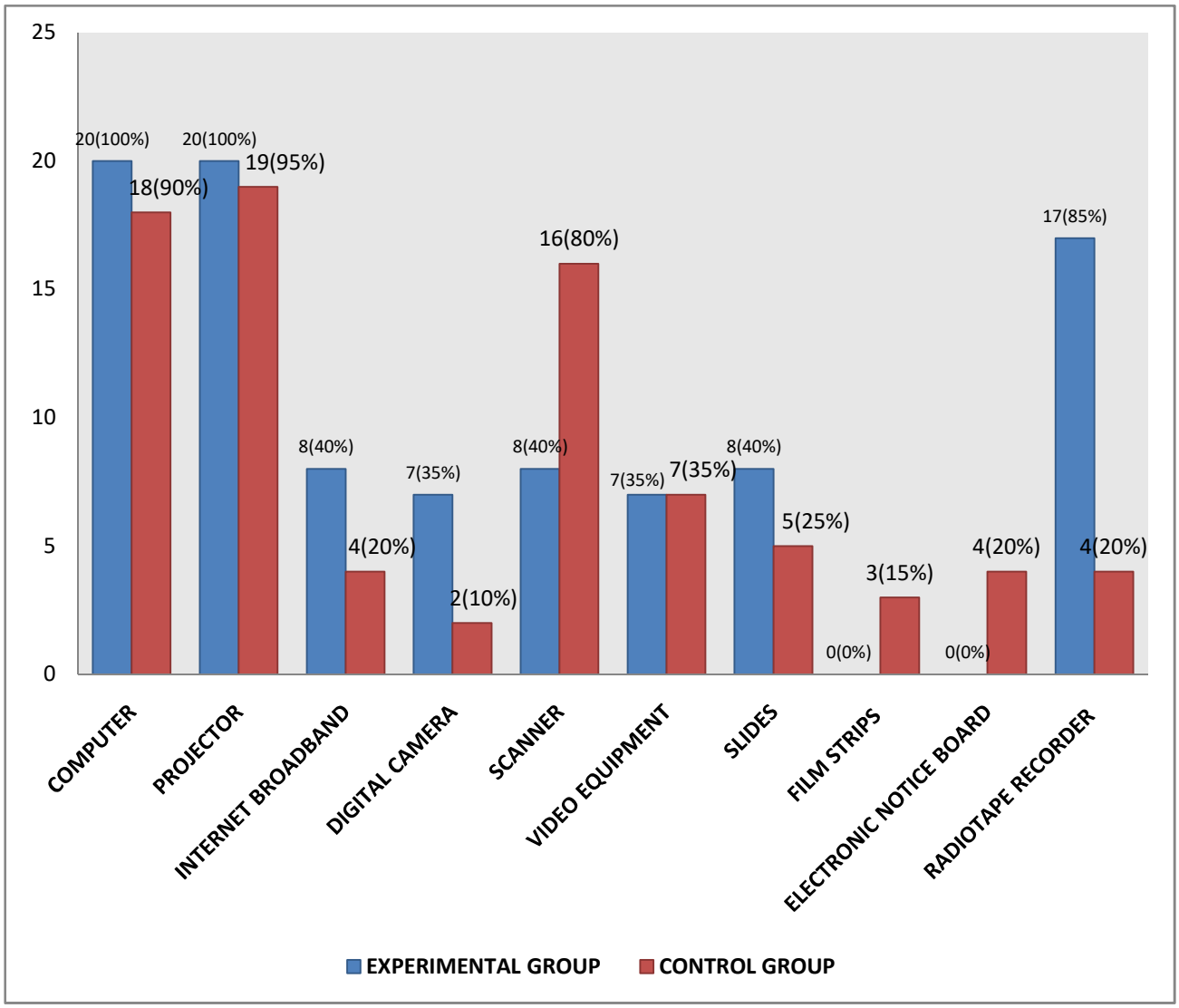


Figure 4.1: Bar chart showingthe availability of the multimedia aids in the schools of nursing

Table 4.2: Descriptive Analysis on Multimedia aid accessibility.

Items	Strongly Agree F (%)	Agree F(%)	Disagree F(%)	Strongly Disagree F(%)
I have inadequate knowledge about use of multimedia aids, although accessible to me	7(15.4)	15(38.5)	13(33.5)	5(12.8
The multimedia aids are kept in the store though I have confidence in using it	6(15.0)	17(42.5)	15(37.5)	2(5.0)
My experience about the use of multimedia aids is inadequate	5(12.5)	22(55.0)	9(22.5)	4(10.0)
My training school find it difficult to pay for the airtime to use the multimedia aids	6(15.0)	25(62.5)	6(15.0)	3(7.5)
Power Needed	14(35.0)	14(35.0)	8(20.0)	4(10.0)
When I am ready to use the multimedia aids for my lectures another colleague may be using it	8(20.0)	21(52.5)	9(22.5)	2(5.0)
Multimedia aids are very expensive for my training school to purchase	7(17.5)	18(45.0)	12(30.0)	3(7.5)

Table 4.3:

Summary Descriptive Analysis on Multimedia aid accessibility.

Pre-test	**Not Accessible N(%)**	**Accessible N(%)**
Base line accessibility	31(77.5)	9(22.5)

4.4 Objective 3: To ascertain the perceived skill in the application of multimedia teaching aids amongst educators in nursing institutions in control and intervention groups

The skill of educators in the use of computer application and multimedia aids pre and post intervention is shown in Table 4.4 and Table 4.5. In the control group the perceived skill pre and post intervention shows no clear definition of improvement while in the experimental group there is a clear difference pre and post intervention. The final analysis is shown in the summary in table 4.6 and the proportion of high and low skills are shown in table 4.7

4.5 The extent of ease of use of multimedia as a tool for teaching

The summary of pre and post mean scores on skills in using multimedia teaching is shown in table 4.6 and multimedia teaching aids between control and experimental group. It was observed from the table that the mean score difference of the control group participants, both at pre-intervention level (24.90) and post intervention level (22.35) was not significant. However, mean scores difference between pre-intervention (24.65) and post intervention (46.30) of the experimental group was found to be significant (input the P.value.) Thus, it could be said that the participant skills in using computer and multimedia teaching aids in the experimental group before intervention was poor while after the intervention the study revealed an improvement.

Showing in Table 4.7 Perceived skill of the use of multimedia teaching aid was categorized into high and low skills. During pre-test, the skill competence of most of the educators was poor 100% compared to post-test where only 60.0% had poor skill. Meanwhile at post-test many 40.0% of the nurse educators developed good skills and was significantly higher than pre-test (p= 0.002).

Table 4.4: Participants perceived skill in using multimedia teaching aids between control and experimental group (pre-test)

Items	Control Group					Experimental Group				
	High Skill	Fair Skill	Skill	No Skill	$\bar{x}$	High Skill	Fair Skill	Skill	No Skill	$\bar{x}$
Use of mouse with computer	16(80.0)	1(5.0)	3(15.0)	-	3.65	-	3(15.0)	13(65.0)	4(20.0)	1.95
Use of keyboard in the computer	17 (85.0)	2(10.0)	1(5.0)		3.75	-	3(15.0)	13(65.0)	4(20.0)	1.95
Microsoft word processing for making notes of lessons	16(80.0)	3(15.0)	1(5.0)	-	3.74	-	2(10.0)	13(65.0)	5(25.0)	1.85
Microsoft excel for students marks	6(30.0)	2(10.0)	7(35.0)	5(25.0)	2.45	-	7(35.0)	13(65.0)		1.35
Microsoft Power-Point to prepare lecture notes and presentations	9(45.0)	5(25.0)	4(20.0)	2(10.0)	3.05	-	6(30.0)	14(70.0)	-	1.30
Web publishing of publication on internet	-	1(5.0)	5(25.0)	14(70.0)	1.32	-	-	1(5.0)	19(95.0)	1.05
Projector to project PowerPoint presentation	6(30.0)	5(25.0)	6(30.0)	3(15.0)	2.60	-	-	8(40.0)	12(60.0)	1.40
Video in preparing practical demonstration	8(40.0)	5(25.0)	6(30.0)	1(5.0)	2.90	-	-	14(70.0)	6(30.0)	1.70
Internet to prepare lesson notes, researches and downloading pictures	15(65.0)	2(10.0)	3(15.0)	-	3.50	-	4(20.0)	13(65.0)	3(15.0)	2.05
E-mail to give assignment to students	19(95.0)	1(5.0)	-	-	3.85	-	5(25.0)	13(65.0)	2(10.0)	2.15
Informatics to prepare students forward practice with clients	4(20.0)	5 (25.0)	9(45.0)	1(5.0)	2.32	-	1(5.0)	2(10.0)	17(85.0)	1.11
Adobe Acrobat to convert PDF files	11(55.0)	4(20.0)	5(25.0)	-	3.00	-	1(5.0)	6(30.0)	13(65.0)	1.32
Flash to record notes of lesson or transfer soft copies to students	15(85.0)	5(25.0)	-	-	3.60	-	5(25.0)	12(60.0)	3(15.0)	2.10
CD to record notes and prevent virus contamination	15(75.0)	5(25.0)	-	-	3.60	-	5(25.0)	11(55.0)	4(20.0)	2.05

Table 4.5: Participants perceived skill in using multimedia teaching aids between control and experimental groups (post-test)

Items	*Control Group*					*Experimental Group*				
	High Skill	***Fair Skill***	***Skill***	***No Skill***	$\bar{x}$	***High Skill***	***Fair Skill***	***Skill***	***No Skill***	$\bar{x}$
Use of mouse with computer	20(100.0)	-	-	-	4.00	12(60.0)	6(30.0)	2(10.0)	-	3.50
Use of keyboard in the computer	20(100.0)	-	-	-	4.00	10(50.0)	8(40.0)	2(10.0)	-	3.40
Microsoft word processing for making notes of lessons	16(80.0)	2(10.0)	2(10.0)	-	3.78	8(40.0)	10(50.0)	2(10.0)	-	3.30
Microsoft excel for students marks	16(80.0)	2(10.0)	2(10.0)	-	3.70	7(35.0)	8(40.0)	5(25.0)	-	3.00
Microsoft Power-Point to prepare lecture notes and presentations	18(90.0)	2(10.0)	-	-	3.80	10(50.0)	6(30.0)	4(20.0)	-	3.25
Web publishing of publication on internet	11(55.0)	3(15.0)	6(30.0)	-	3.10	5(25.0)	7(55.0)	6(30.0)	2(10.0)	2.30
Projector to project PowerPoint presentation	14(70.0)	-	4(20.0)	2(10.0)	3.50	9(45.0)	8(40.0)	3(15.0)	-	3.25
Video in preparing practical demonstration	16(80.0)	-	2(10.0)	2(10.0)	3.30	10(50.0)	7(35.0)	2(10.0)	1 (5.0)	3.30
Internet to prepare lesson notes, researches and downloading pictures	18(90.0)	2(10.0)	-	-	3.80	14(70.0)	4(20.0)	2(10.0)	-	3.60
E-mail to give assignment to students	16(80.0)	4(20.0)	-	-	3.60	14(70.0)	4(20.0)	2(10.0)	-	3.60
Informatics to prepare students forward practice with clients	8(40.0)	12(60.0)	-	-	3.00	4(20.0)	11(55.0)	4(20.0)	1(5.0)	2.90
Adobe Acrobat to convert PDF files	12(60.0)	6(30.0)	-	2(10.0)	3.22	6(30.0)	9(45.0)	4(20.0)	1(10.0)	3.00
Flash to record notes of lesson or transfer soft copies to students	14(70.0)	6(30.0)	-	-	3.40	12(60.0)	6(30.0)	2(10.0)	-	3.45
CD to record notes and prevent virus contamination	14(70.0)	6(30.0)	-	-	3.40	11(55.0)	7(35.0)	2(10.0)	-	3.45

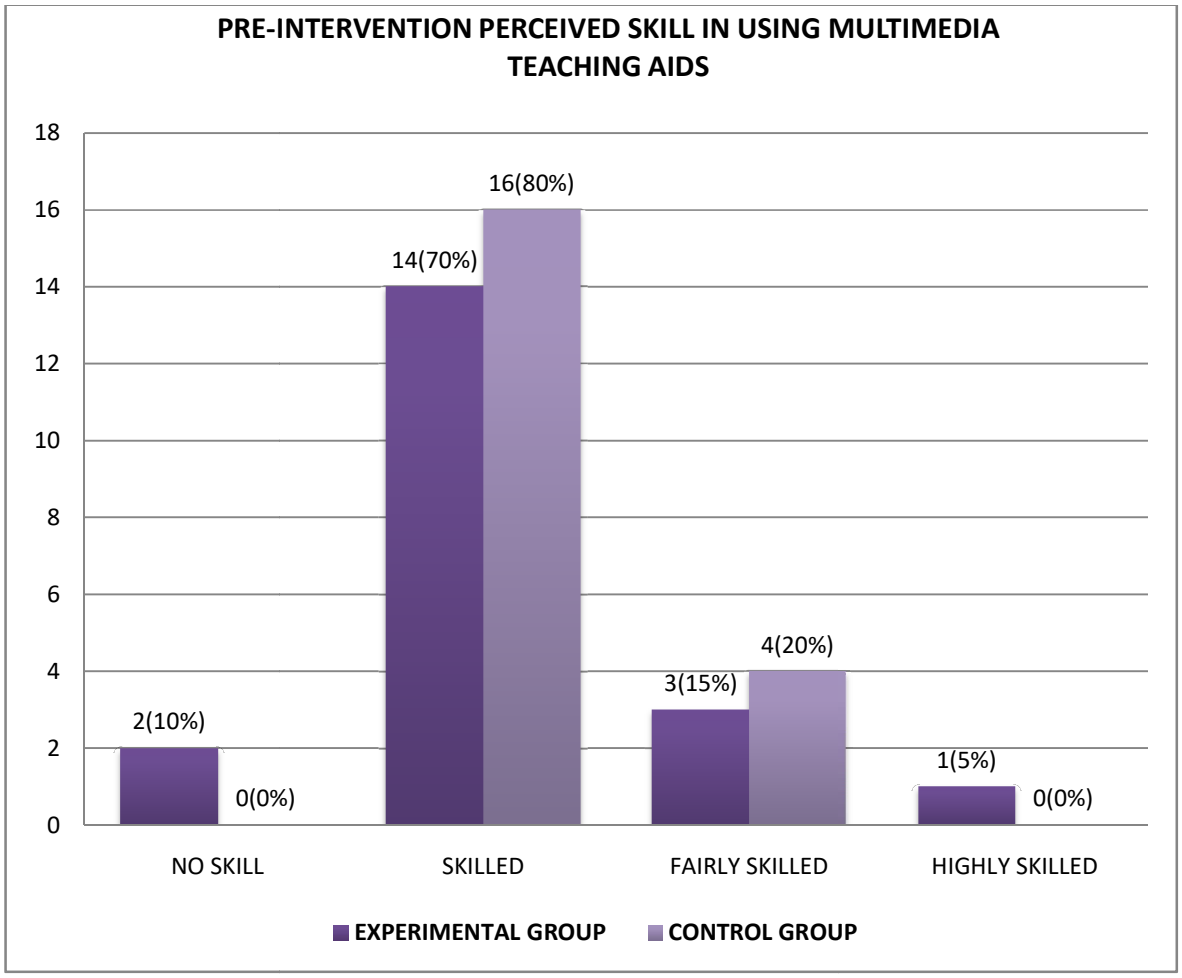
Table 4.6 Summary of pre and post mean scores on perceived skill in using multimedia teaching aids between control and experimental group

Skill in using multimedia teaching aids	Control Group				Experimental Group			
	Pre-intervention		Post-intervention		Pre-Intervention		Post-intervention	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
No skill	-	-	1	5.0	2	10.0	-	-
Skilled	16	80.0	15	75.0	14	70.0	-	-
Fairly Skilled	4	20.0	4	20.0	3	15.0	5	25.0
Highly Skilled	-	-	-	-	1	5.5	15	75.0
Total	20	100.0	20	100.0	20	100.0	20	100.0
Mean	24.90		22.35		24.65		46.30	
Standard dev.	6.34		5.08		9.17		5.55	
Mean difference	2.55				21.65			

Table 4.7 Proportion of perceived skill of multimedia teaching aids between the experimental group and control group at post-test.

	Experimental (pre-test) N=20	Experimental (post-test) N=20	χ^2	p-value
Poor skill (score range = 14-35)	**20(100.0)**	**12(60.0)**	**10.0**	**0.002**
Good skill (score range = 36-56)	**0(0.0)**	**8(40.0)**		

Figure 4.2: Bar chart showing the Pre-Intervention Perceived Skill in Using Multimedia Teaching Aids



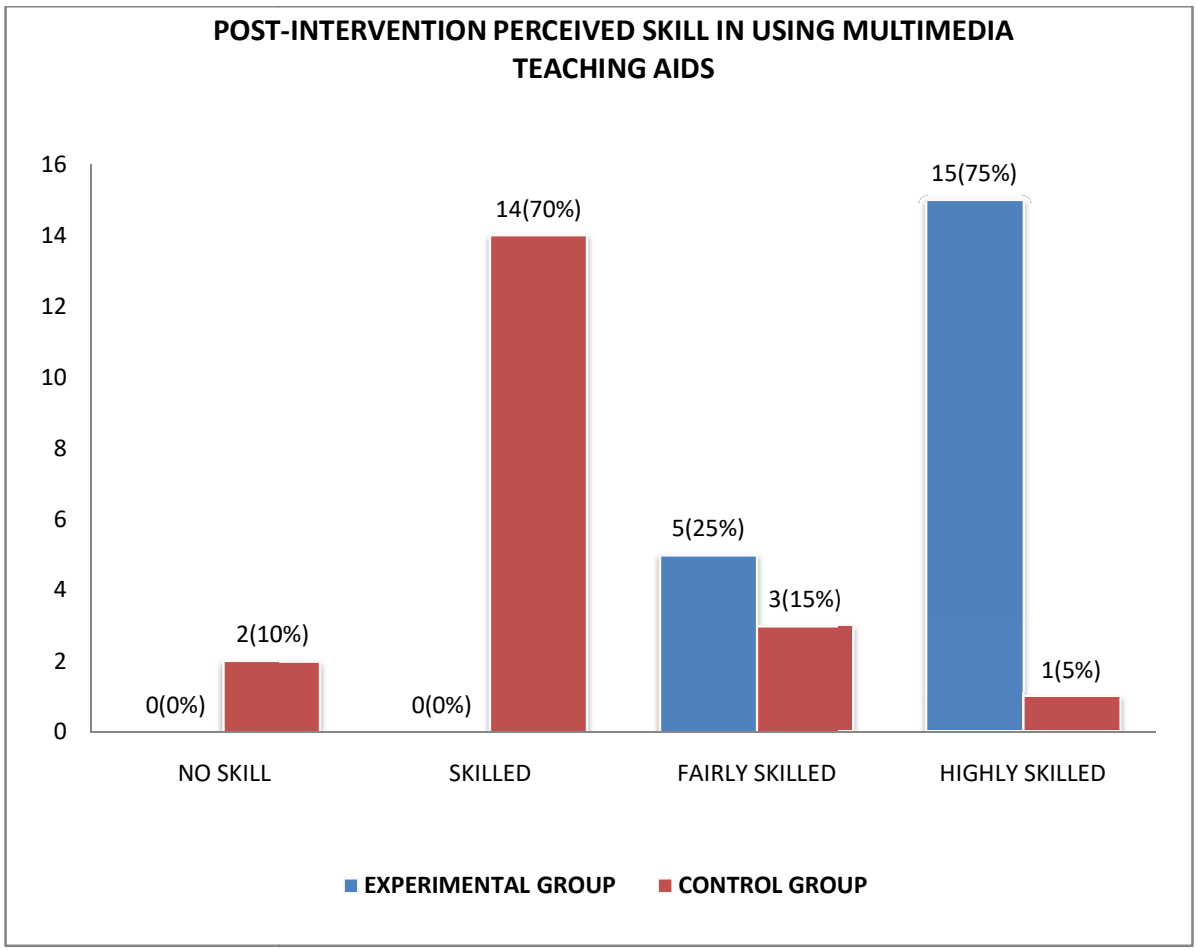


Figure 4.3: Bar chart showing the Post-Intervention Perceived Skill in Using Multimedia Teaching Aids

4.6 Objective 4: To assess perceived ease of multimedia aid use for teaching-learning between the control and the intervention group

The respondents' pre-intervention scores were very low on perceived ease of use for both groups as shown in Tables 4.8, 4.9 and 4.10 showing the results pre and post intervention, summary and the proportion of participants who found multimedia easy to use and those who do not. After the intervention the experimental group scores rose up meaning participants found the multimediaeasy to use except in the area where the participants still did not have a reliable network in their offices. Pre-intervention there was no reliable network in the office and post intervention it came up more. Pre-intervention, participants agreed that there was conducive classroom but post intervention the score was higher. Multimedia equipment, pre-intervention participants said there was none present but after the intervention, there was increase in the score. Participants were not aware that the Nursing and Midwifery Council of Nigeria curriculum was available in soft copy and so post intervention it was made available. The participants, having been guided agreed to use multimedia teaching after the training. Participants agreed that computer background encourages use of multimedia. All the participants used these multimedia aids in teaching especially, Microsoft word, PowerPoint and Internet.

Findings of the study as shown in Table 4:11 indicated that: Majority 100.0% of the experimental group had poor perceived ease of using media teaching aid to enhance teaching mechanism at pre-test compared to only 25.0% who had poor ease at post-test after the training. Interestingly 75% of Nurse educators perceived that multimedia teaching aid is especially important and useful.

Table 4.8: Perceived ease of use of multimedia aids among intervention group before and after intervention

Items	Control Group N/%			Experimental Group N/%				
	Pre-test		Post-test	Pre-test			Post-test	
	Yes	No	Yes	No	Yes	No	Yes	No
There is a reliable network in my office and I make use of it.	5(25.0)	15(75.0)	9(45.0)	11(55.0)	6(25.0)	14(75.0)	10(52.6)	9(47.4)
There are conducive classrooms available for the use of multimedia to teach.	16(80.0)	4(20.0)	14(70.0)	6(30.0)	20(80.0)	-	18(90.0)	2(10.0)
Multimedia equipment available for use and I use them.	12(60.0)	8(40.0)	14(70.0)	6(30.0)	12(60.0)	8(40.0)	19(95.5)	1 (5.0)
I use the electronic course content in the N&MCN curriculum?	20(100)	-	10(90.0)	10(10.0)	16(80.0)	4(20.0)	18(90.0)	2(10.0)
I use multimedia teaching aids since I have good guidance and supports.	7(36.8)	12(63.2)	14(70.0)	6(30.0)	7(36.8)	12(63.2)	18(90.0)	2(10.0)
My computer background encourages the use of multimedia aids.	12(85.0)	8(15.0)	12(60.0)	8(40.0)	12(85.0)	8(15.0)	20 (100)	-
When multimedia aids are used in teaching they add quality to learning.	13(65.0)	6(30.0)	15(75.0)	5(12.5)	13(94.7)	6(5.3)	20 (100)	-
I make use of multimedia aids to teach students informatics.	3(15.8)	16(84.2)	4(20.0)	16(80.0)	3(15.8)	16(84.2)	14(70.0)	6(30.0)
I use Microsoft word to type my notes of lesson.	13(68.4)	6(31.6)	11(90.0)	9(10.0)	13(68.4)	6(31.6)	18(90.0)	2(10.0)
I make use of power-point to teach my students appropriately.	16(80.0)	4(5.0)	11(75.0)	9(25.0)	16(95.0)	4(5.0)	18(90.0)	2(10.0)
I make use of internet as a means of getting information when forming my notes of lesson.	5(26.3)	14(73.7)	10(90.0)	10(10.0)	5(26.3)	14(73.7)	20(100)	-

Table 4.9: Summary of pre and post mean scores on perceived ease of use of multimedia aids between control and experimental groups

Perceived ease of use and experience of multimedia	Control Group				Experimental Group			
	Pre-intervention		Post-intervention		Pre-Intervention		Post-intervention	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
High (19-22)	4	20.0	3	25.0	3	15.0	11	55.0
Moderate (15-18)	11	55.0	13	65.0	12	60.0	8	40.0
Low (11-14)	5	25.0	4	20.0	5	25.5	1	5.0
Total score	118		122		118		198	
Mean	5.90		6.10		5.93		9.56	
Standard dev.	2.01		1.39		1.72		1.28	
Mean difference	0.20				3.63			

*statistically significant at $p<0.05$

Table 4:10

Proportion of Perceived ease of use in experimental group and control group at baseline

	Experimental (pre-test) N=20	Experimental (post-test) N=20	χ^2	p-value
Poor perceived ease of use (11-16)	20(100.0)	5(25.0)	24.00	<0.001*
Good perceived ease of use. (17-22)	0(0.0)	15(75.0)		

***exact test**

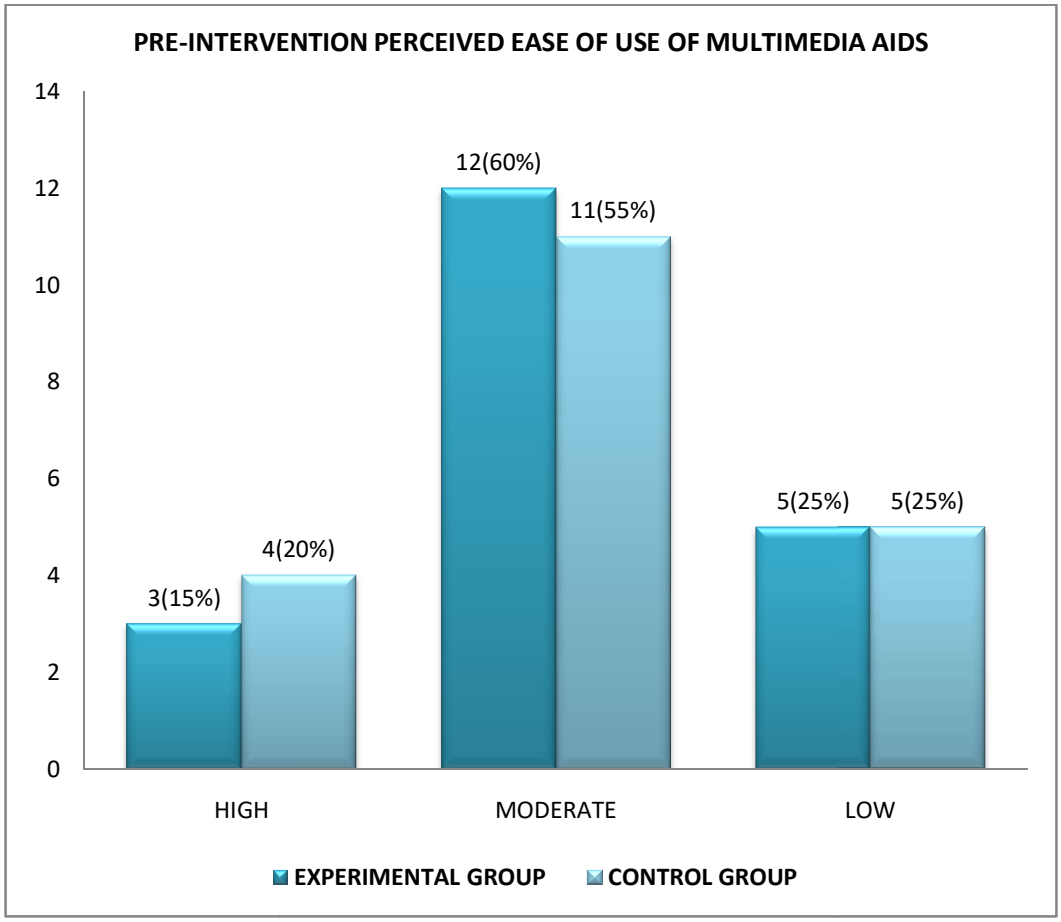


Figure 4.4: Bar chart showing Perceived Ease of Multimedia Aids Use in the Pre-Intervention

Key:

High = 19-22

Moderate = 15-18

Low = 11-14

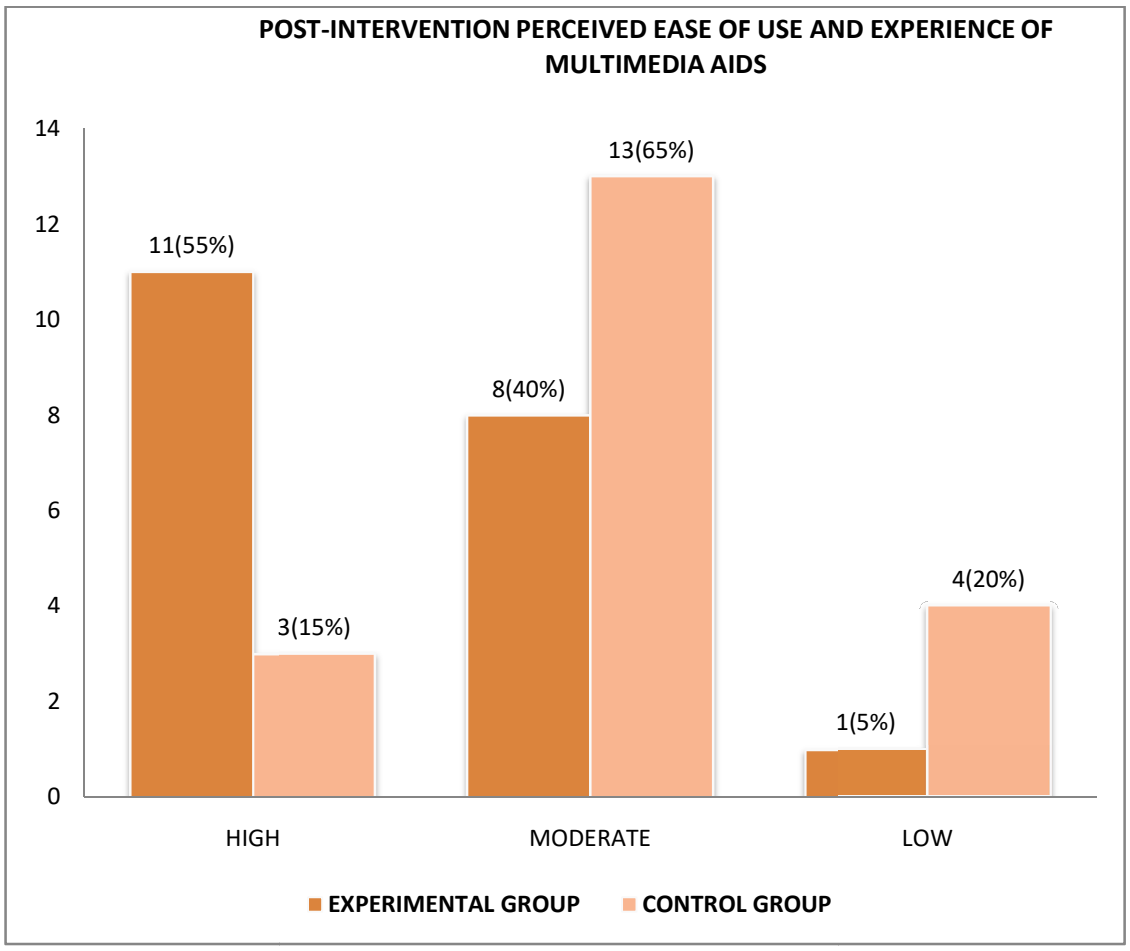


Figure 4.5: Bar chart showing the Post-Intervention Perceived Ease of Use of Multimedia Aids

Key:

High = 19-22

Moderate = 15-18

Low = 11-14

Objective 5: Evaluate nurse educators' attitude towards multimedia teaching aids use pre and post intervention

The response for attitude towards the use of multimedia aid is shown in Table 4.11 and 4.12.It depicted the attitude towards adoption and use of multimedia teaching technology among experimental group before and after administration of intervention.

The summary of the pre and post mean scores of nurse-led training of attitude of nursing instructors to the use of multimedia teaching tools in nursing institutions are shown in table 4.13.The proportion of positive and negative attitude is shown in table 13. The mean scores of responses from the nurse educators for experimental and control groups' pre-tests were 21.60 and 20.63, respectively. At the intervention level, significant difference exists between the experimental and the control groups' mean scores (23.20) and (21.55) of the attitude of nursing instructors to implementation and application of multimedia teaching tools in nursing institutions, respectively. This showed a positive change in attitude toward the use of multimedia aids.

Objective 6: Identify multimedia teaching aids adoption and usage by the experimental and control groups, pre and post intervention

The multimedia teaching aids adoption and usage by the educators is shown in Table 4.15, summary in table 4.16 and the proportion of participants adoption and usage in table 4.17The response of participants' pre-intervention of adoption and usage of multimedia aids shows as being ready to adopt but post intervention higher scores were recorded and so participants would adopt and use multimedia aids. The experimental group participants were asked if after having been trained, they would adopt and use multimedia the response was positive. To further buttress this, the participants were visited three months and further asked which may confirm that they would adopt and use multimedia aids. In the answers given by the participants, the scores were high post intervention. In fact, participants all unanimously said *yes* to adoption and usage of multimedia aids. The participants using the checklist were furthered observed using the projector with power point prepared in table 18.

Table 4.11 Attitude towards adoption and use of multimedia teaching technology among experimental group pre and post intervention

Items	Pre-intervention N/%					Post-intervention N/%				
	SA	A	D	SD	$\bar{x}$	SA	A	D	SD	$\bar{x}$
Learning to use multimedia teaching aids is difficult	4(20.0)	2(10.0)	6(30.0)	7(35.5)	1.68	525.0)	10(50.0)	3(15.0)	2(10.0)	3.25
Learning to use multimedia teaching aids is an easy task	3(30.0)	11(55.0)	5(25.0)	-	3.62	7(35.0)	8(40.0)	5(25.0)	-	3.25
Multimedia teaching aids can make teaching easier	2(10.0)	10(50.0)	3(15.0)	4(20.0)	2.97	3(15.0)	16(80.0)	1(5.0)	-	3.30
Using the multimedia aid is beneficial	3(15.0)	7(35.0)	7(35.0)	3(15.0)	2.01	3(15.0)	4(20.0)	10(5.0)	3(15.0)	1.83
These multimedia aids are too expensive for adoption	-	2(10.0)	10(50.0)	7(35.0)	1.26	1(5.0)	4(20.0)	10(50.0)	5(25.0)	1.94
One may however use them as it makes sense	3(15.0)	5(25.0)	5(25.0)	6(30.0)	1.58	6(30.0)	7(35.0)	4(20.0)	3(15.0)	2.35
Educators should adopt multimedia teaching aids if they want to	7(35.0)	7(35.0)	2(10.0)	4(20.0)	2.62	7(35.0)	6(30.0)	4(20.0)	3(15.0)	2.53
I am positive towards the use of multimedia teaching aids	5(25.0)	8(40.0)	3(15.0)	4(20.0)	2.59	6(30.0)	10(50.0)	4(20.0)	-	3.20
Evidence is yet to show that multimedia aids improve learning outcome	3(15.0)	9(45.0)	2(10.0)	5(25.0)	2.71	5(25.0)	8(40.0)	3(15.0)	4(20.0)	2.58
Multimedia aids can make teaching very difficult	4(20.0)	7(35.0)	3(15.0)	6(30.0)	2.39	6(30.0)	7(35.0)	5(25.0)	2(10.0)	2.59

Table 4.12: Attitude **of nurse educators to the adoptionand use of multimedia teaching technology in control group pre and post intervention**

Items	Pre-intervention					Post-intervention				
	SA	A	D	SD	$\bar{x}$	SA	A	D	SD	$\bar{x}$
Learning to use multimedia teaching aids is difficult	2 (10)	-	10 (50)	8 (40)	1.36	10 (50)	9 (45)	1 (5)	-	3.01
Learning to use multimedia teaching aids is an easy task	1 (5)	1 (5)	9 (45)	9 (45)	1.13	5 (25)	4 (20)	11 (55)	-	1.98
Multimedia teaching aids can make teaching easier	-	-	8 (40)	12(60)	0.98	10 (50)	4 (20)	3 (15)	3 (15)	3.07
Using the multimedia aids is beneficial	-	-	10 (50)	10 (50)	1.01	12 (60)	8 (40)	-	-	3.76
These multimedia aids are too expensive for adoption	3 (15)	6(30)	8 (40)	2 (10)	2.23	12 (60)	4 (20)	2 (10)	1 (5)	3.03
One may however use them as it makes sense	4 (20)	4(20)	10 (50)	2 (10)	1.16	8 (40)	1 (5)	9 (45)	2 (10)	2.29
Educators should adopt multimedia teaching aids if they want to	5 (25)	7(35)	5 (25)	3 (15)	2.03	8 (40)	4 (20)	3 (15)	1 (5)	2.81
I am positive towards the use of multimedia teaching aids	4 (20)	6(30)	6 (30)	4 (20)	1.27	8 (40)	9 (45)	2 (10)	1 (5)	3.01
Evidence is yet to show that multimedia aids improve learning outcome	1 (5)	-	9 (45)	10 (50)	0.92	1 (5)	-	11 (55)	8 (40)	1.01
Multimedia aids can make teaching very difficult	4 (20)	3(15)	6 (30)	7 (35)	1.46	1 (5)	4 (20)	10 (50)	5 (25)	1.11

Table 4.13: Summary of the pre and post mean scores of nurse-led training on the attitude of nurse educators.

	N	Experimental	Control	Mean difference	P
		Mean ± SD	**Mean ± SD**		
Pre-test	20	21.0 ± 1.7	20.63 ± 2.793	0.97	0.000
Post-test		23.2 ± 2.1	21.55 ± 1.876	1.65	
Comparison	20	1.60 ± 0.482	0.92 ± 0.917	0.68	0.000

Table 14:The Proportion of attitude for adoption of multimedia teaching aids between the experimentalgroup and control group at base line.

	Experimental (pre-test) N=20(%)	Experimental (post-test) N=20(%)	χ^2	p-value
Poor attitude	**20(100.0)**	**4(20.0)**	**44.88**	**<0.001***
Good attitude	**0(0.0)**	**16(80.0)**		

***exact test**

Table 4.15: The acceptance and use of the multimedia teaching tools by nursing instructors in experimental and control group pre and post intervention.

Items	Control Group						Experimental Group					
	Pre Intervention			**Post intervention**			**Pre Intervention**			**Post Intervention**		
	Yes	**No**	**Mean**	**Yes**	**No**	**Mean**	**Yes**	**No**	**Mean**	**Yes**	**No**	**Mean**
Computer in classroom teaching	7(36.8)	12(63.2)	0.37	7(35.0)	13 (65.0)	0.35	14 (70.0)	6(30.0)	0.70	20(100.0)	-	1.00
Powerpoint for lecture notes	7(35.0)	13(65.0)	0.35	5(25.0)	15 (75.0)	0.25	14 (70.0)	6(30.0)	0.70	20(100.0)	-	1.00
Projector to project lecture	9(45.0)	11(55.0)	0.45	9(45.0)	11(55.0)	0.45	16 (80.0)	4(20.0)	0.80	20(100.0)	-	1.00
Videotape skills for presentation	9(47.4)	10(52.6)	0.47	9(45.0)	11(55.0)	0.45	16 (80.0)	4(20.0)	0.80	20(100.0)	-	1.00
Web publishing for publication	18(90.0)	2(10.0)	0.90	18(90.0)	2(10.0)	0.90	18 (90.0)	2(10.0)	0.90	20(100.0)	-	1.00
Internet to make lecture notes	5(25.0)	15(75.0)	0.25	7(35.0)	13(65.0)	0.35	19 (95.0)	1(5.0)	0.95	20(100.0)	-	1.00
Informatics	11 (61.1)	7(38.9)	0.61	18(90.0)	2(10.0)	0.90	5(25.0)	15 (75.0)	0.25	19 (95.0)	1 (5.0)	0.95
If your organization provide funds for purchase?	18(94.7)	1(5.3)	0.95	18(90.0)	2(10.0)	0.90	1(5.0)	19(95.0)	0.05	11 (55.0)	9 (45.0)	0.55
If the use of multimedia teaching aid will be beneficial?	18(90.0)	2 (10.0)	0.90	18(90.0)	2(10.0)	0.90	17 (85.0)	3(15.0)	0.85	20(100.0)	-	1.00
If there will be enough time to use them?	15(75.0)	5(25.0)	0.75	18(90.0)	2(10.0)	0.90	13 (65.0)	7(35.0)	0.65	20(100.0)	-	1.00
If multimedia teaching aids is available?	**14(70.0)**	**6(30.0)**	**0.70**	**16(80.0)**	**4(20.0)**	**0.80**	**17 (85.0)**	**3(15.0)**	**0.85**	**20(100.0)**	**-**	**1.00**

Table 4.16: Summary of the pre and post mean of nurse-led training on the acceptance and use of the multimedia teaching aids by nurse educators.

	N	Experimental	Control	Mean difference	P
		Mean ± SD	**Mean ± SD**		
Pre-test	20	7.5 ± 1.0	6.4 ± 1.8	0.78	0.013
Post-test		10.5 ±1. 9	7.2 ± 1.5	3.35	
Comparison	20	3.02 ± 0.043	0.45 ± 0.385	2.57	0.013

Table 4.17:The Proportion of adoption and usage of multimedia teaching aids between the experimental group and control group at base line.

	Experimental (Pre-test) N=20	Experimental (post-test) N=20	χ^2	p-value
Poor adoption and usage (11-16)	**20(100.0**	**1(5.0)**	**42.81**	**<0.00**
Good adoption and usage (17-22)	**0(0.0)**	**19(95.0)**		

Table 18:Comparison of the Mean scores of Teachers Evaluation of Multimedia Teaching Aid Adoption between experimental and control groups (4weeks Post intervention) *Significant @P < 0.05

ADOPTION/USAGE	EXPERIMENTAL $\bar{x}$± SE	CONTROL $\bar{x}$± SE	t-value	P-value
Prepares lesson using training power-point	100.0±0.0	61.76±8.1	4.747	0.000*
Prepares power-point using adequate words and numbers on each line.	100.0±.0	61.76±8.1	4.747	0.000*
Teaches and understands multimedia	88.24±8.1	23.53±6.2	6.351	0.000*
Explains very well using multimedia	58.82±12.3	23.53±6.2	2.558	0.015*
Uses computer appropriately	88.24±8.1	23.53±6.2	6.351*	0.000*
Uses projector appropriately	58.85±12.3	20.51±7.5	2.654	0.012*
Colouring	70.59±11.3	41.18±8.8	2.041	0.050
Students have a good view of lesson	88.24±8.1	44.12±9.5	3.548	0.001*
Lesson is bold and can be seen at a distance	58.82±12.3	50.0±0.0	0.717	0.472
Control class appropriately	58.2±12.3	76.47±6.2	-1.279	0.210
Have personal computer	100.0±0.0	23.53±6.2	12.257	0.000*
Introduced informatics to students	50.0±4.3	0.0±0.0	11.662	0.000*
Setting up web publishing	17.65±5.8	0.0±0.0	2.954*	0.006*
Uses internet to prepare lecture	100.0±0.0	23.53±6.2	11.879*	0.000*
Has a working email address	100.0±0.0	76.47±6.2	3.655	0.001*
Total	**75.83±24.7**	**36.66±24.6**	**4.33**	**0.000***

***significant at 0.000 the scale was converted to 100% scale for standard purposes**

***Mann – Whitney U test done to compute mean**

Hypotheses Testing

Ho1

Showing in Table 4.18 is the distinction in the perceived skill in multimedia teaching tools between the experimental and the control groups. It was observed to be significant (t= 5.915; P= 0.000). Thus, the stated null hypothesis was therefore rejected rather than the alternative hypothesis. Going through the mean scores, the skill of applying multimedia teaching tools in experimental was 43.3 and that of control was 22.3.

Ho_2

Moreover, the difference in the perceived ease of multimedia teaching aids use between the experimental and the control group was found to be significant (t = 1.982; P = 0.000). Hence, the null hypothesis was rejected, while alternative hypothesis was upheld. Going through the mean scores, the perceived ease mean scores of multimedia teaching aids use in the experimental and the control were 9.56, and 6.10, respectively, table 4:19.

Ho_3:

A meaningful distinction in the attitude towards multimedia teaching tools between experimental and control groups (t = 11.049; P = 0.000) was presented in Table 4.20. The null hypothesis is therefore rejected in favor of the alternative hypothesis. Going through the mean score, the attitude towards multimedia teaching aids in experimental was 23.20 and that of control was 21.55.

Ho_4:

Showing in table 4.21, is the difference in multimedia teaching aids adoption and usage between experimental and control groups (t = 2.101; P = 0.013) was similarly significant. Therefore, the null hypothesis was rejected but alternative hypothesis was upheld. Going through the mean score, the implementation and application of multimedia teaching tools in experimental was 10.496 and that of control was 7.153.

Ho_1Table 4.19: Independent t-test showing the difference in the perceived skill of multimedia teaching aids use between the experimental and the control groups after intervention

	N	Mean	Std. Deviation	Df	t	Mean diff.	P
Experimental	20	43.30	5.550	38	5.915	23.95	0.000
Control	20	24.5	5.083				

Ho_2

Table 4.20: Independent t-test showing the significant difference in perceived ease of use of multimedia teaching aids between experimental and control groups after intervention

	N	Mean	Std. Deviation	df	t	Mean	P
Experimental	20	9.6	1.3	38	1.982	3.46	0.00
Control	20	6.1	1.4	38			

Ho3

Table 4.21: Independent t-test showing the significant difference in the attitude towards multimedia teaching tools between the experimental and the control groups after intervention

	N	Mean	Std. Deviation	df	T	Mean diff	P
Experimental	20	20.6	2.8	38	11.049	1.65	.000
Control	20	21.5	1.8				

Ho4

Table 4.22: Independent t-test showing the significant difference in adoption and usage of multimedia teaching aids between experimental and control groups after intervention.

	N	**Mean**	**Std. Deviation**	**df**	**t**	**Mean diff**	**P**
Experimental	20	10.5	1.9	38	2.101	3.343	.013
Control	20	7.5	1.0				

Ho4 at 3months

Showing in Table 4.22 is the difference in multimedia teaching aids adoption and usage between the experimental and the control groups was significant after three (3) months of intervention ($t = 3.932$; $P = 0.000 < .05$). Thus, the null hypothesis was rejected, but the alternative hypothesis was not rejected. Going through the mean score, the adoption and usage of multimedia teaching aids in experimental was 14.00 and that of control was 8.54. This finding shows that the difference observed in adoption and usage of multimedia teaching aids between the experimental and the control did not happen by chance, but for the fact that the experimental was exposed to educational intervention. Also, this result revealed that after3 months of interventionthe implementation and application of multimedia teaching tools among the participants in the experimental group is on the increase compared to those in the control group.

Table 4.23: Independent t-test showing the significant difference in adoption and usage of multimedia teaching aids between experimental and control group after 3 months of intervention.

	N	Mean	Std. Deviation	Df	T	Mean diff	P
Experimental	20	14.002	1.826	38	3.932	5.459	.000
Control	20	8.543	2.019				

4.9 Discussion

This study evaluated if after a training on nurse educators if they will accept and usemultimedia aids in teaching and learning. The whole world has become a global village and every other person is using technology in their occupation or profession and so all should key into this. In addition technology has been introduced into the health sector and nursing care which is the arena where nurses who are trained would be practicing should be involved in technology.What was found in this study will be discussed below.

4.10 Socio demographic

Most of the participants in the two groups were females as is generally found in the nursing profession. Use of ICT has been considered to be limited among women because they face inequality and also encounter far reaching and extensive community based obstacles in their use of ICT' as a result of traditional and cultural norms and so, many women do not use ICT freely (Buskens, 2015). However in this study most of the participants were majorly women and interestingly they were found to have basic skills of internet use. Furthermore, Maleki, et al (2012) in Nigeria found that there were differences in internet use between male and female staff members. These scholars found that females used the internet more than males; females scored a higher mean of internet use in their study.

However in agreement, Walsham(2017) indicated that the gender gap could be reduced by education and has reduced over the past years, with more females than males using the internet and web technologies(Traditionally in some areas in Nigeria, women are not sent to school but rather given away in marriage, at a very young age even in this modern age). The United Nations (2012) highlighted inequalities that found that females are not given equal chance to use ICT. There appears to be a gender divide in developing countries using ICTs, even mobile phones, in business. In a recent study of African countries, there is a much higher share of male-owned than female-owned informal sector

businesses used mobile phones (UNDESA 2013). A report by UNDP (2017) confirms that in thirteen countries in the world, there are still inequalities in gender issues.

This current study highlighted two age brackets (the older adults 41-60) and the (young adults 20-40). In the experimental group, a few of the participants were in the old adults' age bracket while others were young adults. In the control group, most were young adults. Observation shows that the older teachers showed a lot of interest and enthusiasm in the training, by attending all lectures. About a decade plus ago there were contradicting reports, Lau and Sim (2008) conducted a study on the extent of ICT adoption among 250 secondary school teachers in Malaysia. Their findings revealed that older teachers frequently use computer technology in the classroom more than younger teachers.Mukhar (2014), on the contrary, said that the older generation of teachers have anxiety and are afraid to adopt and use ICT because of the generational gap. However Similar study by Semerci andAydin (2018) reported that there was no significant difference in the use of ICT and age.Participants' years of experience as educators in nursing schools was noted to be higher in the intervention group. Some of the participants have worked for more than ten years having experience in the nursing profession. Many researchers have reported that experience plays a significant part in integrating the computer into teaching and learning.

Filgona, Sakiyo and Gwamy (2020) claimed that experienced and knowledgeable teachers are of great value in the teaching of students for a great result.Onwuagboke, et al (2014), in the study on faculty members of the College of Education southeastern Nigeria, found that teaching experience was an item in internet use by the faculty and that teachers with longer years of experience did not use the internet as much as those with fewer years of experience. In this study the control group who were of the young generation used internet very well the older generation pre intervention were not able to use the internet very well. After the intervention these latter groups were able using their experience to learn the use of the internet quickly.While the experimental group post experiment, probably using their experience were able to learn very well.

Findings of this current study indicated that many participants hold a Bachelor of Nursing Science (B.NSc) education. whileonly a few had Diploma in Nursing Education. These figures are very encouraging for the schools of nursing in Nigeria as they showed that those who are faculty in the schools of nursing in Ogun State in Nigeria are competent to teach. According to Aktaruzzaman, Shamin and Clement (2011) to be proficient is another crucial variable in using ICT in teaching and learning.

4.11 Available multimedia teaching aids in schools of nursing

This study, found that some of the multimedia aids needed for teaching in schools of nursing were not available. The participants indicated that Internet Broadband was not available, and most of the teachers had personal modem which they use in the school. They also noted that digital camera, slides, film strips and electronic notice board were not available. Amato (2015) agreed that non-availability of equipment occurs in many institutions she further concluded that many instructors especially in schools in the city center are working dangerouslywith their students with limited resources to aid them. The Nursing and Midwifery Council of Nigeria stipulates that every classroom should be equipped with a projector while the libraries should have enough computers at least one per student. (N&MCN 2016).The researcher observed that there were no projector mounted in the schools' classrooms but were kept in the Principals' offices.

In this study, the participants were expected to include the exact number of resources in their school, most claimed that they do not know the actual numbers. It was discovered later that these resources were not available. Adon and Kpangban(2010) ascertained that reduced computers and other components of ICT wereall due to insufficient funds which limited teachers' use of ICT. Adeoye and Popoola (2011) said that availability, accessibility of resources is essential to the teaching, research and services activities of nursing school teachers. Shihundu (2014) in Kenya concluded his study and observed that teachers' perception were positive to ICT adoption but hampered by the unavailability of adequate equipment. He recommended an increase in ICT development and equipment supplied with necessary training. This recommendation will ensure the adoption of ICT in teaching-learning processes, and he concluded that the quality of

teaching and research of any institution depends on the resources available. This recommendation will apply to Schools of Nursing in Ogun State.

Murrithi, Honer and Pemberton (2016) also found that factors that affect adoption and use are many, including availability and access to ICT resources. Tella (2011), in the study on the level of availability and use of ICT in southwestern Nigeria in colleges of education, found a decrease in the level of usage of ICT gadgets. Also, respondents were sad that integration of ICT was taking too long due to the non-availability of some ICT equipment. In another study, Tedla (2012) claims that the successful integration of ICT in teaching and learning largely depends on the availability of ICT infrastructure and teachers' adoption and use of ICT in education. This point is consistent with Asaolu and Fashanu's (2012) argument that the lack of ICT facilities in government owned schools is inadequate due to inadequate funds to produce and maintain the equipment. This point is also reinforced by the scarcity of human resources, skills and irregular power supply. Therefore, these authors suggested that there should be periodic retraining of teachers on ICT skills acquisition. In this study, educators were convinced that the resources in the schools were not adequate and could only indicate their absence.

4.12 Accessible multimedia teaching aids to educators

In this study,according to the participants in the intervention group, multimedia aid were not accessible to them but contrary in the control group who said some of the multimedia aids were accessible. The reasons advanced bymajority of the participants were irregular power supply, institutions inability to buy airtime to use multimedia aids. There were limited numbers of multimedia aids compared to the numbers of educators. These were the significant indicators for inaccessibility of multimedia teaching aids. This claim corroborates the study ofOshinaike (2012), which concluded that multimedia aids were not accessible to the lecturers at the University of Ibadan to teach. Okolije (2015) also found that irregular power supply was a constraint to the accessibility of multimedia aids. These assertions suggest that ICT materials and training should be subsidized to encourage their use in university education. In this study, the experimental group respondents agreed that multimedia aids are kept in cupboards; therefore, the multimedia

aids are not accessible. Some department heads would lock up equipment rather than leave them for use for fear of losing them or having them stolen. Mathipa and Mukhar(2014) corroborated that lack of digital skills, vandalism and burglary, lack of confidence, teachers' beliefs and poor leadership contributed to inaccessibility to multimedia aids.

Omotosho, et al (2015), however, differ, as findings in their research revealed that the level of ICT use among the respondents of distance learning was high for their studies. Easy accessibility to most of the ICT facilities needed for distance learning was a significant factor responsible for the respondents' increased ICT usage. Even then, the constraints were erratic power supply, frequent breakdown of ICT facilities, and controlled access to ICT facilities did not make for compelling and maximum use. Nwosu, et al (2018), in their study, found that multimedia tools like computer-aided applications, internet-connected laptops were available in medical colleges in Ogun State.

4.13 The perceived skill by nurse educators in the use of multimedia teaching aids

The researcher foundthat the young nurse educators in the control group were skilled in the use of multimedia aids. In the experimental group, a few older adults were not skilled in the use of multimedia use. While the younger ones were skilled in ICT, the older generation did not have the opportunity of computer training in school and therefore made the intervention very interesting. The increase in the mean score at post intervention showed that these nurse educators becamebetter skilled after the intervention. Nurse educators should be involved in creating a global information society. They must be skilled in information technology to contribute significantly to the achievement of health for all. In agreement with this research, Hulela, et al (2014) said that many student nurse teachers learned computer skills, through in-service training. While Onwuagboke, et al (2014) in their research findings revealed that learning by world wide web can be achieved in different ways: through seminars, self-study, co-workers or from family in different percentages. This finding is contrary to

Kolback(2015) who said that nurses probably do not have any training as they have been reluctant to accept the introduction of digital technology because nurses say the use of computerized techniques prevent capturing the ideal nursing care. Nurses explained for example that the pulse rate taken digitally with a machine is not the same where the nurse is close to the patient touches the patient while counting the pulse rate at the hand which can soothe the patient. It argues that ICT may take the place of nursing with those needing care. Also, Kolback (2015) found in his research that students entered nursing schools with fewer ICT competencies than those of their fellow students and were not trained early enough for them to know the importance.

The study participants had high knowledge in using a computer, projector, internet, and e-mail multimedia teaching aids. However, many of the participants had little knowledge of web publishing for uploading their publication online and informatics, which is the information technology for nurses. This point was apparent in recent university ranking as most of Nigeria's universities were not publishing internationally.Hebda et al. (2021) informed that Informatics was recognized as a specialty in 1992, consisting of a framework that transfers data to knowledge. Participants who were highly knowledgeable on the use of multimedia aids are disenchanted as managements in these schools had not provided sufficient numbers for teaching. Amato (2015) described her experience working in an urban school in Chicago where she worked with very few necessary resources.

Adeleke.,et al(2015) Found that most participants, who were nurses, were advanced in the use of e-mail and the internet, mainly through self-effort. However, there was inadequate knowledge of database management and statistical analysis package. Even though many have used computers for more than three years, many (86.2%) expressed a desire for further ICT training. They indicated an interest in additional ICT training. The researcher concluded that it would be worthwhile to enrich the healthcare workers' sources of information to improve public health.

4.14 Perceived ease of use of multimedia aid by nurse educators

At post-intervention a higher perceived level of use was found in both groups. Davis (1989); Farahat(2012) introduced the Technology Acceptance Model (TAM) as a theory, to predict and explain ICT use. TAM developed and validated measures for predicting and explaining use, which focused on two theoretical constructs, perceived usefulness and perceived ease of use which were theorized to be fundamental determinants of system use. Therefore, in this study, the perceived level of ease of use and perceived usefulness were high, and then there is a high probability that the nurse educators will adopt and use multimedia aids. Durodolu (2016) stated that TAM is well-researched and have a lot of strong points used to test perceived use excellently. Ahmad, Kauba and Usman (2012), in their publication, believed that they added to TAM some more variables that may be used to make the theory stronger. They were suggesting that attitude, availability and anxiety can occur due to perceived use or usefulness. Chiou (2011) identified the perceived usefulness and ease of use as predictors of intent to use web 2.0 applications was statistically significant. (Web 2.0 consists of many tools like Google, Gmail, distant- messaging, weblogs, podcasts and other multimedia applications). However, on the contrary, Dasantila (2018), in his study on patients' use of portals, portals are web-based tools that provide patients with access to their health records and allow communication with their care providers. The study investigated the impact of perceived usefulness and perceived ease of use on patients' usage of the portals' and found that it was not significant.

4.15 Attitude of nurse educator to the use of multimedia aid in teaching

Most of the participants had a positive attitude to the adoption and use of multimedia teaching aids. Most participants agreed that learning to use multimedia is easy; that it makes teaching easy and valuable. They decided that it might be expensive but will still adopt and use it. If teachers' reports negative attitude it would be suggested that it could be because they lacked skill and knowledge to make the decision required to integrate

ICT into teaching and learning but in this study the participant had a positive attitude(Bordbar, 2010). Many researchers agreed that the attitude to a specific subject could determine its use or non-use most especially if it is positive; there is the likelihood of usage. Tubaljhat (2014) found that participants hold a positive attitude toward technology and that students who reported a high level of technical skill had the most positive attitude toward technology. Irinoye, Ayamolowo&Tijani(2014) Established that a positive attitude to distance learning was of immense importance to their success in the courses offered. Mingaire (2013) demonstrated from his research that there was positive attitude from the teachers respondents that he used for the research he also advocated a continuing educational programme for teacher's competence to be increased to maintain the curricula using ICT programme. .

In using ICT, there may be a non-positive attitude which even though did not occur in this study could be a determining factor.Ahmad, Kamba and Urman (2012) argued in their study on a deterring factor on ICT use. whatcalled "technophobia" e Technophobia, according to these authors, is non-acceptance of multimedia devices and many other ICT devises. Many devices are not affordable and so may not be available for training, if there is no confidence provided by adequate training, it may result into negative attitude. Bad policies are also elements of discouragement.

4.16 The adoption and usage of multimedia aid by nurse educators

According to the findings in this study, both groups will adopt and use multimedia teaching aids. After training, the experimental groups were positive on the use of multimedia teaching aids. On an unannounced visit, most participants have prepared their lectures using PowerPoint. Therefore, petrol was purchased for the generator so that the teachers can make use of projectors to teach while the researcher graded their performance, and many showed expertise. Web publishing would require more time before it can take off. Post-training, the organization's support is not evident yet, nor are mentors available yet to the educators, they have just been trained. They believe that training is beneficial and have confidence in its adoption and usage. This is in contrast to

Onu&Agbo (2013), when they shared that in Ebonyi State, nurses became fearful of losing their jobs since technology can replace them

4.17 Hypotheses Testing

In the testing of the first hypothesis, the hypothesis explored the difference in the perceived skill of multimedia aids post-intervention in these groups. Pre-intervention, both groups answered that they were skilled in using multimedia aids, but some in the experimental groups were not as skilled as the control group, but after the training, their skill improved. In the experimental group, having been trained, there was a significant difference, and this hypothesis was rejected. Comparison of the pre and post response to the questionnaire of the experimental group showed, without doubt, that the respondents said there was a difference in their skill. Most of the respondents' pre-intervention were enthusiastic about the training.

Adeleke, et al (2015), Intheir study at National Hospital, Abuja with health professionals, remarked that the healthcare workers indicated an interest in further ICT training. The researcher concluded that it would be worthwhile to enrich the healthcare worker's information sources to improve public health. Research findings have confirmed that to deliver ICT hinged curricular effectively, a lot of educators should be engaged and trained in ICT skills (Mingaire. 2013)

Testing hypothesis two which explained if there was a difference in the ease of use of multimedia as seen by both groups, it was found that there was a difference in the ease of use in both groups; therefore, this hypothesis was rejected. Post-intervention, there was a significant difference in the experimental group; this can be explained that the participants became computer literate having learnt skills which they did not find difficult. (Khan, Bibi and Hasan 2016). In answer to a growing debate on what improves the quality of teaching in higher education because students learning outcomes largely depends on the quality of teaching, teachers perceived that the use of technology in teaching is good in many ways as it increases teachers' knowledge and information flows, there is effectiveness and flexibility. It can be concluded that there should be adequate infrastructure for the use of the staff. The provision of electricity supply must be considered to be very essential.

In the third hypothesis, it was found that there was a meaningful distinction in the attitude towards multimedia teaching tools between experimental and control groups post-intervention. Therefore, the hypothesis was rejected. The two groups were expectant and were enthusiastic about new learning. Continuing education is essential and should be encouraged. It is believed that the initial attitudes toward the use of ICT by nurses in education may be a misconception as in this study participants showed a positive attitude. Nurses have come to the realization and would show the way that technology is used to enhance learning. It affects how learners accept the use of ICT, and it finally has a bearing on the way the ICT is learned. Attitude plays a significant part in the way learners think about and use or do not use ICT in their learning efforts and afterwards as a professional (Kolback, 2015)

In the testing of the fourth hypothesis, it was found that there was adoption and usage of multimedia teaching aids in the groups, but definitely higher in the experimental group. The participants showed a lot of enthusiasm during the training, and it showed in the responses in the post intervention questionnaire. Three months post intervention there was an observational visit to the schools. It was observed that the participants adopted and were using the projector and power-point in teaching. They had prepared their lectures using PowerPoint as instructed during the training. They would continue to improve in the classroom as time goes on. There is an immense opportunity to utilize ICTs in Nigeria's education sector for those who wish to learn. In education ICT has many benefits. This research found that available accessible multimedia aids coupled with the right attitude makes adoption and usage of ICT possible as was found by Odeniyi, Ayinde, Adetunji&Sarumi (2013). Mathipa and Mukhar (2014) identify teachers' not allowing adoption and use are insufficient computers, lack of application programs, and teacher' generation gap. Lack of digital skills, vandalism and burglary, lack of confidence, teacher's beliefs, poor school leadership and lack of public support were identified. Puckree et al. (2017) opined that lack of technology training was a stumbling block to the adoption and usage of multimedia aids. These participants have been trained and would use technology and multimedia aids in teaching in Ogun stateschools of nursing.

CHAPTER FIVE

SUMMARY CONCLUSION AND RECOMMRNDATION

5.1 Summary

This research showed how nurse educators use and adopt multimedia aids for teaching in the selected schools in Ogun State. Beginning with availability and accessibility, it found that the total number of equipment available was grossly inadequate. One projector was mounted in the school hall in one of the nursing schools in Abeokuta; however, it is used for seminars and presentations, not for teaching. Most of the schools had two projectors which were kept in the Principals' office. The ideal situation would be to have all equipment installed in the classrooms instead of locking them up in the Principal's office. Educators feel reluctant to be collecting from the office to use projectors, and it would have been very convenient to go to class with a computer and plug into an already installed projector. Many educators are computer literate but are not using multimedia to teach as these resources were not readily available. The primary reason forwarded by participants is lack of electricity, which was evident to the researcher. In order to give the training, petrol was bought to work generators where there were available generators. In other places, the generator had to be brought for use. Also, there is a lack of motivation and frustration on some educators due to a lack of resources

During the training, some educators started making teaching notes using PowerPoint but wholly abandoned it and did not complete the notes started four weeks previously when the researcher was there to see them. However, some completed their notes. Most of the educators showed good insight concerning the easiness of the use of multimedia aids which led to a positive attitude and eventually adoption and usage as predicted by Davis

(1989). Taherdoost (2018) confirmed the technology acceptance theory, added habits, facilitating conditions, and affect to improve the theory's predictive power.

5.2 Conclusions

This project was found to be needed by the participants in this study where many were skilled in ICT but did not have the facilities required for effective adoption and use of multimedia aids in teaching. Therefore attention has been drawn to this deficiency and before long this shall be addressed by the stakeholders and the facilities provided. However as stated by Nkosi, et al (2011) that nursing needs to become competent in the ongoing InfoTech because it is necessary for instruction in this profession. Then,Dankor, et al (2015) insisted that even though InfoTech is playing a big part in the educational system in all institution in Nigeria, it is still not yet in use in schools for instruction and literacy. Therefore the training was necessary as the result of this project will be forwarded to the Ministry of Health; the findings scrutinized and may be used for the schools.This was one of the conditions for approval to use of the schools of nursing in Ogun state for my project.

Nursing informatics has a key role in nursing technology. It incorporates courses in nursing, incomputer and knowledge into nursing. (Hebda and Czar 2021). Therefore, informatics was a key part of this study. Cipiano and Hammer (2010) highlighted the necessity to get at least a little understanding and capability in informatics and InfoTech. Nurses need to be trained in ICT to disabuse their minds and reluctance to accept technology because nurses were of the opinion that ICT distances nurses from patients and disrupts rapport. Kolback (2015) further explained that nurses may be reluctant due to the unwillingness of policy makers to implement ICT in the nurses' programme early by not providing financial support.

The researcher can conclude that this research met the original objectives specified at the commencement of this study. The training increased the skills of participants in PowerPoint presentation and informatics which in the future may improve teaching and

learning. This study achieved significant mean difference in the attitudes and adoption and usage of multimedia aids.

Therefore the training program has empowered educators to acquire more knowledge and skills in using multimedia aids in teaching in schools of nursing in Ogun State. This would go a long way in improving technology in nursing. Facilities needed as identified in this study should be provided.

5.3 Recommendations

The following recommendations are made based on the current study findings:

- The public schools should be supported financially by the state government to ensure that there is equipment sufficient for use for the number of students in the schools
- There must be a good electricity plan for the use of the schools to be worked out by both schools and State government.
- There must be adequate number of multimedia aids equipment for efficient teaching-learning in schools to meet global heights and expectation.
- Nursing & Midwifery Council of Nigeria can include this training in their package in the Mandatory Continuing Professional Development Program (MCPDP) for nurses.
- Refresher courses or training should be organized by governing bodies for teachers on computer and ICT periodically.
- The State government should provide motivation for the nurse educators to make sure teachers teach very well by paying adequate remuneration and sponsor university masters and PhDs.
- Encouragement by employers for participants in this study to continue to use multimedia aids in teaching and not abandon it by providing resources identified.
- Set up a committee through the nursing and midwifery council to look into the findings in this study.

5.4 Implications of Findings for Nursing

- This study identified how available multimedia aids are in the schools of nursing in Ogun state schools of nursing.
- It found that multimedia aid is not readily accessible.
- Multimedia teaching aid adoption and usage in the nursing schools will increase.
- The Ministry of Health that owns these schools will be glad to see this information.
- Information has been given which is evidence based to aid policies for Ogun State.

Most of the time, teachers in secondary schools were used for such experiment, thus, adding to knowledge in this aspect. By using nurse educators Researches are moving on in the nursing profession.

5.5 Limitations in the Study

The sample size was not adequate in numbwe, because there is shortage of nurse educators. The researcher used all available participants found in the schools. This could affect the power of the research which can further affect the association among the variables in the research if there is any. Electricity one of the problems identified in the study and should be taken into consideration.

5.6 Contribution to Knowledge

There was contribution to knowledge as this research is available for information on this project topic.

1. An eyeopener to a fundamental gap in nursing education in the country, the project was found to be needed by the participants in the study where many skilled in ICT but did not have facilities required for effective adoption and use of multimedia aids in teaching.
2. Nursing education in its present form in Nigeria has not employed the role of informatics knowledge.

3. The appropriate use and provision of multimedia facilities are not adequate in bringing up nurses to reach the mark of world class statue even when there are skilled facilitator on ground.

REFERENCES

Adeleke, I. T. Salawu A. A. Achinbee M. Anamah T. C. Zakai I. B and Wasagi, M. H. 2015 ICT knowledge, utilization and perception among healthcare providers at National Hospital Abuja Nigeria.*American Journal of Health Research*. Special issue: Health

Adeoye B.F, Arome G., 2019. The roles of technology and globalization in educational transformation IGI Global

Adeoye, M.O. Popoola S.O. 2011. Teaching effectiveness, availability, accessibility and use of library and resources among teaching staff of school of nursing in Osun and Oyo State Nigeria. Blackwell Publishing Ltd. Library Philosophy and Practice ISSN1522-0222

Adoni, E. E, and Kpangban 2010.Application of ICTs in Nigeria Secondary Schools. Library Philosophy and practice (e-journal)345.http://digitalcommons.unl.edu/libphilpra345

Aduwa-Ogiegbean, S.E. and Iyamu, E. O. S. 2008.Using Information and Communication Technology in Secondary Schools in Nigeria. 8. 1: 104-112

Agarwal P, Kaushik A, Sarkar S, Rao D, Mukherjee N, Bharat V, et al. (2021) Global survey-based assessment of lifestyle changes during the COVID-19 pandemic. PLoS ONE 16(8): e0255399. https://doi.org/10.1371/journal.pone.0255399

Ahmad S.A, Kamba M. A. and Urman M. 2012 Techophobia Versus ICT Acceptance and use in Teaching and Learning among academic staff in Universities in Northern Nigeria Paper presentation of the British Educational Research Association Annual Conference, University of Manchester 4 – 6 September 2012.

Akpabio I.I and Esienamoh E.E 2016. Required competitions and possible challenges of information communication technology assisted teaching and hearing: Assessment of Nurse Educators and structures in Calabar, Nigeria

Akpan, C., P., 2014 ICT Competence and Lecturers' Job Efficacy in Universities in Cross River State, Nigeria. International Journal of Humanities and Social Science 4:10 259-266

Aktaruzzaman, Shamin R. H and Clement C. K. 2011.Trends and Issues to integrate ICT in teaching and learning for the future world of Education.*International Journal of Engineering &Technology IJET – IJEHS* 11:03.

Alabi A.O, Mutala S. 2020. Information and Communication Technologies: Use and factors for success amongst academics in private and public universities in Nigeria. South African Journal of Information Management 22:1:1129

Ali, Z., Ghani, F., and Ali, A., 2009.The use of Instructional Technology in private schools and National Education Policy.*The Dialogue* 6(2), 169-172

All Answers Ltd 2018. Use of ICTs in Healthcare Delivery System Retrieved from https://audweranswers.net/essays/icts/its-healthcare-delivery-systems-7268.php?ref=1 delivering quality health service: a global imperative for universal health coverage. Geneva: World Health Organisation, Organisation for Economic co-operation and Development. The world bank;2018. Licence: CCBY-NC-SA3.O1GO

Asaolu O S and Fashanu TA 2012.Adoption of ICT and its comparative impact on private and public High schools in Lagos State, Nigeria.*International Journal of Science Emerging technology* 3. 1: 1 – 6.

Atherton, J.S., 2013 *Learning and Teaching; Constructivism in learning* [On-line: UK] retrieved 29 June 2015 from http://www.learningandteaching.i nfo/learning/ constructivism.htm

Atkinson, R, K. 2013. Evaluating the impact of interactive tutoring and gaming environment on learning and engagement

Aypay, A., 2011. The adaptation of the teaching – learning conception questionnaire and its relationships with epistemological beliefs. Educational sciences: *Theory of practice* 11. 1: 21 – 29.

Becta, B., 2008 Emerging Technologies for learning. https://www.becta.org.uk/ research/reports/energytechnologies

Bello, U.H, AbdElwhab, L. Hassan A.E., Yunusa.Bindu C. N. 2017. Attitudes towards ad awareness of ICT in classroom: A care of Expatriatt Indian Teachers at UAE. Journals of Education and Practice 8.10-17

Bordbar, F., 2010.English teachers' attitudes toward computer-assisted language learning.
International Journal of Language Studies, vol. 4, no. 3, pp. 27-54

Bowles K.H, Dykes P. 2015. The use of Health Information Technology to improve care and outcomes for older adults. Journal of Gerontology Nursing 8,1:5-10

Brandstrom, C., 2011. Using the internet in Education – strengths and weaknesses.A quantitative study of teachers' opinion of the use of the internet in planning and instruction.

Buabang-Andoh C., Issifu Y 2015. Implementation of ICT in learning: A shady of student in Ghanaian Secondary Schools Social and Behavioural Science 191:1282 - 1287

Button, D., Harrington, A., Belan, I., 2014. E-learning and informatics communication technology (ICT) in nursing education: A review of the literature. *Nurse Education Today* 34. 10: 1311-1323

Charlieberger, R., 2012 Retrieved http://uoitonlinetech.wordpress.com/2012/05/31 /engagement theory –in-ability-based-education/.

Chickenring, E., and Gamson, D., 2018. 7 Rules for undergraduate education. Retrieved citt.ufl.edu/tools/chickering-and-gamson-7-rules-form-undergraduate education/

Chu, T., L., Wang, J., Lin, H., L., Leo, H., L., Lin, C., T., Chieh, L., Y., Sung, Y., C., Lin, Y., E., 2019 Multimedia assisted learning of new nurses: a quasi-experimental study. BMC Med Education 19,68https://doi.org/10.1186/s12909-019-1496-2

Cipriano, P.F., Hamer, S., 2013. Nursing Technology and Information systems.Enabling the ordinary move time to care. *American Nurse Today*8:1 www.American NurseToday.com.

Cohen, D. 2018. *Digital multimedia: Concepts methodologies and applications*. Information Resources Management USA IGI Global.

Courtney-Pratt, H.,S., Cummings, E., Turner, R., Cameron-Tucker, H., Wood-Baker, R., Walters, E.R., and Robinson, A. L. 2012 Entering a world of uncertainty: community nurses engagement with information technology. *Computers, Informatics, Nursing* 30(11) 612-619

Davis, R., Campbell, R., Hildon. Z., Hobbs, L., Michie, S. 2014 Theories of behaviour and behaviour change across the social and behavioural sciences: a scoping review. Health Psychol Rev. 2015;9(3):323-44. doi: 10.1080/17437199.2014.941722. Epub 2014 Aug 8. PMID: 25104107; PMCID: PMC4566873.

D'Souza M. S, Karkada, S. N, Gastro, R., 2014. Exploring e-learning among nurse educators in undergraduate nursing.*Journal of Nursing Education and Practice* 4. 1: 73 – 83.

Damkor, M., Irinyang, D., J., Haruna, M., Manasseh, H., 2015.The Role of information Communication Technology in Nigeria Education System.*International Journal of Research in Humanities and Social Studies* 2. 2: 64 – 68.

Dasantila, S., 2018 Perceived usefulness and perceived ease of use impact on patient portal use Doctoral Dissertation to Walden University.

De Sousa L., Richter B., Nel C., 2017. The effect of multimedia use on teaching and learning o social sciences at tertiary level: a case study yesterday and today on-line version. ISSN 2309-9003 http://dx.doi.org/0117159/2223-0386

De Young, R., 2009. *Teaching Strategies for Nurse Educators* Prentice Hall NJ

Demirci, A., 2009. How do Teachers Approach New Technologies: Geography Teachers' Attitudes towards Geographic Information Systems (GIS). *European Journal of Educational Studies, vol. 1, no.1.*

Drent, M.,Meelissen, M., 2008. Which factors obstruct or stimulate teacher educators to use ICT innovatively? *Computers and Education, vol51 no.1,* pp. 187-199.

Eze, R., I., and Olusola, E., 2013 The Teachers and the Use of ICT for professional development.A paper presentation.International Conference on ICT for Africa 2013.

Fagerstom, C., Tuvesson, H., Axelsson, L., and Nilson, L., 2016. The role of ICT in Nursing Practice: An Integrative Literature Review of the Swedish Context. *Scandinavian Journal of Caring Sciences,* 31 (3).

Florence 2021 On–line Innovation and technology for social care.Retrived Nursing%20Challenges%20ad%How%to%20Overcome%Them.html

Hebda, Hunter and Czar 2021. Handbook of information for nurses and health care professionals updated 6th Ed.

Hebda, T., Czar, P., 2013. *Handbook of informatics for Nurses and Health professionals* Pearson

Hu, L., Za, Z., 2020. The nursing profession in a globalizing world. 67.2:4-5 doi:10.6224/JN.202004-67(2).01

Hulela, K., Rammolai, M., and Mpatane, W., 2014.Assessment of computer technology availability accessibility and usage by agricultural education student teachers in secondary schools in Botswana.*Educational Research and Reviews* 9.17: 610-617.

Ibara, E., C., 2014 Information and Communication Technology Integration in the Nigerian Education System: Policy Considerations and Strategies. Journal of Educational Planning 21:3 5-18

Irinoye, O., Ayamolowo, S., Tijani, O., K., 2014. Part-Time undergraduate Nursing students' Perception and Attitude to ICT supports for Distance Education in Nursing in Nigeria. *Malaysian on line Journal of Educational Technology* 4. 2: 8 – 21

Johnson, M., Calvert, E., and Raggert, N., 2009.ICT in schools Final report.Retrieved from http://www.2020.org.nz/template/ict_09_-_online_final_.pdf.

Keengwe, J., and Onchwari, G., 2008. Computer technology integration and student learning: Barriers &promise. *Journal of Science Education and Technology, vol. 17*, pp. 560–565.

Khaled, K., 2014. The effect of Information and communication Technologies ICT in the Jordanian Universities *Jordan Abstract* 4(12) 122.

Kolback, R., 2015. Nursing Students attitudes towards ICT in education and clinic in Denmark seminar net, International Journal of media technology and lifelong learning 11

Lewis, T., Synowiec, C., Lagomarsino, G., and Schwelter, J., 2012 E-health in low and middle income countries: findings from the center for health market innovations. *Bulletin of the World Health Organization* 90, 332 – 334.

Lipke, L., 2014. Nurses' competence in Information Communication Technology (ICT) Usage in Patient care Literature Review. Final Project.

Maleki, H., Majidi, A., Haddadian, F., Rezai, A., M., and Alpour, V., 2012.Effect of applying informant on and communication technology (ICT) on learning level and

information literacy of students.*Procardia-social and behavioral sciences* 46. 5862 – 5867

Martin, F., & Parker, M. A. (2014). Use of Synchronous Virtual Classrooms: Why, Who, and How? Journal of Online Learning and Teaching, 10, 192-210. http://jolt.merlot.org/vol10no2/martin_0614.

Mathipa, E., R., Mukhar, S., 2014. Teacher factors influencing the case of ICT in Teaching and Learning in South African Urban Schools *Mediterranean Journal to Social Sciences* MCSER Publishing, Rome Italy 5:23.

Mayer, R., E., 2014. Principles for multimedia learning.Retrieved http://lelt.harvard.edu/blog/ principles-multimedia-learning-richard-e-mayer

Mayer, R.E., 2010 Applying the science of learning to medical education – Medical Education 44:6 543 - 549

Mingaire, L., 2013. Skill challenges in Adoption and use of ICT on Public secondary schools Kenya, *International Journal of Humanities and social science* 3. 13: 61 – 71.

Murrithi, P., Honer, D., and Pemberton, B., 2016 Factors contributing to adoption and use of information and communication technologies within research collaboration in Kenya.

Murtonen, M., Gruber, H., Lehtimen, E., 2017.The return of behaviorist epistemology.A review of learning outcomes studies. *Educational Research Review* 22 114-128

Nisar, M., W., Muner, E., U., Alishads, 2011 Usage and Impact of ICT in Education Sector: A study.*Merlot Journal of (online) learning and teaching 1*0(2).

Nkosi, Asah, Pillay, 2011. Post basic nursing students access to and attitudes toward the use of information technology in practice: a descriptive analyses*Journal of Nursing Management* 19. 7: 816 – 882.

Noor-Ul-Amin, S., 2013.ICT as a change agent for education (A literature review) *Scholarly Journal of Education* 2. 4: 38-45

Ntui, A., J., Udah, A., E., 2015. Accessibility and Utilization of library Resources by teachers in secondary schools in Calabar Education Zone of Cross River

State.*Global Journal of Human Social Science: Arts & Humanities Psychology* 15:1.

Nut, J., 2010. Professional educators and the evolving role of ICT in schools: Perspective report. Retrieved July 12, 2016 from http://www.ictliteracy.info/rf.pdf/ICTin Schools.pdf.

Nwosu, J., C., John, H., C., Akorede, O., J., 2018 Availability and Accessibility of ICT-based instructional tools in medical colleges in Ogun State, *Nigeria Educational Research 1*3 (11) 391 – 39.

Odeniyi, O., .A., Ayinde, A., Q,, Adetunji, A., B., Sarumi, O., A., 2013 Adoption of ICT to Enhance Educational Development in Nigeria IJCSI *International Journal of Computer Science Issues,* Vol. 10, Issue 4, No 1

Okolije, E. O., 2015 Knowledge, Accessibility and use of information Communication Technology (ICT) among Students and Teachers in the Department of Nursing Science of Nigeria, Enugu Campus Faculty of Health Sciences and Technology Department of Nursing Science. MSC Dissertation.

Olafare, F., O., Adeyanju.,Fakorede S., O., A. 2017 Malaysian Online Journal of Educational Sciences 5:4

Olokoba, A., A., Abdulahi, A., M.,Omosidi, S., A., 2014Impact of Information Communication Technology (ICT) on the management and performance of secondary school teachers in Kwara State, Nigeria international journal of education learning and development. 2:.3.60-67

Omotosho, A., O., Lateef, E., B., Amusa, O., I., Bello. T., O., 2015. Information and Communication Technology Adoption and use among students of a Nigerian University for Distance Learning Library Philosophy and Practice (e -journal)

Omotosho, A., Ayegba, P., Emuoyibofarhe, J., Meinel 2019 Current State of ICT in Healthcare Delivery in Developing Countries International Journal of Online Engineering (iJOE) 15(8):91-107DOI:10.3991/ijoe.v15i08.10294

Osakwe, N., R., 2010The Influence of Information and Communication Technology (ICT) on Teacher Education and Professional Development in Delta State, Nigeria Asian Journal ofInformation Technology 9(5):280-285DOI:10.3923/ajit.2010.280.285

Onu F., U., Agbo S., A. Factors that Affect the Use of ICT in Nursing Proffession in Ebonyi State Nigeria Journal of Information Engineering and Information 3:ii

Onwuagboke, B., B., C; Singh T., K., R., Fong, S., F., and Onwuagboke, J., N., 2014.Internet use among faculty members of colleges of Education in South-Eastern Nigeria.*European Scientific Journal* 10. 31: 1857 – 1881.

Oyediran, W. O., Dick, T. T., 2017.Use of Information Communication Technology (ICT) in teaching profession in Ogun State, Nigeria. International Journal on e-learning 7, 549 – 555

Oyediran, W., O., Omoare, A., M., 2014 Information and Communication Technology (ICTS) application in Agriculture.A total towards youth's empowerment in Ogun State Nigeria.*International Journal of Applied Research and Technology* 3(3) 33 - 36.

Puckree, T., Maharaj, S., Mshunquane, N., 2017. Status of usage of information technology by academic staff at a selected Nursing training Institution in South Africa. International Journal of Educational science. 8. 3: 511-519

Rees. C., 2010 Theory on Medical Education Research: how do we get there? Wiley Online Library 44:4 334 – 339 https://doi.org/10.1111/j.1365-29232009.03615.x

Rouleau G., Gagnon M. and Cole J. (2015). Impacts of Information and Communication Technologies in Nursing Care: an Overview of systematic reviews (protocol).

Sadoski, M. And Paivio, A., 2012. *Imagery and text: a dual coding theory of reading and writing*, New York, NY: Lawrence Erlbaum.

Shihundu, L., N., 2014 Factors influencing ICT Adoption among public secondary school teaches a case of Webuye sub-county Bungoma County, Kenya Dissertation in project planning and Management University of Narobi

Skiba, D., J., 2009. Teaching with and About Technology: Providing Resources for Nurse Educators worldwide. *Nursing Education Perspectives* 30. 4: 255 - 256.

Tedla. B., A., 2012. Understanding the importance impacts and barriers of ICT on Teaching and Learning in East African countries.*International journal for e-learning security* (Jel-S) 2:3/4.

Tella, A., 2011. Availability and use of ICT in south-western Nigeria.Colleges of Education International multidisciplinary *Journal Ethiopia* 5. 22: 315 – 331

Teo, T., 2008. Pre-service teachers' attitudes towards computer use: A Singapore survey. *Australasian Journal of Educational Technology, vol. 24, no.4:* 413-424.

The International Conference on Management Education an Information (MEICI2017) Analysis of Advantages and Disadvantages of Multimedia Teaching Wang X School of Science. Advances in Intelligent System Research Volume 156

Tubaljhat, A., 2014. An investigation into the attitude of nursing students toward technology.*Journal of Nursing Research* (2) 119 – 125.

Udhaya M.B and Kalaeyerasen G 2016. Educational Trends in 19th Century. Educational practices in Chola Kingdom (850 -1279 AD) E PICK

Umar, L., B., Lulah,,Abd. E., AbdElaty. H., Umar, Y., Idris, A., Ruqayya, H. Usman, K. Nuhu. N. 2017, Challenges of Information and Communication Technology Utilization Among Undergraduate Community Health Nursing Students in Tanta University, Egypt, *American Journal of Nursing Science*. 6 : 3, 274-279. doi: 10.11648/j.ajns.20170603.26

Wasif N.M, Ehsan, M,U. Alshade 2011 Usage and Impacts of ICT in Education Sector A study of Dakestan. Australian Journal of Basic and Applied Science 5,12 578-583

Wilkinson, A., Allison, E., While, A., and Roberts, A., 2013. Nursing students' use of technology enhanced learning: A longitudinal study. *Journal of Nursing Education and Practice* 3:5

Yu – Fang, C., 2018 Perceived usefulness, perceived ease of use, computer attitude and using experience of web 2.0 by Pre-service Teachers for teaching. Doctoral Dissertation presented to the faculty of the Gladys W. and David H. Patton College of Education and Human Services of Ohio University.

Yushau B. and Nannim F.A 2018.ICT facilities and their utilization for educational purposes in Nigerian Universities. A review of literature from 2004 – 2018 ATB Journal of Science, Technology Education 6:1: 237 – 263

Yussuf, M., O., 2011.Information and communication education.Analyzing the Nigerian National Policy for Information Technology.*International Education Journal* 6. 3: 316-321

Yusuf, M., A., Afolabi, F., O., Loto, A., B., 2013.Appraising the role of information communication technology (ICT) as a change agent for higher education in Nigeria.*International Journal for Educational Administration of political studies*. 5. 8: 177 -183.

Zulfiqar, H., and Chen, S., Zareen, A., 2015. Adoption of E-Government in Pakistan: Demand Perspective *International Journal of Advanced Computer Science and Application* vol. 6. No. 5 Bath, P.A 2010 How ICT development can support health care. British Journal of Healthcare Management 16 (4) 5-9.

APPENDIX I

TRAINING MODULE

ICT AND MULTIMEDIA AIDS
FOR NURSES IN OGUN STATE 2018

Introduction

Globally ICT is used to teach and to learn. Ogun State should incorporate ICT into the education of nurses and consequently into teaching and learning. Technology has advanced into the nursing profession therefore, staff development and continuing education is of paramount importance in any profession. This training module is designed specifically for my project in partial fulfillment for the award of PhD in Nursing Education.

This training module can be utilized by Schools of Nursing or the governing council for nurses. The challenge for ICT inclusion is of great value to teach and learn. Nurse Educators should be skilled in the use of multimedia Aids to teach, for students to learn, in order to produce excellent students.

This training module is prepared and used for nurse educators to learn skills in the management of multimedia Aids. ICT is relatively new in this part of the divide where using information technology tools and processes to specific needs must take into account their ethical and social science aspects.

Training Methodologies

Various interactive training methodologies have been included in this training. These include PowerPoint, internet, e-mail, first hand observation and opportunity to demonstrate acquired skills under the supervision of assistants.

Practical sessions have been included with assignments to encourage self-study

Module 1

Information Communication Technology

Learning Outcome

Identify what Information Technology, Computer, and Computer Literacy?

Assess importance in today's society.

Classify computers.

Discuss the differences in computer components

Discuss the different parts of a computers

Information Technology and Computer Literacy

Defining ICT: this is the use of communications devises and networks and having knowledge of computer.

Computer literacy is using all the devises of communication and the ability to use their resources and critique information.

A computer is an electronic communication device that takes in data or raw facts, brings out useful information from processing data.

The act of producing information from a computer is as a result of series of processes referred to as Program. The use of IT in health care is essential so health professional must have knowledge of the basic concepts of computer.

There are many examples of computerisedprogrammes in health..

The data, and the information are first temporarily stored in memory and processed, and after this are stored permanently in secondary storage media for future use. Computers are accurate, fast, and reliable

Terminologies

LARGE COMPUTERS: are large used for many purposes in Science such as weather forecasting and drug design. Supercomputers solve complex mathematical data and give accurate forecasting of epidemics, pandemics, and other disasters.

LARGE COMPUTERS: are large computers in Science and give accurate forecasting.

MICROCOMPUTERS: are large computers used for an individual's need for solving mathematical problems.

PERSONAL DIGITAL ASSISTANTS (PDAS): These are small computers with specific functions, it has expanded today to hold more sophistication. A lot of PDAs are utilized in all the health care system.

Health care providers can use these PDAs, in several ways, consulting online, capturing patient information and downloading it to a hospital computer. PDAs also hold reference manuals and are used in public health to gather information and help track diseases and epidemics

The embedded computer:

These are computers embedded in appliances even in human being it is a simple computer on a chip of silicon. Can be used to run cars, microwave, pacemaker, or watch. If a chip is embedded in a human being it can dispense medication and other things.

HARDWARE: These are the working parts of a computer, they are called hardware. They are named according to the functions each performs as follows: input, process, output, and storage. Binary digits (bits) 1 (one) and 0 (zero). When data is made into 1 and 0 it is called digitalization.

Input Devices

Input devices make data that people understand into a form that the computer can process. Input devices are: keyboards and direct-entry devices.

Examples are, pointing devices, scanning devices, smart and optical cards, speech and vision input, touch screens, sensors, and human-biology input devices.

THE AUXILLARY DEVICE: the common ones are:

Mouse: used to move to positions on the screen or make a choice from menu. There are

others derived from the mouse.

Light pens, digitizing tablets, and pen-based systems: use of a pen or stylus to mark, write or enter data which are digitalized.

Examples :

Magnetic ink character: (MICR) this is a special scanning equipment. Enables the numbers at the bottom of checque book to be read.

Fax Machines. Messages are digitalized scanned and sent on telecommunication lines.

RADIO FREQUENCY IDENTIFICATION (RFID) : these are imput devises tags inserted into the body which sends out radio waves. Used as identification. One medical insurance company is conducting a two-year trial with chronically ill patients who will have an RFID the size of a grain of rice implanted.

Input :Cards

Automated Teller Machine (ATM) card with a magnetic stripe which contains data to use in the teller machine

A smart card: can hold a lot of data and contains a microprocessor. Smart cards have been used as debit cards. Several states now use smart cards as driver's licenses.

Optical card : Contains many pages up to two thousand. It can hold a persons' medical history, with test results and X-rays. This card small enough to be carried in ones' pocket can give the whole history in an emergency

Alzheimer's patients are given glasses devises (vision imput devise) which contain a database of names and faces; the device camera sees a face, and if it compares it to the stored faces it then gives the wearer the name of the face.

SPEECH INPUT SYSTEMS: contains a lot of prepared packages for different professions these are stored as data or commands. For example if Medicine profession it would contain medical terms where patient records can be stored to create medical reports. Health personnel could use the system as an imput device to dictate notes from other areas while performing other procedures within the hospital

A SENSOR: this is a device that collects data directly from the environment and sends those data to a computer. They are used to monitor clinically the systems of the In intensive care unit of hospitals they sense changes immediately no matter how minute in temperatures, blood pressure respiration and other functions of the body system.

Human-biology Input Devices:

The newest input devices. The body as an input device, include Biometrics; which are being used in security systems to protect data from being accessed by fraudulent persons they include fingerprints, hand prints, face recognition, and iris scans. Has been found not as perfect as it seemed.

Processing Hardware and Memory

PROCESSING HARDWARE: is the brain of the computer.in the circuit board (or motherboard).

THE PROCESSOR OR SYSTEM UNIT: contains the central processing unit (CPU) and memory.

The CPU has two parts:

The Arithmetic-Logic Unit; and The Control Unit

MEMORY: situated on the main circuit board.in two parts Rrandom-access memory (RAM).temporary store and is not there for long

Read-only memory (ROM) has start-up instructions, .

OPEN ARCHITECTURE: this allows addition of devices.

Output Devices

Once data are processed, the language becomes what humans can understand from initial bits. Output devices are divided into two basic parts: those that produce hard copy, examples are printers and plotters; and those that produce soft (digital) copy.

Monitors - the most commonly used output device. Soft copy is also produced by speakers that produce speech, sound, or music

Storage Devices

STORAGE DEVICES: store information data and programs. It can be stored temporally or volatile can be the simply Memory or permanent storage known as Secondary Storage Device which saves work permanently To save your work permanently, you use storage devices like; High-capacity optical disks (compact disks CDs or digital video disks or DVDs)

Software

The series of rules that informs the hardware step by step is the program which is referred to as the software. Software can be a) System software and b) application software.

System Software

System software is the operating system that manages the computer resources using series of program. The operating system allows input and output of the computer function ensures proper saved files in the disk and memory thus controlling the hardware.

User interface— this describes how the user will work with their computer. For example, Windows provides a graphical user interface, pictures or icons that can be clicked on with a mouse.

When the computer is turned on, the operating system is Booted or loaded into the computer's RAM. No other program can work until the operating system is booted.

Application Software

Use for a work to be done using computer

There are different ones for all

For reports, letters or memo there are software that can be used and you use it as you like it

You can make it in different sizes including what it looks like

The following can be done, using different programs:

Answers to values are got for example blood values and other health related information

Creating graphs using spreadsheet to get this done.

Editing large data into tables

Networking with other computers

Networking, Connectivity, and Telecommunications

Connectivity allows the world to become a global village information can be got from everywhere in the world. This enhances the development of tele-medicine.

Network. The connection of computers and other hardware devices, there is small network inside a room or local area networks (LANs), to wide area networks (WANs), which may span a state, nation, or even the globe, like the Internet and World Wide Web. Networks can be private or connected through telephone lines.

Telecommunications networks. This occurs when networks are connected either privately or through telephone lines and Given the right mix of hardware and software, computers are connected globally. There are several communications channels—either wired or wireless

Learning/Teaching Aids

Computers

PowerPoint Lecture presentation

Overhead projector

Practical session – identifying all the parts of the computer and using the computer to type.

Assessment

Questions

Quiz

Definition of a computer

An electronic input and output devise

An electric device that given out data

An electronic device that accepts data

An electronic device called program

Types of computer

_____ Supercomputer

_____ Main frames computers

_____ Minicomputer/personal computers

_____ Microcomputer/personal computers

_____Embedded computers

Define Hardware

The physical components of a computer

A polluting device or scanning devices

Takes data and translate into a form that computer can process

Biometrics

Direct – Entry devices are:

The physical components of a computer

A polluting device or scanning devices

Takes data and translate into a form that computer can process

Biometrics

Input devices are described as

The physical components of a computer

A polluting device or scanning devices

Takes data and translate into a form that computer can process

Biometrics

Example of Human – Biology input devices is

_____ Biometrics

Output devices are divided into two basic categories

_____ hard copy

_____ soft/digital copy

Systems software is divided into

_____ operating system

_____ Application software

_____ word processing software

_____ Database management software

_____ communication software

Connectivity greatly enhances the power of the computer and making it possible to connect and interact with people around the world.

Connection of computers and other hardware devices is known as

_____ Network

Two ways it comes

_____ LANS

_____ WANS

Module 2

PowerPoint Presentation

Learning Objectives

At the end of this presentation

The learner will explain the process of the preparation of a slide

Will explain the process in creating a PowerPoint presentation

Will explain steps in the presentation or using of a PowerPoint in Lectures or Seminars

Will demonstrate the skill in the use of PowerPoint.

Content

Power point presentation

How to prepare a slide presentation

Planning :

Before you make a presentation, consider this wise chinese proverb: “Tell me, I forget. Show me, I remember. Involve me, I understand” .Your goals as a speaker are to make listeners understand, remember, and act on your ideas.

To get them interested and involved, include effective visual aids. Some experts say that we acquire 85 % of all our knowledge visually. Therefore, an oral presentation tat incorporates visual aids is far more likely to be understood and retained tan one lacking enhancement.

And remember that presentation slides summarize; they do not tell the whole story. Slides are not a script that the presenter reads to the audience.

Keep all visuals simple ; spotlight major points only.

Use the same font size and font style for similar headings

Apply the rule of seven. For the most readable slides, use no more than:
Seven words on a line
Seven total lines
49 total words.

Keep bullet points to no more than five levels
Use the layout provided in the power-point template for your title page and for all slides
If you import text by linking to or copying from another document (word or excel), be sure the imported text uses the correct fonts: Arial and Arial black.
If you use dynamic effects (e.g fades, zoom, et.c) please remove these effects before preparing the PDF version of your slides for publication in the conference proceedings

Building Bullet Points:
When you prepare your slides, translate the major headings in your presentation outline into titles. Then build bullet points using short phrases. Avoid using numbered lists unless the numbers provide significant information.

One of the best features about electronic presentation programs is the “build” capability. You can focus the viewer’s attention on each specific item as you add bullet points line by line. Bullet items fly in from left, top, right, or bottom or center.
As new bullet point is added, leave the previous ones on the slide but show them in lightened text. In building bullet points or in moving from one slide to the next, you can use slide transition elements, such as wipe-outs, glitter, ripple, liquid. But don’t overdo it.

Font Tips
Font sizes of your title lines ≤ 42 points
General text at ≤36 point. May be as low as 32 points.

Titles 60points if possible.

Use bold fonts in presentations.

It increases the width and density of letter shapes It improves legibility.

Allows viewers to see and read projection.

Use bold and large fonts to emphasize some text

Different colours may be used

Text may be italicized or underlined.

Use Arial or Arial black for the theme font

Use fonts that are big and bold.

Use bold and large fonts to emphasize some text

Different colours may be used

Text may be italicized or underlined.

Use Arial or Arial black for the theme font

Use fonts that are big and bold.

Use bold and large fonts to emphasize some text

Different colours may be used

Text may be italicized or underlined.

Use Arial or Arial black for the theme font

Use fonts that are big and bold.

Do not put all the texts in the powerpoint

The learners would no longer read further

Put points only

Contrast Your Text and Background Colours

se dark text on light colored backgrounds
Use light colored text on dark backgrounds.
Red text on a blue background
Pick background images with large blocks of either dark or light colors that are big enough to fit your text in

Choose black and white to print
Use a color palette of five or fewer colors for an entire presentation.
Use the same color for similar elements
Use dark text on a light background for presentation in a bright room

Preferably light text on a dark background for presentation in a darkened room
As well dark text on a light background for transparencies.
Do not use light text on a light background e.g yellow text on white background
Do not use dark text on a dark background for example,red text on a blue background

USE SHADOWS AS FOLLOWS
Adding shadow to your fonts, will give your text a more polished look
Shadows can improve the legibility of your fonts by giving them more contrast to their background, especially when using photo images as backgrounds.

To add shadow to a font simply click on the help button in powerpoint, select index ad type in the word “shadow”
Beginner may use shadows when they are needed but not all the time.

Shadows make presentation more legible and polished

Everyone in the audience should be able to
see the slides
Show a slide, allow the audience to read
Do not read from a slide rather paraphrase it
Practice talking to the audience, not to the slides.
Bring backup floppy disk or pen-drive in case of equipment failure.

How to Create a Power Point Presentation

PowerPoint presentation creates ideas to an audience.
We will now show how to create a presentation from a PowerPoint template or create a fully customized presentation.
We will go through the following steps.

Steps:
Click open PowerPoint.
A blank screen with two boxes in the middle of the screen will come up.
1, "pick title," 2, "pick subtitle“
Pick “File” from upper left side of screen
Pick “New tab from the tool bar on the left.

An already made template, may be used therefore pick "Sample templates" box. This is a preloaded background that is designed for specific presentations, such as an itinerary or a status report.

Pick the template you would like to use, depends on the type of presentation. If not found then it is best to choose a theme.
Pick the "Themes" box in the "New" tab, which is a slideshow with a preloaded background that can be used for general presentations.

Pick the specific template or theme that is good to work with for you .
Having done this, pick the " title" and " subtitle"

Having done this, pick "New Slide" button in the "Slides" tab up top or create a new slide with the shortcut (Ctrl + M).
Add lectures or diagrams as what you wish to put across.
In making powerpoint add points not the whole lecture

Next step, go to "File then Save As" and save your file so that you can retrieve it later when you have completed the presentation.
Presentation can be viewed as a series of slides, pick "Slide Show" tab and then pick "From Beginning" top left.
Click the arrows on the right and left to move the slides.

How To Create Power Point (blank slide)
Steps:
These are the steps for another method of creating powerpoint
Pick powerpoint from the laptop as shown
A blank slide presentation will open

Creation of first slide.
Pick “new slide” from the top toolbar
Pick the format required from the “slide layout” which has different titles, text, pictures and charts or totally plain to be chosen from continually adding slides as it continues. Pick "New Slide" button in the top toolbar, pick "Insert New Slide".
Use "Slide Layout" toolbar to select the preferred slide every time a new slide is selected the next step is to add content to slides.
Pick the version preferred from the many available.
There are two (2) ways to add content like text, pictures, charts or multimedia files to slides.

1, pick the “insert” menu, then choose the content to be added to the slide.
There are many files to be chosen from depending on what is needed
You will be asked which is preferred to be inserted.
2, you can create what is needed on the slide.

Adding content directly from a slide.
To do this, select a format from the "Slide Layout" toolbar that has content options built in.
Then, click on the icon of the type of content that you wish to add, and navigate to find the appropriate file.

To change slide themes or backgrounds.
There are pre-made themes or create your own custom slide backgrounds.
There can be combination of themes with custom background colors and you come up with a unique theme.

Pick "Slide Theme" on the top toolbar, or select "Format and Slide Theme" from the main menu.
Changing background color, pick "Format Background" in the Formatting Palette or select "Format and Slide Background..." from the main menu. We find different colors and designs to choose from.

Having found the one preferred, then pick "Apply" or "Apply To All”.
when the whole work is done, the final product can be viewed. Pick "Slide Show" in the top toolbar or select from "Slide Show to View Slide Show" in the main menu.

How To Create Power Point (installed templates)
Creating Power point with installed template. Choose a slide with a template or theme.

Contains pre-made layouts and color schemes. Pick “Office” orb in the upper-left corner, and select “New”.
Then, on the left, pick Installed Templates or Installed Themes.

Look at the slides from the template and see what characteristics are available.
On the sidebar at left, there are more templates to consider.
These can be done with the slides depending on choice:
Slides can be duplicated by right clicking and selecting “Duplicate slides”.
Slides can be deleted in the same way right click on the slide and click “delete slide” and slides are deleted.

It is possible to change the layout of a chosen slide. There are slides with more information than the ones initially chosen slides that may have more.
Select a slide, right click, and hover over Layout. Or, click Home on the top bar, and then the drop menu next to Layout.

Same slides or different ones may be added as follows: Same slide is added by right click the slide and select “New”. Different one click “Home” then pick from the drop menu under New “Slide”.

Slides should be properly arranged and put them in good order. Drag and put them in order.
Add content as previously presented.
Using short, concise words and paraphrasing, guiding your audience
The presenter is to explain in detail the presentation.
Using the right words that describes, which you can fully explain during presentation, means that the subject matter is known by the presenter
For example, use “steps in nursing process” as a keyword in a PowerPoint, but explain

the process during the actual presentation.
Use bullet points not sentences.
Have many slides don't overcrowd

Adding elements will make presentations looks veryorganised.
Insert diagrams and charts by clicking "insert"
Inserting pictures and graphs engages the visual aspect of learning
Present your texts in bits not together.

Tips for Presenting Powerpoint

- To present PowerPoint, note the importance of the B key. (blanking key)
- When the B key known as blanking key is used during a presentation, it puts a blank black slide on the screen.
- Used in emergency if the wrong slide is mistakenly used.
- Press any other key for the presentation to continue.
- This is very important for people to know in presentation.
- The B key function only in presentation mode.
- Cannot be used even when editing slides.

The "B" key can be used to get the attention of the audience

It is good to pay attention to the speaker and not look at the screen.

- At the beginning admiration for the beautiful work done colours, graphics can make beginners forget that PowerPoint is only to aid the message.
- Many times it is best to turn the screen off to get the attention of the audience.
- Many times it is best to use the "B" button, blank the slides and talk to the audience
- The speaker usually gets back the attention after showing some blank slides.

- When the speaker wishes to send very important messages then the above is used. The attention of the audience will be on the speaker.
- **It is very important to** minimize the distraction of the screen.
- For example you have a contribution and you wish to discuss it, using the "B" key takes attention from the slide to the discussion.
- **The B key can also be used in changing from what you previously planned.**
- **If there is need to change present one and move to another one blank out the slides and move to a new one.** Use it as it is needed.
- The "W" key on the other hand during presentation gives a white blank.

Using the 'ALT-TAB' Keys

- Windows have many advantages one of which is the ability to run more than one program at the same time.
- It is no more necessary to exit from one program to get to another. Just use the "ALT-TAB keys
- Do not use the mouse use the keyboard command hold down the "ALT" key and while doing so press the "TAB" key.
- All available windows will come up. Keep pressing the "TAB" key until the wanted window shows up and then release the key.
- The window you need should come up
- In PowerPoint presentation mode, one can switch between screens by simply holding down the ALT key and pressing the TAB key once.
- One can switch back and forth between the first and last screens being used.

Using the Right Mouse Key

- Another tool that can be used during presentation is the right mouse key.
- The left key when pressed would advance the slides.

- The right key when pressed would make the slides to go back, jump and even allow drawing on slides.

Other Keys

- There are many other keys that perform control during powerpoint presentation. As follows:
- Page down key or space bar will advance slides during presentation.
- Pageup and backspace keys will allow one slide to go back during presentation. They just move you back one slide
- The functioning of the right mouse, depends on the software you are using. Actions that can be taken with the right is dependent on the type of software and how conversant you are with the software.
- You can experiment with the right mouse you may get what you want no matter which software you are using.
- **One can jump from the beginning to the last slide by pressing the END key.**
- Pressing the “HOME" key will jump you to the first slide of your presentation.
- Pressing down both right and left mouse for about two seconds jumps you to the first slide.
- **Exiting from presentation slides simply press the ESC key.**
- **Pressing the F1key gives a list of shortcuts** that can be used for presentation.

Use the Pointer and Pencil

- This is used to point to things during presentation to be noted by the audience.
- During presentation the mouse pointer is cleared up but can be restored by moving the mouse up and down. Locate the screen using the right key mouse that will allow activation of the pencil marker which can allow you to draw on the screen.

Special Tools

- A laser pointer is one of the special tools available to use during presentation.
- This pointer allows walking about the room and control your slides without having to stand by the computer keyboard.
- Lastly wireless mouse which is not better than the normal mouse.
- There are a lot of different kinds of mice and wireless controllers. Today, you can even buy wireless digitizing pads. Nevertheless, that feature alone may be worth the cost of the wireless controller.
- Questions
- Practical session 1 -30minutes of practice
- Practical session 2- preparation of given topic power-points presentation to teach student mates
- Learning Teaching Methods
- PowerPoint Presentation
- Overhead Projector
- Personal Computer
- Assessment
- Questions and Answer
- Preparation of a unit in the curriculum using PowerPoint, Practical Session:
- Presentation use of prepared PowerPoint to teach colleagues presentation use check list.

Module 3

Nursing Informatics

Time Frame –

- 8hours of Lecturer
- 4hours Theory and
- 4hours Practical

Learning Objectives

The learner at the end of this lecturers

1. Identify the functions in informatics nursing
2. Describe historical perspectives of nursing informatics
3. Identify the nursing informatics framework
4. List the components of practice in nursing informatics
5. Explain Nanda Terminology and other classifications

Content

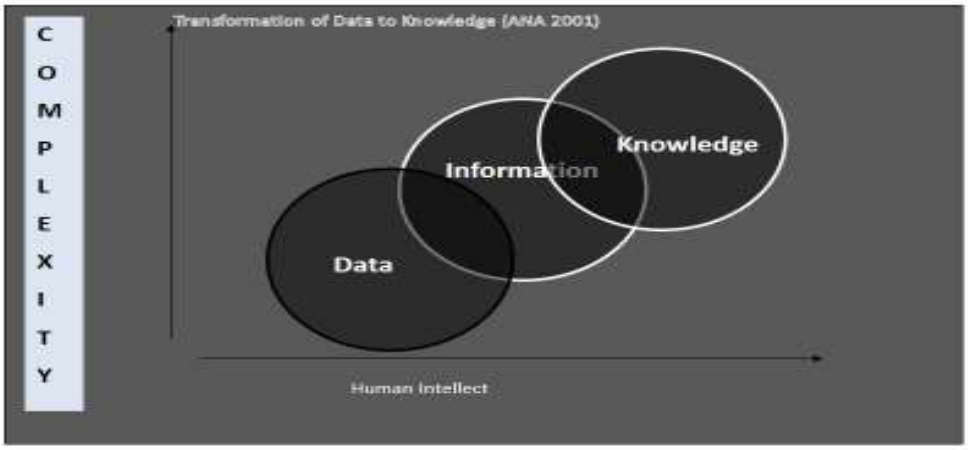
Nursing Informatics

- in US as well as in other parts of the world technology is becoming embedded in health care .
- Technology will result in improvement of the Health care delivery system as ascertained by experts in the system.
- Nurses, have many roles in health care delivery.
- They lead in the use of technology through their roles in patient care delivery.
- Informatics a technological term is practiced in the hospital by specially trained nurses.

Functions in Informatics Nursing

- Nursing practicing informatics become nurse informatics specialists.

- They have been working in health care organizations for many years.
- The American Nursing Association (ANA) defines the role of these specialists
- These nurses have a distinguished role different from other informatics as this is involved in patient care/
- ANA provided the current definition in 2001 as:
- 1. A specialty that integrates nursing science, computer science and information science to manage and communicate data, information, knowledge in nursing/patient practices.
- 2. They facilitates the integration of data, information, knowledge to support patients, nurses and other providers in their decision-making in all role and settings



- ANA gives five roles performed by these specialists
- Problem Solving
- Finding Solution
- Developing Solution

- Implementing the Solution
- Evaluating the Solution
- To perform these roles ,the nurse specialist will be the following:

  Process based manager Teacher, Business executive, programmer, Specialist, Manager Proponent/strategy developer, Internet developer,and many others to be performed by the nurse.

History

- In 1992 the Nursing informatics specialty was formed. How it will work was developed by the American Nurses' Association in 1994.
- These nurses were registered as nurse informatics for the first time in November 1995 by the American Nurses Credential Center through exam.

Nursing Informatics Framework

- Previously Schwirian, in 1986, had proposed a model and developed standards of nursing practice for nurse informatics.
- This was later taken over by ANA.

Components of Practice

- Data
- Information
- Knowledge

The three components:

- Data are discrete entities that are described objectively without interpretation
- Information is data that are interpreted, organized, or structured
- Knowledge is information that is synthesized so that relationships are identified and formalized.

- As data are transformed into information and information into knowledge, each level increases in complexity and require greater application of human intellect.
- For example. The collection from a patient of his vital signs , respiration temperature and blood-pressure – is a set of data.
- Collection of vital signs over a period put together and compared with normal is said to be information.
- When the blood pressure drops, the pulse rate is fast. Increase in respiration combined with high temperature in an elderly client who has a urethral catheter in situ is definitely not normal.
- The knowledge is knowing from the information, that the patient may have an infection and is in need of nursing and medical care.
- This will therefore be implemented by Nursing informatics specialists being a new technology to improve health care service. This is the goal to make all care work together and reduce money to be spent by patients

Project Management

- The informatics nurse is involved in project management which is used to enhance new services and bring out new technologies. The informatics nurse is part of the changes that is occurring in health care.
- Many successes have been recorded with these specialists as part of the care team.

the projects are planned by:

- identifying goals and objectives
- Identifying ways and means of achieving goals
- Getting resources
- Time of completion and adequate budgeting

- With proper planning the next stage is implementation.
- Implementation must follow strictly the plan and must not go off.
- In conclusion it must go through the evaluation stage to move forward to support and maintenance or go back to feasibility study stage

Human Factors Components

- Defining the term simply as the relationship that is found between machines and man. Is man happy using machines? Especially machines like computer, mouse or printers or training to use these equipment
- The informaticspecialists takes this aspect of human factors as standard of practice.
- Adequate nursing care will be provided if the standard is maintained.

Privacy-Confidentiality–Security

- The confidentiality of information of patient care is the responsibility of the nurse, as information about patient care is available in the electronic media and could be readily available to anyone.
- These medical record must be adequately stored.
- Privacy means that a client has the right to release health information they want to release about themselves.
- It protects the clients.
- Privacy protects information for the client, confidentiality and security address protection of the information itself.
- Confidentiality means the information requested by the client not to be shared and will not be shared.
- Security is a means by which data is secured by removing those things that will identify and using a code.

- Many ways have been developed.
- For example, removal of 19 idetificators such as name , address, telephone number, birth date, relative's name, employer's name.
- (Department of Health and Human Services (DHHS)
- Many times nurses provide the patient record which are kept electronically by them to other members of the medical team or to students for study only.

In Totality: Nursing Informatics

- Described as a specialized body of knowledge is both clinical and non clinical
- Ensures that quality care is provided and therefore increases the welfare of clients.
- Information is adequate on time and to the right client.
- Included in their practice is the aspect of human factor
- Privacy, confidentiality and secured data is carried out
- Ensures new ways of dealing with both new and old technology
- Works closely with other colleagues in this field.

Nursing Data Sets and Terminologies

- Nursing has developed terms and languages used in electronic health records in nursing practice.
- Technology advancement in nursing is rapidly occurring having an impact in documentation.
- ANA therefore set up a committee to come up with guidelines to ensure standard in nursing practice.

ANA Recognised Data Sets

- There are numerous data sets and nursing has set up data sets to work with in nursing practice
- These data sets ensures that the use of electronic health record by nurses are run efficiently and effectively.
- Set up by ANA.

Nursing minimum Data set

- The first data set is the Nursing Process (Foundation for nursing languages development 1972 (UHDDS), 1977,1985)
- This entails using the following languages:
- Nursing diagnosis, Nursing interventions and Nursing outcomes

NANDA Terminology

- Series of classification on the state of the ill patient to plan treatment.
- It is updated every 2 years the last updated is 2015-2017
- It is usually approved by a board after due evaluation by review committes.

Clinical Care Classification (CCC) Terminology

- The Clinical terminologies developed by Virginia Saba in 1991 as Home Health Care Classification (HHCC)
- Contains 176 nursing diagnostic categories in CCC of nursing diagnoses (2.0) taxonomy
- These categories are classified as expected/ actual outcome and qualified as Improved,- Stabilized, -Deteriorated.
- There are about 528 items
- Including 197 nursing interventions
- Coded according to ICD-10(WHO, 1992)

Nursing Interventions Classification System (NIC) Terminology

- Another classification is NIC where there are 514 Interventions.
- Divided into seven domains at the top are the abstract level thus: Physiologic-basic,-Physiologic-complex, -Behavioral , -Safety , Family, Health system, Community .

Nursing Outcomes Classification System (NOC) Terminology

- the next classification is NOC, about 330 outcomes is outlined here
- These outcomes contains, definitions, indicators, and measurement scale.
- Seven domains namely: Physiologic health, Psychosocial health, Health knowledge, Health behavior, Perceived health , Family health, Community health

Clinical Decision Support Systems

- Another classification is Clinical decision support system (CDSS) used in evidence based practice in nursing.
- CDSS allows nurses to match a client's challenge to a written computer application which can be used for client's care.
- May be used for practice or to support care outlined.

Nursing Informatics Contribution

- Nursing informatics specialist can assist in advancing the use of CDSS by nurses
- Consequently resulting in improvement in patient care outcomes.
- Assist in the training of students in clinical settings

Question and Answer

Quiz

Instruction: please circle your response for each question

1. Which year did the first informatics exam take place?

a) 1960

b) 1970

c) 1980

d) 1995

2. Function of nursing informatics except?

a) Project manager

b) Educator

c) Product developer

d) Dietician

3. One of the three main goals for every new technology are to enhance services, streamline the process, are…….

a) Keep track of who is not using the new system

b) Reduce learning needs of user

c) Reduce cost

d) Duplicate the old system

4. What is a clinical decision support system?

a) Computer software applications that match patient characteristics with a knowledge base to generate specific care recommendations

b) Telephone that provides patient information to health care team members

c) Screen monitor that displays maps of hospitals

d) Track-ball that allows selection of clinic appointments

5. Which is one of the ANA recognised nursing terminologies?

a) NANDA

b) SPSS Inc

c) PDA

d) ICD-9

6. Addressing the optimal placement of computer terminals in a patient room is an example of…….

a) Training

b) Education

c) Ergonomics

d) Activation

7. The term human factors describes the general relationship between..

a) Nurses and physicians

b) Nurses and their managers

c) Nurses ad patients

d) Humans and machines

8. Which means of protecting health information is authorized by the individual?

a) Voting

b) Privacy

c) Admitting

d) Storing

9. What is the sequence whereby data is transformed to knowledge?

a) Data, information, knowledge

b) Knowledge information, data

c) Information, knowledge, data

d) Data, knowledge, information

10. One single instance of vital signs- heart rate, respirations, temperature and blood pressure- is an example of which level of "transformation of data to knowledge ?"

a) Data

b) Information

c) Knowledge

d) Wisdom

e) Learning/Teaching methods

f) PowerPoint Presentation

g) Internet E-mail

h) Practical use of modern and various web pages including Google scholar on the Internet

i) Assessment

APPENDIX II

UNIVERSITY OF IBADAN

DEPARTMENT OF NURSING

QUESTIONNAIRE

Dear Respondent,

My name is Lawal Clara. I am a PhD student from Department of Nursing, University of Ibadan, Oyo State. I am conducting a study on the **OUTCOME OF INFORMATION TECHNOLOGY LITERACY TRAINING ON MULTIMEDIA TEACHING AIDS ADOPTION AND USAGE IN SCHOOLS OF NURSING IN OGUN STATE, NIGERIA.** This study is for academic purpose. Thank you so much for agreeing to take part in this training. I know you are busy, as all teachers are, and value your input highly. The following set of questions will help in getting all the information needed for this project; kindly patiently fill all areas as indicated. I will not release your individual answers to anyone.

Thank you.

MrsLawal Clara O.

SECTION A: Demographic Information

Instruction: Please tick (√) and fill the blank spaces as it is applicable to you.

1. 1. Sex : Male [ ] Female [ ]
2. Age: 20-40yrs [ ] 41-60 years and above [ ]
3. Marital status: Married [ ] Single [ ] Widow [ ] Separated [ ] Divorced [ ]
4. Religion: Christianity [ ] Islam [ ] Others (specify)……
5. Status: Chief Nurse Educator [ ] Asst. Chief Nurse Educator [ ]
   a. Principal Nurse Educator [ ] Senior Nurse Educator [ ]Nurse Educator [ ]
6. Years of teaching experience: 1-5yrs [ ] 6-10yrs [ ] 10yrs and above [ ]

7. Level of Nursing Education: Certificate [ ] Diploma [ ]BSc [ ]MSc [ ] PhD [ ]
8. Field of specialty: Nursing Science [ ] Health Education [ ]Others (specify)…….....

SECTION B: Multimedia Aid Availability

Instruction: **Tick(√) and add as applicable to your school**

S/N	Items	Available Number	Not available
9.	Computer		
10.	Projector		
11.	Internet Broadband		
12.	Digital camera		
13.	Scanner		
14.	Video equipment		
15.	Slides		
16.	Film strips		
17.	Electronic notice boards		
18.	Radio /Tape recorder		

SECTION C: Multimedia Aid Accessibility

Instructions: Kindly respond to these statements as applicable to you

S/N	Items	SA	A	D	SD
19.	I have inadequate knowledge about use of multimedia aids, although accessible to me				
20.	The multimedia aids are kept in the store though I have confidence in using it				
21.	My experience about the use of multimedia aids is inadequate				
22.	My training school find it difficult to pay for the airtime to use the multimedia aids				
23.	Power needed for the use multimedia aids is irregular				
24.	When I am ready to use the multimedia aids for my lectures another colleague may be using it				
25.	Multimedia aids are very expensive for my training school to purchase				

SECTION D: Indicate how skilled you are in using computer and multimedia teaching aids as below:

S/N	Items	High Skill	Fair Skill	Skill	No Skill
26.	Use of mouse with computer				
27.	Use of keyboard in the computer				
28.	Microsoft word processing for making notes of lessons				
29.	Microsoft excel for students marks				
30	Microsoft power-point to prepare lecture notes and presentations				
31.	Web publishing of publication on internet				
32.	Projector to project PowerPoint presentation				
33.	Video in preparing practical demonstration				
34.	Internet to prepare lesson notes, researches and downloading pictures				
35.	E-mail to give assignment to students				
36.	Informatics to prepare students forward practice with clients				
37.	Adobe Acrobat to convert PDF files				
38.	Flash to record notes of lesson or transfer soft copies to students				
39.	CD to record notes and prevent virus contamination				

SECTION E: Perceived ease use of multimedia aids

Instruction: Tick (√) the most appropriate option

S/N	Items	Yes	No
40.	There is a reliable network in my office and I make use of it		
41.	There are conducive classrooms available for the use of multimedia to teach		
42.	Multimedia equipment available for use and I use them		
43.	I use the electronic course content in the N&MCN curriculum?		
44.	I use multimedia teaching aids since I have good guidance and supports		
45.	My computer background encourages the use of multimedia aids		
46.	When multimedia aids are used in teaching they add quality to learning		
47.	I make use of multimedia aid to teach students informatics		
48.	I use Microsoft word to type my notes of lesson		
59.	I make use of PowerPoint to teach my students appropriately		
50.	I make use of internet as a means of getting information when forming my notes of lesson.		

SECTION F: Attitude Towards Adoption And Use Of Multimedia Teaching Technology

Instructions: Tick the most appropriate option

S/N	Items	SA	A	D	SD
*51.	Learning to use multimedia teaching aids is difficult				
52.	Learning to use multimedia teaching aids is an easy task				
53.	Multimedia teaching aids can make teaching easier				
54.	Using the multimedia aid is beneficial				
*55.	These multimedia aids are too expensive for adoption				
56.	One may however use them as it makes sense				
*57.	Educators should adopt multimedia teaching aids if they want to				
58.	I am positive towards the use of Multimedia Teaching aids				
*59.	Evidence is yet to show that multimedia aids improve learning outcome				
*60.	Multimedia aids can make teaching very difficult				

*negative questions

SECTION G: Adoption and Usage

Instruction: Kindly indicate in the questions below if you adopt and use the following multimedia teaching aids

S/N	Items	Adopt/ Use	Not adopt/ Not Use
61.	Will you adopt/use computer in classroom teaching		
62.	PowerPoint for lecture notes		
63.	Projector to project lectures		
64.	Video skills for presentation		
65.	Web publishing for publication		
66.	Internet to make lecture notes		
67.	Informatics		
68.	If organization provide funds for purchase		
69.	If the use of multimedia teaching aid will be beneficial?		
70.	If there be enough time to use them?		
71.	If multimedia teaching aids is available		

Appendix III

CHECKLIST OBSERVATION OF USAGE 20TH WEEK

		0	½	1	Total
	Prepares lesson using training power-point				
	Prepares power-point using adequate words and numbers on each line.				
	Teaches and understands multimedia				
	Explains very well using multimedia				
	Uses computer appropriately with words in big font				
	Uses projector appropriately				
	Colouring is bright and sound is adequate				
	Students have a good view of lesson				
	Lesson is bold and can be seen at a distance				
.	Control class appropriately				
.	Have personal computer				
.	Introduced informatics to students				
.	Setting up web publishing				
.	Uses internet to prepare lecture				
.	Has a working email address				

APPENDIX IV

CONSENT FORM

I, Lawal Clara, a PhD student of the Department of Nursing, University of Ibadan, Ibadan presently working on the topic **OUTCOME OF INFORMATION TECHNOLOGY LITERACY TRAINING ON MULTIMEDIA TEACHING AIDS ADOPTION AND USAGE BY NURSE EDUCATORS IN SCHOOLS OF NURSING IN OGUN STATE NIGERIA** hereby solicit your cooperation to participate in this ongoing research. This is a training research which will take some of your time. This is used for academic purposes only. You will be required to fill the questionnaire which is a bit long as frankly as you can and be in class for four weeks. Thank you.

CONSENT FORM

I, signature.----------

HEREBY GIVE MY CONSENT TO BE A PARTICIPANT AT THIS TRAINING, HAVING BEEN GIVEN ALL NECESSARY INFORMATION.

THIS IS FOR ACADEMIC PURPOSES.

THANK YOU

Appendix 6

MINISTRY OF HEALTH

DEPARTMENT OF PLANNING, RESEARCH & STATISTICS

ABEOKUTA, OGUN STATE, NIGERIA

NHDS/338/226 Date 16-01-2017

RE:"EFFECT OF INFORMATION TECHNOLOGY LITERACY TRAINING ON MULTIMEDIA TEACHING AIDS ADOPTION AND USAGE IN SCHOOLS OF NURSING IN OGUN STATE NIGERIA".

Notice of Research Exemption

This is to inform you that the activities described in the submitted protocol/documents have been reviewed by the State Health Research Ethics Committee, the activities described there-in meet the criteria for exemption and is therefore approved as exempt from SHREC oversight.

The State code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code. The HREC reserves the right to conduct compliance visit to your research site without previous notification.

Please note that, you are expected to share us the findings of your research work via rantioladeinde@yahoo.com and ogndprs@yahoo.com

O.Oladeinde

Dr. Ranti Oladeinde BSc, MBBS, MPH, PGDHMGT, FMCPH, MNIM.
Director, Planning, Research and Statistics
Secretary, State Research Ethics Committee