Journal of Information and Technology

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ISSN: 2617-3573

Stratford Peer Reviewed Journals and Book Publishing
Journal of Information and Technology
Volume 9||Issue 1||Page 13-31||April||2025|
Email: info@stratfordjournals.org ISSN: 2617-3573

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How to cite this article: **Musa, A. I. (2025). Teachers' Perception towards Utilization of Information and Communication Technology for Teaching Basic Technology in Chanchaga Local Government, Niger State.** ***Journal of Information and Technology*****, 9(1), 13-31.** https://doi.org/10.53819/81018102t4320

Abstract

The study was conducted to ascertain the perception and utilization of ICT tools in Chanchaga Local Government area of Niger state, Nigeria. Three research questions and three hypotheses guided the study. The target population for the study consisted of all Basic technology teachers in Chanchaga Local Government secondary schools. One hundred respondents completed the questionnaires used for data collection. Percentage and mean were used to answer research questions. Data collected were coded using statistical package for sciences version 20.0 for windows. The findings revealed that: (1) ICT tools were available in secondary schools for teaching Basic technology (2) Basic Technology teachers maked use of ICT tools for teaching Basic Technology (3) Basic Technology teachers perceived ICT tools to be useful for teaching Basic Technology in Chanchaga Local Government area of Niger state. Recommendation includes provision of ICT tools for training of teachers by the government to actualize the National Policy on Education (FRN. 2004). That computers and other equipment for the use of ICT for teaching introductory technology should be supplied by the government and so on.

Keywords: *Information and Communication Technology, Technology Curriculum*

1.0 Introduction

Information and communication technologies (ICTs) refer to technological tools and resources which are employed to communicate, create, disseminate and manage information. ICT is the emergence of tools of microelectronic and telecommunications that are used in the automatic acquisition, analysis, storage, retrieval, manipulation, management, control, movement, display, transmission, reception, and interchange of quantitative and qualitative data (Boritz, 2000; Cheta, 2003). Haddad (2002) divided ICT in education into three categories: instruments (TV, DVD, and computer), instructional (video and multimedia modules) and dissemination (TV broadcast. CD or Web), but emphasized that the choice of technology and the way it is used is partially determined by what is expected in terms of education, learning and teaching objectives. Many aspects in life are influenced by ICT such as business, science, entertainment and obviously, the education field. In education field, ICT assists students in their learning and teachers efficient in their teaching. In fact, it aids the teachers in doing the administrative works efficiently.

Information and Communications Technology (ICT) is becoming increasingly widespread, influencing many aspects of our social and work lives, as well as many of our leisure (Abedalaziz, Jamaluddin & Chin, 2013). ICT tools work as the platform for the teachers and the students to explore and enhance the teaching and learning process. In addition, ICT is seen as a skill for life, now as important as being literate and numerate (Simmons & Hawkins, 2009). This indicates that ICT is very crucial in the education system of a nation.

The development of ICT in the education system has gone through various developments (Isjoni, Ismail & Mahmud, 2008). Various implementations related to ICT have taken place in the education system such as the development of the e-curriculum in Nigeria. This is due to the changes that occur in the ICT as agreed by Simmons and Hawkins (2009) that ICT is an ever-changing subject. In fact, in near future, every student will have the access to a network in school through internet which serves as virtual learning platform that can be used by teachers, students and parents to share learning resources, run interactive lessons and communicate virtually.

To compete successfully in a competitive global economic environment, a highly skilled and educated workforce with aptitude and skills in the application of ICT is very essential. This makes knowledge and use of ICT central to education in the 21st century (Wolff and Mackinnon 2002). People need to be effective and efficient in the use of ICT for success in today's rapidly changing and highly competitive world which depends on such knowledge and skills; hence the concern for Africa to take the best advantage of the knowledge economy (Obanya 2004).

Nigeria, like many other countries around the world, has over the years sought to improve its education system by introducing reforms and making plans based on the education needs of the country, hence the development of Universal Basic Education (UBE). The broad aim is to give a solid foundation for life-long learning through the inculcation of appropriate learning-to-learn, self-awareness, citizenship and life skills (FGN 2003). With this focus, it can be concluded that beyond increasing access to education, ensuring quality is a key goal of basic education in Nigeria.

In the Nigerian educational system, basic technology is a subject that introduces students at the junior secondary schools level to the basic rudiments of technology. At the inception of the 6.3.3.4 system of education, it was called, "Introductory Technology" but currently, in the 9.3.4. system of Nigeria education, it is called "Basic Technology" As the name implies, basic technology combines so many of the skills subjects at their basic level from which students can make their choice of career in future such as wood work, metal work, painting, Building construction, Electrical /Electronics, computer, mechanics and so on. (Babafemi, 2000). The National Policy on Education (FRN, 2004) recommended basic technology as a way of life and the gate way to industrialization and it is accepted as a vehicle of productivity, social and economic development. Due to these rationales, it is important to utilize and employ the use of ICT tools in teachers' lives. The issue raised is whether the teachers perceived the use of ICT in the teaching of Basic Technology.

Perception is an attitude or understanding based on what is observed or thought, it is the process of using the senses to acquire information about the surrounding environment or situation. Perception and utilization of ICTs in Nigeria and African countries is generally increasing and dramatically growing. However, while there is a great deal of knowledge about how ICTs are perceived and used in developed countries, there is no much information on ICTs perception and utilization because it is being introduced into schools in developing countries in small quantities (Beukes-Amiss and Chiware, 2006). Looking at the developing countries according to these authors, there is generally limited access time per month using ICTs by both the

teachers and students, and even less time spent with reliable Internet access. It should be noted that availability of ICTs vis-à-vis access in term of ratio of teachers and students differs significantly. Despite this, the new and emerging technologies challenges the traditional process of teaching and learning, and the way education is managed. While information communication technology is an important area of study in its own right, it is having a major impact across all curriculum areas. Easy worldwide communication provides instant access to vast array of data, challenging assimilation and assessment skills (Fowowe, 2006). Rapid communication plus increased access to ICTs in the home, at work, and in educational establishment, could mean that learning becomes a truly lifelong activity- an activity in which the pace of technological change forces constant evaluation of teaching process itself which in so doing is increasing teachers perception of ICT use.

1.1 Statement of the Problem

The Millennium Development Goals Report (UN 2005) acknowledges that the use of ICT in education is yet to be adequately addressed in terms of teachers, curricula, teachers' support and teaching learning materials. Igbuzor (2006) noted that the process of learning and teaching did not lead to production of analytical, critical and engaging products; the teachers did not have the competence and skills to use ICT tools, and that the content of education in Nigeria is irrelevant to the use of ICT in teaching and learning.

Studies conducted in Nigeria have also shown clearly that there were low academic achievements among students in such basic technology Lawal, 1995; Aderinoye 2002, Afe, 2006). There were also proposals on how ICT can be deployed for effective acquisition of skills through the knowledge of basic technology (Haddad, 2002; Salawu, 2008). In ensuring effective use of ICT in educational systems, UNESCO (2004) identified a number of frameworks for setting ICT for education programmes. These include: policy and vision of ICT use in schools, technology and infrastructure, curriculum, pedagogy and content development, professional development, monitoring and supervision. Using these criteria, has Nigeria been able to recognize ICT roles in her educational policies and therefore committed to its practice and implementation, especially in the context of teaching skill related subject like basic technology. This study hopes to provide insights to the perceptions of teachers on the utilization of ICT in teaching basic technology. This is the gap the researcher hopes to fill.

1.2 Purpose of the Study

The main purpose of this study was to investigate the perceptions of basic technology teachers towards the utilization of ICT. Specifically the study sought to;

i. Find out the available ICT tools for teaching basic technology
ii. Investigate the level of utilization of ICT tools by basic technology teachers in Chanchaga local government area, Niger state.
iii. Examine teachers' perception on the use of ICT tools for teaching basic technology.

1.3 Research Questions

i. What are the available ICT tools for teaching basic technology?
ii. What is the level of utilization of ICT tools by basic technology teachers?
iii. What is the perception of teachers' on the use of ICT tools for teaching basic technology?

2.0 Literature Review

Meaning and Objectives of Basic Technology Curriculum

Education has remained an instrument of change and national development. It is a social process and the medium for the acquisition of relevant knowledge, skills and attitudes for

survival in a changing world. In the Nigeria education content, basic education as the foundation requires a sound knowledge of science and technology. This is not only because science and technology has a tremendous impact on all social institutions but also because science and technology teaching is virtually non-existent in our school (Danmole, 1998). Nigeria philosophy of education as contained in the national policy on education (FRN, 2004) based on the integration of individual into a sound, dynamic and effective citizen. Technology is application of knowledge to the practical aims of human life or to changing and manipulating the human environment. Technology includes the use of materials, tools, techniques, and sources of power to make life easier or more pleasant and work more productive (NICK WADDELL, 2013). Technology is the process of practically applying knowledge and using the resource matter, energy and natural phenomena to solve human problems making life easier (MDG, 2011).

Issa (2005) defined technology as the application of scientific knowledge into the field of engineering. It is the fruit of application science, the concrete expression of research done in a laboratory to meet human needs. Technology therefore means the ways people use their inventions and discoveries to satisfy their needs and desires. It involves practical engagement, that is, act of doing. Basic Technology is a subject that introduces students at the junior secondary schools in Nigeria to the basic rudiment of technology. At the inception of the 6.3.3.4.system of education, it was called "Introductory Technology" but currently in the 9.3.4 system of education it is called "Basic Technology" The National policy on Education (FRN, 2004) defined it as the aspect of education which leads to acquisition of practical and applied skills as well as basic scientific knowledge. It is also a subject that deals with the fundamentals of engineering and technology and its components include: Woodwork, Metalwork, Building construction, Electrical/Electronics, Computer, Mechanics, Technical Drawing and so on (Omiola, 2012).

Basic technology is a collection of learning experiences designed to expose students of certain occupations so that they can determine whether any of the occupations suit their interests' needs and ability. These subjects are however geared towards the provision of occupational orientation and exploration for vocational technical careers (Issa, 2005). Students at the pre-vocational level are supposed to know how to carry out minor repairs in the different aspects of basic technology thereby making themselves capable of being self-reliant to some extent upon graduation. The subject studied under basic technology includes auto-mechanics, building construction, and ceramics, plastics, rubber and information and communication technology and so on.

Nigeria depends heavily on importation of raw materials from abroad to keep our industries running, foreign experts are also invited to operate these industries. This dependency culture has tended to create a situation of hopelessness in our developmental efforts (Babafemi, 2000). The Federal Government on realizing the important role basic technology can play kin the industrialization of the country decided to introduce it into the school system and make it a core subject at the junior secondary school level.

The Nine (9) years Basic science and Technology curriculum is a restructuring and re-alignment of the revised core curriculum of primary science and the integrated science and introductory technology of the junior secondary school. Basic Technology has been introduced at lower and middle Basic level. The objectives of the new Basic Education Curriculum In science and technology are also spelt out thus to enable the learner:

a) Develop interest in science and technology
b) Apply their basic knowledge and skills in science and technology to meet societal needs

c) Take advantage of the numerous career opportunities offered by the study of science and technology and
d) Become prepared for further studies in science and technology (FRN, NPE, 2014).

In order to reduce ignorance about technology and help to lay a solid foundation for true national development; Basic Technology subject has been accorded a place in the school curriculum as a core subject like Mathematics and English Language.

The main objectives of teaching basic technology subject in Nigerian schools include:

a) To provide pre-vocational orientation for further training in technology
b) To provide basic technology literacy for everyday living and
c) To stimulate creativity (FME, 2004).

Looking critically at the objectives stated above, it would be impossible to teach this subject without a standard workshop, equipment and necessary tools to carryout practical activities in the schools. This is because the theory is minimal and largely consists of simple explanations and descriptions of how certain results are to be obtained with tools and equipment. However, for Nigeria students to be creative and sound in technology at the junior secondary school level, standard workshop is fundamental. Reason being that a workshop is a place where manual work of designing, manufacturing and repairing would be carried out. A standard workshop according to Mohammed (2010) should have at least a space of the size of a classroom, there must be at least two work benches for student to practice, there must be at least two tools racks or boxes, available tools should be in ratio 1:2 students and at least one lathe machine should be made available in the workshop.

The responsibility of every nation and every school is to provide opportunities for all to acquire technological literacy. This is in line with the goals of National Economic Empowerment and Development Strategies (NEEDS) (FRN, 2007). Teaching and learning are therefore to be facilitated by use of real life experiences through industrial visits, use of information and communication technology (ICT), instructional materials and other audio-visual aids. Curriculum implementation will depend on the availability of qualified teachers, equipment, teaching materials and opportunities for excursion. In order to attain the objectives of basic technology, the subjects studied includes woodwork, metal work, basic electrical/electronics, plastics, rubber, ceramics, building construction and technical drawing and so on.

Issa (2005) and Olaitan (1991) analyzed the basic technology curriculum. It was stated that the major shortcoming of basic technology is its shallow statement of the conditions for its implementation. The objectives are obviously inadequate, as they do not cover the broad range of objectives for pre-vocational studies. He added that the effective implementation of the basic technology curriculum is constrained by lack of adequately trained teachers. Andrew (2000) stated that the method of assessment and examination is inadequate; he noted that there seems to be no laid down standard for assessing practical work by the various state examination bodies. This negates the objective of basic technology which includes the acquisition of practical skills for everyday living.

Problems Associated with the Teaching and Learning of Basic Technology

Lawal (2000) noted that technology is a catalyst that can speed up the process of technology acquisition. Successive governments have been paying lip-service to technology education by establishing more technological institutions. However, the thing they have to show for their purported love for technology is the proliferation of polytechnics and colleges of technology. Many people are of the views that basic technology is not well taught in Nigerian secondary schools today (Nworji, 2000). UNESCO (2002) noted that the government has not done much in providing the needed fund for the purchase of equipment. The students also developed

nonchalant attitude towards the learning of basic technology in schools. Ignorance on the part of the administrations, teachers and students on its importance is also a problem.

Lawal, (2000) opined that the problem without technological and vocational education system is that no single part of it is adequately taken care of. The deteriorating global economy which has affected Nigeria in connivance with misplacement of priorities has prevented government from providing fund to adequately implement technological education programme at a result oriented level. He noted that the syllabuses are too wide, equipment not adequate and no enough qualified teachers. It is also, the syndrome of treating government property has no body's property that has seriously divested our economy to the extent that technology education has no pride place again. Lack of fund and inadequate trained technical manpower are some of the factors affecting the implementation of technological educational programme. Proper and adequate fund are not allotted enough for education in the budget of both State and the Federal. Lack of Basic technology workshops and other necessary tools and materials are parts of the factors contributing to poor performance of students in basic technology in Nigeria according to Ivowi (2000). Many scholars have been emphasizing the problems of non-availability of qualified teachers to teach basic technology subject in Nigeria. However, if there are qualified teachers and there are no standard workshops, no enough equipment and tools to use for practical activities by teachers and students the whole exercise would be in vain.

Issa (2005) noted that the greatest problem facing technical education programme in Nigeria is the source of teacher to teach technical subjects. In addition to qualified staff in every workshop, there should be workshop attendants. Onatola (2000) also noted that the government policy on technical education is good but the preparation is far below expectation. For example, preparation was not made in terms of infrastructural facilities, staffing, machinery, tools and training materials. The effect of this was the State inability to enroll students regularly for technical students. Abubakar (2000) observed that many technical colleges in the country lacks essential work tools, equipment and were they are available, no qualified teachers or manpower to handle them. Consequently, the teaching is done theoretically without instructional materials and this influences the teaching and learning process negatively. Babafemi (2000) examined student's performance in introductory technology. His findings reveal that inadequate supply of instructional materials has a negative effect on the teaching and learning of introductory technology. He further stated that lack of electricity is another factor affecting the teaching of introductory technology. Since most of the equipment imported for teaching the subject is powered by electricity and those in the rural schools have no electricity and those in urban schools do not often have stable power supply.

Concepts of Information and Communication Technology (ICT)

Information and Communication Technologies (ICTs) are often associated with the most sophisticated and expensive computer-based technologies. ICTs also encompass the more conventional technologies such as radio, television and telephone technology. While definitions of ICTs are varied, it might be useful to accept the definition provided by United Nations Development Programme (UNDP): 'ICTs are basically information- handling tools- a varied se of goods, applications and services that are used to produce, store, process, distribute and exchange information They include the 'old' ICTs of radio, television and telephone, and the 'new' ICTs of computers, satellite and wireless technology and the Internet. These different tools are now able to work together, and combine to form our networked world's – a massive infrastructure of interconnected telephone services, standardized computing hardware, the internet, radio and television, which reaches into every corner of the globe'.

Technology does not refer to only computer and Internet based technologies, but also to simple audio visual aids such as the transparency and slides, tape and cassette recorders and radio;

video cassettes and television; and film. These older and more familiar technologies are referred to under the collective heading of "analogue media" while the newer computer and Internet based technologies are called the "digital media". However, in today's world, with the increased convergence or blending of the engineering designs and with the coming together of the satellite and the computer, the dividing lines between these different media are becoming blurred and consequently, the way people define and refer to ICTs is also getting blurred.

Often, the definition of ICTs is also done in terms of "old" and "new" as if to distinguish between the analogue and digital. But what is "old and what is "new"? Livingstone (1999), in an extensive exploration of the idea of newness, has argued that the notion of "new" can either be seen with reference to the "newness of technology" or in the context of "what's new for society" about these media. Livingstone further argues that what is new for the western world is not necessarily so for the rest of the world. Within a social context, the introduction of radio or television may be as "new" as the introduction of Internet. While there is much euphoria about the ICTs, after more than half a century of research, social scientists are still skeptical about tall and ill-defined claims about potential societal changes that may follow a technological innovation. This means that "new" cannot merely be defined cither in terms of time and time scales or in terms of the technology innovation.

Teachers' perceptions greatly influence how teachers integrate technology in the classroom. Palak and Walls (2009) conducted a mixed study to investigate whether teachers who frequently integrate technology and work at technology-rich schools shift their beliefs and practices toward a student-centered paradigm. The results showed that their practices did not change; neither student-centered nor teacher-centered beliefs are powerful predictors of practices. However, teachers' attitudes toward technology significantly predict teacher and student technology use, as well as the use of a variety of instructional strategies.

Sang, Valcke, Braak, and Tondeur. (2010) focused on the impact of Chinese student teachers' gender, constructivist teaching beliefs, teaching self-efficacy, computer self-efficacy, and computer attitudes on their prospective ICT use. The findings confirmed the results of the study by Palak and Walls (2009) that the strongest predictor of future ICT use were teachers' attitudes toward it. In addition to the influence of teacher attitudes, Sang et al. (2010) further indicated that pre-service teachers with highly constructivist teaching beliefs have stronger intentions to integrate technology into their future teaching practices. Furthermore, more confident pre-service teachers were more capable of and interested in using computers in real classrooms. Thus, although teachers' attitudes towards ICT use were found to be the strongest predictor of technology integration, the impact of their beliefs and confidence in using ICT should not be disregarded either. Internal variables can partially explain the success of technology integration in the classroom. However, the influence of these variables may change after participation in technology preparation courses or programs.

Abbott and Faris (2000) examined pre-service teachers' attitudes toward the use of computers before and after a semester-long technology literacy course. The results showed that positive attitudes toward computers increased after the course because of the instructional approaches, meaningful assignments requiring technology, and supportive faculty. Thus, the authors claimed that teacher education programs should teach preservice teachers not only how to use hardware and software, but also how to incorporate computers into their teaching strategies and activities. The authors also noted that small groups and collaborative learning are the most appropriate when introducing new hardware and software because more advanced and experienced teachers can assist those who need more technology learning support.

Another similar study was conducted by Doering, Hughes and Huffman (2003), who analyzed pre-service teachers' perspectives regarding ICT in their future classrooms before and after

participation in a teacher preparation program. Prior to taking the preparation courses, teachers were doubtful about the utility of ICT in the classroom, implying that they would closely examine and consider technology integration, rather than blindly incorporate it into their teaching practices. After completing the courses, their doubt had transformed into more positive sentiments. The teachers had a better understanding about ICT use in the classroom. Although the teachers confronted other issues such as technology availability, accessibility, professional support, and classroom management, their perceptions about technology's role had changed. They were more likely to believe that technology can assist in learning and to recognize its importance.

Serhan (2009) and Chai, Koh and Tsai (2010) also investigated pre- service teachers' beliefs about the use of computer technology and the effectiveness of ICT courses. The results of both studies indicate that after participating in courses, pre-service teachers recognized the importance of technology integration into their curricula and believed that ICT use would enhance student learning. They felt that such courses prepared them to apply ICT in the future, and their abilities to select, evaluate, and use a variety of technological resources improved. More specifically, Chai, Koh and Tsai (2010) found that ICT courses with direct instruction on the use of technological tools through the technology enhanced lesson (TEL) approach helped teachers learn how to use technologies as supporting tools in order to enhance their teaching and student learning. Consequently, the pre-service teachers viewed the preparation course favorably. It is worth exploring how the ICT preparation courses or programs change teachers' intentions and actions.

Choy, Wong and Gao (2009) conducted a mixed study to examine the intentions of pre-service teachers before and after a technology preparation course. Their intentions were then compared with their actions related to technology integration during their teaching. Confirming previous results from Doering, Hughes and Huffman (2003), the findings showed that their intentions became significantly more positive as a result of increased pedagogical knowledge. Nevertheless, these teachers were not able to translate the positive intentions into actual teaching, largely due to unfamiliar school environments. Based on these results, Choy, Wong and Gao (2009) concluded that teacher education programs need to increase awareness of the benefits of integrating technology into student-centered learning approaches, and provide pedagogical knowledge related to student-centered learning as well as technology integration strategies. Beyond the impact of preparation courses on teacher perceptions and attitudes,

Vannatta and Beyerbach (2000) reported increased proficiency in technology applications and instructional methods. It was found out that a significant increase existed in technology integration for both preservice and in-service teachers after participation in a preparation course. After the course, teachers were able to incorporate a constructivist view of technology integration into their instruction in order to engage students in meaningful learning. Qualitatively, the pre-service teachers reported great benefits from the use of technology in the classroom after the course. The study concluded that simply teaching basic ICT skills is inadequate if teachers are to constructively integrate technology constructively into their instruction. More emphasis should be placed on advanced skills in teacher education programs in order to provide teachers with authentic opportunities to experience and develop lessons that integrate technology in a meaningful context. The findings also encourage collaborative learning in technology- related assignments.

Information and Communication Technology Tools are examined in the following ways:

Delivery systems: Based upon their characteristics, media technologies can be grouped into two categories, namely, synchronous and asynchronous. Synchronous media require all participants to be together at the same time even though in different locations. Asynchronous

ICTs allow for participants in the learning process to be at "different times" and "different places" as described in the Table 1;

Table 1: Types of ICT Tools used in Education

Synchronous Media	**Asynchronous Media**
Audio –graphics Audio conferencing Telephone conference Broadcast radio and television Teleconferencing Computer conferencing such as chat and internet telephony.	Audio and video tapes and CD's Email Computer file transfers Virtual conferences Multimedia products, off line Web based learning formats

Source: www.unesco.org/../unit-13pdf

Types of Media /ICT Content: Just as we can divide ICT technologies into two types, educational content is also categorized into two different types of educational content general awareness and instructional content. Table II, describes the different features of educational and instructional content.

Table 2: Types of Educational Content

Educational	Instructional
Broad audiences Awareness orientation Nature of learning is Broad, multidimensional, even incidental Process and summative methods	Clearly defined target Enrichment Clear objectives Target related Evaluation critical, through formative.

Source: www.unesco.org/../unit-13pdf

When a decision is taken to use ICTs for educational purposes, we must be able to define and describe for what purpose the content will be used and also be very clear as to what delivery system we are going to use. Such a decision should not be based on the technologies but on the conditions and contexts in which it seeks to use the ICTs; e.g. access to media by the learners, etc. Factors that will determine the choice of ICT use and of the content are important. It should ensure that there is adequate reach and access.

ICT in education is considered in current thinking as: ICT education, ICT supported education, and ICT enabled education. ICT Education is the most common understanding of the field of ICTs in education. Essentially, it refers to the creation of human resource to meet the IT needs of the knowledge economy. In developing countries like Nigeria, each state is trying to create a pool of manpower to address job opportunities in- computers-hardware and software, creating and training people in computer engineering. Very often, an ICT in Education policy of a government describes the steps by which computers will be placed in schools, how teachers

and students will be provided the basic computer programming skills to cater to the growing job market in computer based technologies.

ICT Supported Education: A large number of distance education universities and programmes use ICT to support the print content that they deliver to students. These include broadcast audio and video such as radio

- **Interactivity**: Interactivity is the way in which a person can relate to the content, go forward and backward in the content, start at any point depending upon prior knowledge instead of always in a sequential way.
- **Low per unit cost**: Per person, ICTs reduce the cost of education from very high to very low.
- **Distance and climate insensitive:** It does not matter where you are, or how the weather is, you can still access and learn from ICTs.
- **Can serve multiple teaching functions and diverse audiences:** ICTs, especially the computer and Internet based can be useful in drill and practice; to help diagnose and solve problems, for accessing information and knowledge about various related themes.
- **High speed delivery, wide reach at low cost:** There is instant delivery of information.
- **Uniform quality:** If content is well produced and is of good quality, the same quality can be delivered to the rich and the poor, the urban and the rural equally and at the same low cost.

Assist students in accessing digital information efficiently and effectively

As Brush, Glazewski and Hew (2008) have stated, ICT is used as a tool for students to discover learning topics, solve problems, and provide solutions to the problems in the learning process. ICT makes knowledge acquisition more accessible, and concepts in learning areas are understood while engaging students in the application of ICT.

Support student-centered and self-directed learning

Students are now more frequently engaged in the meaningful use of computers (Castro Sánchez and Alemán 2011). They build new knowledge through accessing, selecting, organizing, and interpreting information and data. Based on learning through ICT, students are more capable of using information and data from various sources, and critically assessing the quality of the learning materials.

Produce a creative learning environment

ICT develops students' new understanding in their areas of learning (Chai, Koh and Tsai 2010). ICT provides more creative solutions to different types of learning inquiries. For example, in a reading class, e-books are commonly used in reading aloud activities. Learners can access all types of texts from beginning to advanced levels with ease through computers, laptops, personal digital assistants (PDAs), or iPads. More specifically, these e-books may come with some reading applications, which offer a reading-aloud interface, relevant vocabulary-building activities, games related to reading skills and vocabulary acquisition, and more. Therefore, ICT involves purpose designed applications that provide innovative ways to meet a variety of learning needs.

Promote Collaborative Learning in Distance-Learning Environment

Koc (2005) mentioned that using ICT enables students to communicate, share, and work collaboratively anywhere, any time. For instance, a teleconferencing classroom could invite students around the world to gather together simultaneously for a topic discussion. They may have the opportunity to analyze problems and explore ideas as well as to develop concepts. They may further evaluate ICT learning solutions. Students not only acquire knowledge

together, but also share diverse learning experiences from one another in order to express themselves and reflect on their learning.

Offer More Opportunities to Develop Critical (Higher-Order) Thinking Skills

Based on a constructive learning approach, ICT helps students focus on higher-level concepts rather than less meaningful tasks (Levin and Wadmany 2006). McMahon's study (2009) showed that there were statistically significant correlations between studying with ICT and the acquisition of critical thinking skills. A longer exposure in the ICT environment can foster students' higher critical thinking skills. Thus, schools are strongly advised to integrate technology across all of the learning areas and among all learning levels. Where this is done, students are able to apply technology, to the attainment of higher levels of cognition within specific learning contexts.

Improve Teaching and Learning Quality

As Lowther, Inan, Strahl, and Ross (2008) have that there are three important characteristics are needed to develop good quality teaching and learning with ICT: autonomy, capability, and creativity. Autonomy means that students take control of their learning through their use of ICT. In this way, they become more capable of working by themselves and with others. Teachers can also authorize students to complete certain tasks with peers or in groups. Through collaborative learning with ICT, the students have more opportunity to build the new knowledge onto their background knowledge, and become more confident to take risks and learn from their mistakes.

Serhan (2009) concluded that ICT fosters autonomy by allowing educators to create their own material, thus providing more control over course content than is possible in a traditional classroom setting. With regard to capability, once students are more confident in learning processes, they can develop the capability to apply and transfer knowledge while using new technology with efficiency and effectiveness. For example, in an ESL listening and speaking class, students may be asked to practice their pronunciation using an online audio dictionary. They are required not only to listen to the native pronunciation from the dictionary, but also to learn the definitions and examples of a new vocabulary item. They then have to make a recording of their own pronunciation and provide examples of how this new word is used in context. Before completing this task, they have to know which browser to use in order to search a suitable online audio dictionary. They will have to browse several online dictionaries, and select the one that best meets their learning needs.

In addition, finding good software to record their voice is another prerequisite for these learners. Therefore, the whole learning process enriches students' learning skills and broadens their knowledge beyond what they already know. By using ICT, students' creativity can be optimized. They may discover new multimedia tools and create materials in the styles readily available to them through games (Gee 2007, 2011), CDs, and television. With a combination of students' autonomy, capability, and creativity, the use of ICT can Improve both teaching and learning quality.

Support Teaching by Facilitating Access to Course Content

Watts-Taffe, Gwinn, and Horn (2003) found that teachers can act as catalysts for the integration of technology through ICT. If the encouragement, equipment, and necessary technological support are available from institutes for the teachers, developing an ICT class will be easier for them. The main responsibilities of these teachers will be changing their course format, creating and explaining the new assignments, and arranging for the computer lab through their technology learning specialists or assistants. In sum, as Reid (2002) has indicated, ICT offers

students more time to explore beyond the mechanics of course content allowing them to better understand concepts. The use of ICT also changes the teaching and learning relationship.

Based on the findings of Reid's study, teachers reported that the relationship between teacher and learner is sometimes reversed with regards to information technology. This relationship boosts students' confidence when they are able to help teachers with technical issues in the classroom. ICT changes the traditional teacher-centered approach, and requires teachers to be more creative in customizing and adapting their own material. While ICT is changing teaching and learning for the better in several ways, the existing literature has also identified some barriers.

Source: www.unesco.org/../unit-13pdf

Perception of teachers on use of ICT

Teachers perceived ICT use to be of great importance to themselves, their teaching and their students' learning, according to the empirical evidence of previous studies (Cox, Preston and Cox, 1999), teachers are more likely to have a positive attitude to the use of ICT in the classroom. In the review of literature, a number of factors which will contribute to teachers' perception to the use of ICT were identified. Some of these factors are given in Table 1.

Table 3 Positive and Negative Factors Influencing Perception and Utilization of ICT Tools

Positive factors	Negative factors
Makes my lessons more interesting	Makes my lessons more difficult
Makes my lessons more diverse	Makes my lessons less fun
Has improved the presentation of materials for my lessons	Reduces pupils' motivation
Gives me more prestige	Impairs pupils' learning
Makes my administration more efficient	Restricts the content of the lessons
Gives me more confidence	Is not enjoyable
Makes the lessons more fun	Takes up too much time
Enhances my career prospects	Is counter-productive due to insufficient technical resources

Source: Cox, Preston & Cox (1999).

Teachers' attitudes to many of these factors will depend upon how easy they perceive using ICT to be on a personal level as well as for teaching in the classroom. According to Davis, Bagozzi, & Warshaw (1989) technology acceptance model shown in Figure 1, the more positive the responses to the above factors of perceived usefulness and perceived ease of use, then the more positive the attitudes of teachers will be to the use of ICT and the more likely they will be to use ICT in their teaching.

Additionally, there are a number of factors that can be identified which relate to the perception and utilization of ICT tools. This case is for an experienced practicing ICT user. The Impact project (Watson, 1993) identified a wide range of skills and competencies which teachers felt they needed in order to find ICT easy to use. Some of these are given in Table 4.

Table 4: Positive and Negative Factors Influencing Perceived Ease of Use

Positive factors	Negative factors
Regular use and experience of ICT outside the classroom	Difficulties in using software/hardware
Ownership of a computer	Need more technical support
Confidence in using ICT	Not enough time to use ICT
Easy to control the class	Is too expensive to use regularly
Easy to think of new lesson ideas	Insufficient access to the resources
Can get help and advice from colleagues	Restricts the content of the lessons

Source: Cox, Preston & Cox, (1999).

Appraisal of the Literature Reviewed

Researchers like, Issa (2005), MDG (2011), Mitcham (1994), Sellars (1962), FEM (2004), Olaitan (1991) all worked on reasons for teaching technology, and content of basic technology curriculum, while Lawal (2000), Nworji (2000), UNESCO (2002), Issa (2005), Abubakar (2002) and Babafemi (2000) investigated problems associated with the teaching and learning of Basic Technology. Their findings revealed that there are no instructional materials, lack of basic technology workshops, inadequate supply of tools and other facilities, nonchalant attitude towards the learning of basic technology by students, lack of stable electricity, among others. The present study examined teachers perception towards information and communication technology which is in agreement with the submission of Palak and Walls (2000), Sang et al (2010), Abbot and Faris (2000), Doerung Hughes and Hufman (2003), Serhan (2009), Chai Koh and Tsai (2010), Choy, Wong Gao (2009), VanattaBeyerbach (2000). That Worked on teachers' perceptions towards the use of ICT, the result showed positive attitude towards ICT use in the class.

3.0 Methods

This is a descriptive study using the survey method to systematically describe the facts, qualities, and characteristics of given population, events or area of interest as factually and accurately as possible. The method was adopted because it is a method used in studying behavior whereby the researcher attempts to determine the frequency of occurrences, the distribution of and the relationship among a variety of variables. The population for this study consisted of all teachers in secondary schools in Minna, Niger State. The target population comprised of secondary schools teachers in Chanchaga local government area, Niger state. Twenty secondary schools were randomly selected for the study. A total of One hundred teachers were also randomly selected for the study.

Researcher-designed questionnaire titled "Questionnaire on Teachers' Perception on the Use of ICT" "QTPUICT" was used for gathering data over a large number of respondents within a relatively short period. The questionnaire contained two sections. Sections A, and B. Section A centered on the teachers' biographical information, it contained information on the respondents' school. Section B of the questionnaire investigated the perception of basic technology teachers towards the Utilization of ICT in Chanchaga Local Government.

The research instrument was validated by the researcher's supervisor and three other lecturers in the Department of Educational Technology for scrutiny, necessary suggestions and corrections.

A letter of introduction was taken from the Institute of Education to the authorities of the schools concerned. The researcher personally administered the questionnaires to basic technology teachers in their respective schools.

Stratford Peer Reviewed Journals and Book Publishing
Journal of Information and Technology
Volume 9||Issue 1||Page 13-31||April||2025|
Email: info@stratfordjournals.org ISSN: 2617-3573

The data obtained from the administration of the researcher- designed questionnaire were subjected to descriptive statistics. The descriptive analysis (percentage and mean) were used to answer research questions. Data collected were coded using Statistical Package for Social Sciences (SPSS) version 20.0 for windows.

4.0 Data Analysis and Results

This chapter presents the analyses and interpretation of data collected from the questionnaire administered on teachers. The results of the survey are presented in a descriptive format supported by presentations of tables.

Data Analyses and Interpretation

The analyses of data obtained in respect of the research questions are presented in a descriptive format.

Analyses of Research Questions

Research Questions 1: What are the available ICT tools for teaching basic technology?

Table 5: Available ICT tools for Teaching Basic Technology

S/N	QUESTION	AVAILABLE	NOT AVAILABLE
1.	Computer System	60%	40%
2.	Internet Facility	10%	90%
3.	CD-rom	25%	75%
4.	E-mail Facility	10%	90%
5.	Fax	5%	95%
6.	Intercom / pbx	5%	95%
7.	Telephone	35%	65%
8.	Digital Projector	10%	90%
9.	Digital Video Recorder	10%	90%
10.	Digital Printer	30%	70%
11.	Scanner	10%	90%
12.	Closed Circuits Tel.	5%	95%

Table 5 revealed that 60% of the total respondents answered agreed that computer systems are available in their schools for teaching basic technology while the remaining 40% disagreed, that computer systems are not available in their schools. The table further reveals that internet facility, e-mail facility, digital projector, digital video recorder and scanner have 10% availability each and 90% non-availability each in the selected schools. CD-ROM has 25% availability and 75% non-availability in the selected schools. Fax, intercom/PBX, and Closed circuit television all have 5% (5) availability each and 95% (95) non-availability each in the selected schools. Telephone has 35% (35) availability and 65% (65) non-availability in the selected schools. Digital printer has 30% (30) availability and 70% (70) non-availability in the selected schools.

Research Question 2: What is the level of ICT use by basic technology teachers?

Table 6: Level of ICT use by Basic Technology Teachers

ICT Resources	Never	Rarely	Sometimes	Always
Computer Systems	40%	10%	25%	25%
Internet Facility	5%	20%	15%	10%
CD-rom	65%	20%	15%	0
E-mail	50%	25%	5%	10%
Fax	90%	10%	0	0
Intercom/PBX	70%	10%	15%	5%
Telephone	30%	15%	20%	35%
Digital Projector	55%	35%	10%	0
Video Recorder	65%	20%	15%	0
Printer	60%	5%	10%	25%
Scanner	75%	20%	5%	0
CCTV	95%	5%	0	0

Table 6 revealed that 40% of the teachers stated that the computer systems were never used in their schools, 10% used it rarely, and 25% used it sometimes while 25% stated that it was always used in their schools. Results also showed that 55% of the teachers stated that the internet facility was never used in their schools, 20% stated that it was used rarely, 15% stated that it was sometimes used while 10% used it always. 65% never used the CD-ROM, 20% used it rarely, 15% used it sometimes, and none of the teachers used it always. Findings further revealed that 50% never used E- MAIL for educational purposes, 25% used it rarely, 15% used it sometimes while 10% stated that they used it always. Additionally, 90% (90) never used the FAX, 10% (10) used it rarely, and none used it sometimes or always. Findings revealed also that 70% of the teachers stated that Intercom/PBX was never used in their schools for administrative purposes, 10% used it rarely, and 15% used it sometimes, while 5% used it always. Findings indicated that 30% never used Telephone for administrative duties, 15% used rarely, 20% used it sometimes while 35% of the teachers indicated that it is used always.

Majority 55% never used the projector, 35% used it rarely, and 10% indicated using sometimes, and none used it always. Most 65% never used a digital video recorder for administrative duties, 20% (20) used it rarely, 15% used it sometimes while none used it always. Findings also revealed that 60% (60) never used the printer for administrative duties, 5% used it rarely, and 10% used it sometimes while 25% (25) of the teachers used it always. An additional 7 5% never used scanner, 20% used it rarely, 5% used it sometimes while none used it always. Most 95%, indicated that they never used a closed circuit television (CCTV), none used it rarely or sometime while 5% used it always. The implication of the results is that the school administrators have very poor exposure and awareness to ICT resources.

Research Questions 3: What is the perception of teachers' on the use of ICT for teaching basic technology?

Table 7: Perception of Teachers' on the Use of ICT for Teaching Basic Technology

Teacher's perceptions		SA	SD	N
1.	1 am active in the use of ICT in the classroom	21.7	13.6	56.3
2.	I make allowance for ICT use	15.5	17.8	57.9
3.	I consider ICT useful for learning	9.1	26.2	58.9
4.	I use computers at home if they so wish	14.2	25.6	55.0
5.	ICT is not relevant to teaching	9.1	27.8	57.6
6.	I use ICT only for personal purposes	26.6	9.1	58.9
7.	I use ICT for professional purposes	21.7	12.0	59.9
8.	I do not feel threatened with the use of ICT	10.7	24.3	57.6
9.	I feel inadequate in using ICT	20.4	17.8	57.0
10.	I seek out ideas about ICT always	20.4	13.9	57.0
11.	I make learning activities with ICT	26.5	10.4	56.3

Table 7 revealed that 21.7% strongly agreed that teachers are active in the use of ICT in the classroom, 13.6% strongly disagree while 56.3% are neutral. Also, 15.5% strongly agreed that they make allowances for ICT use, 17.8% strongly disagree while 57.8% are neutral. More so, 9.1% of the teachers consider ICT useful for learning. 21.7% use ICT for professional purpose. The implication of the study is that teachers do not perceive ICT to be useful for teaching basic technology as most of them are neutral and don't make use of ICT resources for teaching Basic Technology.

Summary of Findings

i. ICT resources were available in secondary schools for teaching Basic Technology in secondary schools in Chanchaga Local Government area, Niger state.
ii. Basic Technology teachers made use of ICT facilities for teaching secondary Schools students in Chanchaga Local Government area, Niger state.
iii. Basic Technology teachers perceived ICT resources to be useful in Chanchaga Local Government area, Niger state.

4.0 Discussions

The educational system is undergoing changes occasioned by socio- economic, political and technological changes in the external environment. Information and Communication Technology facilities should be provided for efficient management of school system. Investment in ICT is indispensable considering the relationship between economic development and effective use of ICT. Howell and Lundall (2000) emphasized that the effective use of ICT in a country impacts strongly on the competitiveness of the economy within the global market place as well as the ability of the governments to deliver on their social goals. The educational system is already facing numerous challenges ranging from inadequate infrastructure for effective teaching and learning to poor quality teachers. This brings the issue of the extents of the use of ICT in administrative and managerial duties of the principal will receive adequate attention. In 1987, the then Minister of Education inaugurated a national policy on computer education Committee to enable the country to catch up with the rest of the world and to be ready to enter into twenty first century with them (Ajelabi, 1997). More than twenty years after, Nigeria cannot claim to have made meaningful progress in the use of ICT in the educational system especially at secondary level. Policy formulation is not the problem of Nigeria but rather the implementation at the various levels of educational system. Inadequate funding, corrupt practices at high levels, sudden and frequent changes in governments, and a

host of other problems are strong forces militating against the success of ICT involvement in our school system.

5.0 Conclusion and Recommendations

The conclusion that could be drawn from the results obtained from this study is that ICT facilities are available for teachers in Chanchaga local government secondary schools and the teachers have positive perception towards its use.

Based on the major findings, the following recommendations were made:

1. Government should provide ICT for training of teachers.
2. Teachers should be encouraged to use ICT so as to change the way they perceive ICT.

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