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Equity and Quality in ICT Utilization in Education

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Abstract: This paper examined issues of equity and quality in information and computer technologies in the Nigerian education system. Subsequently, matters pertaining to equity and quality education were discussed. It was observed that equity has to do with the fact that quality education is provided for students through adequate provision and equitable distribution of ICT facilities and resources to teachers and students, provision of training services, equitable provision of electricity, internet and web services in schools in the urban and rural areas through accessible roads. Similarly, issues of equity and quality through ICT utilization in education were examined. It was observed that if social justice is to be achieved in terms of equity and quality of educational opportunity and services, the availability and accessibility of ICT materials is imperative for both teachers and students. The role of ICT in improving the quality of education was explored. Factors militating against ICT utilization in Nigeria were also examined. Finally, implementation issues in ICT utilization in Nigerian schools were explored and it was observed that the problem of implementation emanating from the government has been the major plague impeding on proper establishment of equity which has culminated in poor quality of education in the country. Based on these issues, one of the recommendations is that government should provide adequate funds into the education system to ensure equitable distribution and utilization of ICT facilities, for quality at all levels of education in the country.

Keywords: Equity, Information and computer technologies, Quality, Utilization, Education

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I. Introduction:

The advent of ICT has turned the world into a global village as it has influenced all facets of life, including education with diverse innovative technologies invading the classroom teaching and learning processes. Subsequently, a lot of interest is geared towards how computers and other ICT facilities can best be harnessed to improve the efficiency and effectiveness of education at all levels of education. One has to be computer literate to meet with the challenges of life. Adekunle & Caleb (2015) observe that the quest for viable technological advancement and innovation in information technology necessitated the establishment of National Information Technology Development Agency (NITDA) by the Federal Government of Nigeria. The Federal Government of Nigeria started the implementation of its ICT policy in April 2001 till date. After 20 years, one observes that the country is still lagging behind in the area of ICT. Specifically, one of the policies which stipulated that ICT will be integrated into the mainstream of education and training is yet to be fully achieved especially in the area of operational teaching and learning processes in secondary school.

Ramirez, De la Torre and Pacheco (2016) define equity is as an act of social justice implemented by the state by way of social policy and is aimed at ensuring quality. That is, the education system must be able to provide access, grant opportunities, and permanently satisfy users with services resources, educational processes and products. This supply must be available for the entire population to educate. According to them, equity that has to do with how the system facilitates access to opportunities (in) and permanent satisfaction (by) services, resources, educational process and produce offered by resulting in quality in education. Therefore, quality in education has to do with equal distribution of resources and implementation processes. It ensures that education benefits are shared equally to all. Their results tend to reduce inequalities and social injustice resulting in equity. Equity, therefore refers to the equitable access individuals and institutions have to quality ICT resulting in quality education for children of the poor and the rich, including those from the rural and urban area. According to Thompson & Thompson (2018) quality in education aims at providing quality higher education for the citizenry and making the graduates more competitive so that they can be absorbed into the labour market.

Consequently, a quality education system as evidenced by equity, that is to say, the distribution of resources are the application of suitable processes so that the results actually tend to reduce inequality.

UNESCO (2009) defines ICT as the system of technologies, tools and devices that are used to transmit, process, store, create, display, share or exchange information by electronic means. The broad definition encompasses a wide range of technologies such as computers, and its peripherals, video, radio, television, compact disc (CD), digital video disk (DVD), telephone, personal digital assistants (PDA), digital cameras, satellite systems, network hardware and software as well as equipment associated with these technologies such as video conferencing, emails, web logs (blogs), and social network (such as facebook friendsters, my space and twitters).Okai (2019) states that information and communication technologies are computer based tools, they are electronic technologies used for information processing, storage and retrieval. These include computers, word processing, payroll software, separate system software, satellite and internet communication, CD-ROM, projectors, scanners etc. They are those devices, equipment, machines, tools and instruments used to promote teaching and learning, research and administrative functions.

According to Akubuilo, Nnam & Ugo (2021) utilization of ICT facilities in teaching refers to the method of using ICT strategies in improving the value and practice of teaching in secondary schools. Utilization of ICT facilities involves various methods which include systematized feedback, computer-based operation/network, video conferencing and audio conferencing, internet and computer assisted instruction. It has to do with the arrangement and circulation of instructional content and materials through electronic teaching in order to improve learning and communication at all level. Hence, the utilization of computers and internal service must be available for students at all levels of secondary school education.

This paper sought to find out whether there is equity and quality at all levels of education in Nigeria through the utilization of information and communication technologies by teachers and students in the classroom teaching and learning processes.

II. Issues of equity and quality in education

According to Akubuilo, Nnam and Ugo (2021), equity has to do with the fact that information and communication technologies facilities are provided or made available for all students. It also deals with the fact that teachers/students are trained to use these facilities as the teaching and learning experiences in the classroom. Equity also deals with the fact that quality education is provided for students through adequate provision and equitable distribution of ICT facilities and resources to both teachers and students, equitable distribution of electricity, internet and web services in the urban and rural areas through accessible roads and school infrastructure for securing and guarding the facilities against vandalization by hoodlums and bandits. Akubuilo et al note that through a chain of technology interventions for rural communities many rural schools now have access to technology but the usage is minimal due to other huge challenges such as basic infrastructures.

Darling-Hammond, Whilhoit and Pittenger (2014) define equity policies as one that provide every student access to an education focused on meaningful learning. One that teaches the deeper learning skills contemporary society requires in ways that empower students to learn independently throughout their lives. According to them, an equitable system does not treat all students in a standardized way but differentiates instruction, services and resources to respond effectively to students diverse needs so that each student can develop his or her full academic and societal potential. Access to well qualified teachers is one of the important elements of an equitable system. Equity and quality in schools are based on a foundation that embraced the perspective that all children can learn. Equity and quality education are a balance for protecting democracy and refueling society with professional and talented individuals that can assume responsibility for leadership and professional roles in society (Thompson, 2018). Equity in education means that personal or social circumstances such as gender, ethnic origin or family background, are not obstacles to achieving educational potential (definition of framers) and that all individuals reach at least a basic minimum level of skills. According to the Center for Global Education (2012) the highest performing education systems are those that combine quality with equity. Equity in education means that personal or social circumstances such as gender, ethnic origin or family background are not obstacles to achieving educational potential (definition of fairness) and that all individuals reach at least a basic minimum level of skills (definition of inclusion). In these education systems, the vast majority of students have the opportunity to attain high level skills regardless of their own personal and socio-economic circumstances. Thus, the way education systems are designed can exacerbate initial inequalities and have a negative impact on student motivation and engagement, eventually leading to dropout. Making educational systems more equitable benefit disadvantaged students without hindering the progress of other students, (http://asiansociety.org).

OECD (2012) observes that across OECD countries, lack of fairness and inclusion can lead to school failure and this means that one in every five young adults is on average dropout before completing upper secondary education. The highest performing education systems across OECD countries combine quality with equity. According to them, education plays a major role in changing patterns of inequity and is one of the major drivers of intergenerational society and income mobility. It is a major tool to use against the problem of poverty and income dispute. Education systems that enable equitable outcome are keys for both economic prosperity and

social cohesion. According to Cramer, Little & McHatton (2018) educational equity ensures that the needs of individuals from disadvantaged socio-economic background, individuals with disabilities and other disenfranchised minorities are provided with educational tools, resources and support that are individualized to a student's educational needs. They observe that education equity allocates educational resources by equalizing the educational system for students whose low socio-economic status, ethnic background, family background or geographic region impeded their academic growth. This would help close the gap between students from a low socio-economic status compared to those from a high socio-economic status.

Equity recognizes that different students need different resources to achieve the same goals as their peers. Every child brings to school a unique set of needs, talents, and resources that prompt teachers to respond in different ways to each individual student. In other words, equity is critically important to public education. Thus, to advance educational equity, equitable academic resources programs and opportunities must be available to students from all backgrounds for the attainment of quality education. Thus, one may state that equity can be achieved in the education system by utilizing technology, preparing educators with the skills necessary to teach in diverse settings, developing inclusive methods of teaching students from different backgrounds as well as celebrating diversity. When differences exist in access to curriculum, instruction and resources, there may likely be differences in performance from school to school with a resultant adverse consequence in the quality of education. Ogbomo(2011) asserts that providing access to ICT is the only one facet of efforts to address equity issues and attention must be paid to ensuring that the technology is actually being used.

According to FME (2019: 23-24) current initiatives and strategies targeted at integrating ICT in education include the following:

i. The use of the national policy on ICT in education to drive the development and deployment of ICT in education in the country.

ii. Provision of requisite ICT infrastructure and service such as:

- Nigerian Research and Education Network (NREN), which has interconnected 27 universities with a hub at the National Universities Commission.
- Campus networks in schools especially at the tertiary level
- Functional websites email facilities and portals for the ministry of schools.
- Data centres in the ministry and in schools
- Computers and other multimedia facilities
- Internet connectivity through VSAT and fibre optic in all federal institutions
- Alternative power supply such as solar panels, generators, inventers and so on.
- CCTV for security and safety of the education community

iii. The introduction of schemes which are targeted at the provision of computers to government staff at all levels of education at preferential level.

iv. Establishment of ICT laboratories in schools and centres of excellence in the tertiary institutions

v. Introduction of e-learning and application of ICT to Distance Education and open learning at all levels.

vi. ICT capacity-building for teachers and educational administrators through nationally and internationally recognized certifications.

vii. The use of ICT to streamline the education delivery management.

However, despite all these notable achievements the FME (2019:15) observes that there is inadequate ICT infrastructure in the country in general. Therefore, the need to provide the infrastructure required in support of effective teaching, learning, administration and research is important. They note that research and development (R&D) is pivotal to the attainment of ICT-enhanced education. However, adequate attention has not been paid to R&D in ICT generally and in ICT in education in particular, even though ICT can be considered as a key tool for promoting equity in educational opportunities as it has permeated almost every facet of our daily business and have become the most important priorities formal and informal education.

III. Equity and quality through ICT utilization in education

According to Amutha (2020) the ICT is an umbrella that includes any communication device or application, encompassing, radio, television, cellular phones, computer and network hardware and software satellite system and so on, as well as the various services and applications associated with them, such as video conferencing and dislike learning. He avers that one area in which the impacts of ICT is significant, is education, as it is making major differences in the teaching approaches and the ways students are learning. ICT enhanced learning environment facilitates active collaborative, creative, integrate and evaluate learning as an advantage over the traditional method.

Thompson and Thompson (2018) observes that investing on ICT infrastructure for schools and creating networks among educational institutes will help in improving overall standard of education by reducing the gap

in quality of education between schools in urban and rural areas. Similarly, initiation of efficient school with objectives to foster self-paced, self assessed and self directed learning through the applications of ICTs and developing ICT policy for education and training will also enhance equity and quality in education. According to them, access to well qualified teachers is one of the important elements of an equitable system in both the rural and urban areas. Furthermore, government policies that ensure the proper evaluation of effective teachers and professional development in ICT use will go a long way in addressing inequities and the issues of quality education. According to National Digital Inclusion Alliance (2019) digital equity is defined as a condition in which all individuals and communities have the information technology capacity needed for full participation in the society, democracy and economy. Digital equity is necessary for civic and cultural participation, employment, life-long learning and access to essential services. Resta, Laferriere, McLaughlin and Kouraogo (2018) observe five dimensions of digital equity and these encompass access to:

1. Access to hardware, software, and connectivity to the internet
2. Access to meaningful, high quality, culturally relevant content in local language.
3. Access to creating, sharing and exchanging digital content
4. Access to educators who know how to use digital tools and resources
5. Access to high quality research on the application of digital technologies to enhance learning.

These five dimensions of equity depict the importance of the utilization of ICT in ensuring equitable and quality education among learners. In other words learners must have equal distribution of ICT materials; the goals and objectives of education must be culturally relevant; learners must have access to the internet so as to share and exchange digital content; teachers must be trained on how to use digital tools and resources through professional development seminars and conferences and research on the application of digital technologies must continually be conducted to enhance quality education.

Willems, Farley and Campbell(2019) observe that the rise of distance and flexible learning opportunities has helped to broaden access and participation to higher education. Electronic access to course materials and course activities enables many students otherwise unable to participate in face to face activities on campus to participate in higher education. Through e-learning, there is higher participation by large number of students from non-traditional cohorts. Students are able to study in a range of modes (full-time,or part-time; on-campus or at a distance), have variable enrollment patterns to accommodate their particular circumstances and are able to enter into their higher education through a variety of bridging programs. There is also the increase in the use of internet-enabled technologies to manage learning. Thus with the rise of internet and digital technology, the opportunities for access and participation in higher education has broadened, however barriers remain. FGN (2004) stated that the goal of distance education is to provide access to quality education and equity in educational opportunities for those who otherwise would have been denied. Open and distance learning is important because it makes education accessible and reduces cost while maintaining quality. It enhances equity and creates room for quality education.

However, UNESCO (2009) notes that the global system of Mobile (GSM) telecommunication and the use of ICT resources for professional teachers' development purposes general and open and distance learning is still very low. They observe that most students in the open and distance learning have no computer education background, they suffer from technophobia to the extent that their zones usually hire experts at a cost to fill their admission forms, register and complete other documents meant for them to fill online. According to Igbokwe (2015) the use of ICT's in distant education programme has the potential to distribute opportunities for learning wider and equitably across the teaching force. It can also improve the quality and variety of the resources available to teachers, opening up new avenues for professional development. This means that if social justice is to be achieved in terms of equity of educational opportunity and services, the availability and accessibility of ICT materials is imperative to both teachers and students.

Similarly, Ogbomo(2011) observes that given the wide disparities in access to ICTs between the rich and the poor countries and between different groups within the countries, there are serious concerns that the use of ICTs in education will widen existing divisions drawn along economic, social, cultural, geographical and gender line. According to him, the introduction of ICTs in education when done without careful deliberation can result in further marginalization of those who are already underserved, and/or disadvantaged. For example women have less access to computers ICTs and fewer opportunities for ICT-related training compared to men because of illiteracy, lack of education, lack of time, lack of mobility and poverty. Boys are more likely to have access to computers than girls in school and at home.

IV. Role of ICT in improving the quality of education

According to Akubilo, Nnam and Ugo (2021) successful assimilation of ICT in the school system depends largely on the availability of ICT facilities. ICT facilities in teaching will only be possible when they are available and accessible. According to them availability of valuable information and communication technology facilities in teaching and adequate utilization of the facilities add greatly to quality in education.

They note that availability of current ICT facilities especially computers and other peripherals are essential for teaching in this 21st century as it is a key instrument to equity and quality education. For instance, Computer Assisted Instruction (CAI) is a valuable ICT resource in teaching. It is the use of computer in educational background and frequently refers to drill and practice lecture. Microsoft power point is another facility that enables visual organization and communication of ideas. With it the teacher can disseminate the presentation with sound, animation, charts, graphics, narration and video thereby making the classroom lively. Various tools encourage active learning or maximum learning participation in the lesson. The computer can serve as a teaching machine to deliver programmed instruction to learners. This could be adopted for regular instruction from pre-primary to university level in conjunction with textbooks, lectures, films, discussion for enrichment of curriculum especially for students who want to pursue their interest outside scheduled class lessons and for remedial instruction especially with slow learners who need corrective training.

Robinson (2008) state that ICT can improve access, equity and quality of professional learning opportunities at the same time establishing online training for teachers in courses. He stated that the goal of teacher quality for all is proving difficult in many countries especially in the rural areas yet teacher quality is a key determinant of students' participation rates and achievement levels. It also affects the attainment of social justice in terms of equity in educational quality for students.

According to Anikueze & Kanu (2018:618) ICT's affect teaching and learning in the following specific ways:

i. It provides a more scientific basis for designing instruction in a sequential manner and utilizing adequate instructional materials and other reinforcement strategies.

ii. It makes instruction richer and more powerful in influencing learning through the application of new forms of communication and technology by which distant and remote events can be brought closer into the learning situation e.g use of films (motion pictures), slides photographs and filmstrips.

iii. ICT supports the delivery of educational resources particularly course materials ranging from printed books and charts through radio and television to multimedia computers and internet.

iv. It makes education more productive by speeding up learning and enabling students to invest more time in the application of acquired knowledge and creativity which can lead to breakthrough.

v. It simplifies the task of the teacher e.g is communicating abstract concepts to learners by helping to bridge the gap between theory and practice. Learners can study reality through computer simulation and the use of various media that are capable of bringing the world into the classroom.

vi. The emphasis on technology has led to the broadening of the academic curricular to include curses such as electronics animal husbandry, engineering, photography and journalism.

vii. ICT has further led to individualized instruction making learners to practice at their own pace through the use of programmed instruction, learning packages and computer terminals.

Furthermore, ICT's help students to gain more understanding of academic concepts, prepare their assignments, do their home works and write their projects in record time. Internet and computer help students to obtain access to adequate information. It also helps to improve their communication skills and academic excellence. Use of technology helps teachers in augmenting their technical skills. Both teachers and non teaching staff make use of the internet and computer to make their jobs easier. Parents could provide technology and internet connection at home so that their children can access these facilities available within their homes and will not need to go to computer centre. Parents who are knowledgeable in the use of computer and internet can help their children with assignments for better academic achievement.

ICT can enhance equity and quality in education by giving both the teachers and students equal opportunity, by increasing the motivation and interest of students, by acquisition of basic skills and by enhancing teacher training. It shifts the learning process from teacher centered to learner centered. ICT enhanced learning mobilizes tools for examinations, calculation and analysis of information in order to provide a platform for student inquiry, analysis and construction of new information. ICT makes the learning less abstract and more relevant to their life situation. ICT supported learning encourages interaction and co-operation among students' teachers and experts. It provides equal opportunity for learners to collaborate with other students from different cultures. It promotes the manipulation of existing information and creation of real world products rather than duplication of received information, as well as integrative and evaluative learning. ICT allows students to monitor and manage their own learning, think creatively, solve simulated real world problems, work collaboratively, engage in ethical decision-making and adopt a global perspective towards issues and ideas. It also provides students from remote areas access to expert teachers and learning resources and gives administrators and policy makers the data and expertise they need to work more efficiently. Akubuilo, Nnam & Ugo (2019) observes that ICT is used to prepare students for future jobs, improve students' academic performance, promote active learning experience, encourage co-operative and project-based learning, develop student independence and make the learning process more interesting. Hence, the utilization of ICT has rendered a significant contribution in bringing about improvement on the quality of education.

According to Kapur (2018) the use of ICT promotes a favourable learning environment and when used within the teaching learning processes and instructional strategies has a positive effect upon the education system. With the help of technologies, transformations are facilitated from teacher centered to student centered instruction. Through ICT, schools can bring about improvement in the quality of education with minimal cost. Moreover, new ICT's have the potential for establishing equity for teacher education in larger quantity and quality. If ICT is utilized in every aspect of learning within the educational institutions, it improves the quality of education and offers more effective pedagogy in the teaching/learning process. When students are making use of technologies in their assignments and projects, then equity and quality in education are enhanced. Through the use of ICT in the teaching-learning methods and instructional strategies students are able to acquire enhanced knowledge and understanding of the subject. They make use of internet and technology to acquire information and teamwork among the students is enhanced. Schools where adequate library facilities are not available, where much emphasis is not put upon the usage of technology, where proper infrastructure, facilities and other equipment is not available, use of ICT would not be worthwhile because they are located in rural communities. On the other hand, in urban areas, schools are well developed and are making use of ICT within the teaching-learning method and instructional strategies.

V. Factors militating against ICT utilization

According to Ajaigbe, Ogunsakin & Shogbesan (2015:97) factors militating against the integration of ICT into the mainstream of education include the fact that there are low percentage of teachers who have ICT skills that will match up to the population of the students in teaching and learning processes; inaccessibility to ICT infrastructure capable of transporting multimedia messaging; obsolete electric power grids in most parts of the country even in case of adequate communication coverage, lack of accessibility to computer equipment and other accessories and lack of motivation from the government to school administration for implementation of ICT policy. Also, inadequate funding of the educational sector for the budgetary allocation may have contributed to the limitation of the full implementation of ICT policy in Nigeria which in turn affects secondary school education. Other problems include irregular power supply, inadequate funds. All these problems hinder and pose challenges to equity and quality in the utilization of ICT in education.

UNESCO (2020) also note that current measures of ICT availability fall short of capturing the needs in certain countries and regions as they fail to report on factors such as availability of electricity (grid or solar based) and access to computers for pedagogical purposes are primary necessities. Moreover, many ICT based educational programmes in Nigeria lack sustainability. In many instances these projects are initiated by third party donors such as international agencies or corporations and attention is not paid to establishing a mechanism by which the educational institution or community involved can pursue the project on its own or in partnership with other stakeholders after the initiating donor exit. This apart from cost and financing constitute barrier to sustainability.

Factors that may contribute to certain students having less access to educational opportunities than other students include the following-race, religion, sexual disorientation, disability, perceived intellectual ability, past academic performance, ability to speak English, family income or educational attainment levels in addition to factors such as relative community influence, geographic in which educational institutions and policies ensure that students have equal and equitable opportunities to take full advantage of their education. According to Olibie, Eziuzo & Enueme(2013) factors responsible for inequalities include: **i**nadequate budgetary allocation to the education sector, inadequate supply of electricity, lack of making education a priority of government, inequitable distribution of ICT resources and funds, lack of constant review of the education curriculum in the face of rapid change in ICTs, failure to establish to effective bodies that will monitor standards and quality of education at all levels and failure to establish effective policies and inefficient implementation of policies can create different levels of education.

According to Ajayi, Ekundayo & Haastrup (2009), Igbokwe (2015) and Okoy & Nkanu(2018) some of the factors militating against ICT utilization include the following:

High cost of ICT materials: the price of computer hardware and software impedes on equitable liberal access to possession of personal computers. Nigeria has over 6000 public schools and majority of them operate from dilapidated infrastructure such as classrooms and only a few are equipped with laboratories and libraries. Moreover the cost of printers, monitors, paper, modem and extra disc drives and exhibiting internet connectors are beyond the reach of most secondary schools in Nigeria. Most Nigerians cannot afford computing and telecommunication resources. Cybercrime, hacking, ATM fraud and general identity fraud theft are on the increase. Access to the internet and local networking in ICT needs attention.

Poor Infrastructure: The epileptic supply of electricity power in Nigeria does not provide an enabling environment for the use of ICT applications. This has led to the damage of electronic equipment such as radio, television, video recorder and even ICT equipment such as computers. When. electric supply is not constant, it becomes difficult to keep high-technology equipment such as computers functioning. More so, adequate and up-

to-date telecommunication facilities are in short supply. The greatest educational problems are mostly in the remote areas where electricity supplies may be irregular or non-existent, telephone services are scarce and networks are poor. In the rural areas, most schools and homes do not have access to electricity, thereby depriving them and causing a great problem in trying to utilize ICTs in such locality. The few internet access available is found in urban areas.

Lack of human resources: Lack of human skills and knowledge to fully integrate ICT into secondary school education. There is acute shortage of trained personnel in the application of software operating systems, network administration and local technician to service and repair computer facilities. Besides, most teachers lack the skills to fully utilize technology in curriculum implementation.

Lack of relevant software: Software that is appropriate and culturally suitable to the Nigeria education system is in short supply. Moreover there is a great discrepancy between relevant software supply and demand in Nigeria. There is also lack of knowledge and skills by some facilitators in designing and developing courses in electronic format and lack of computer education background by both students and teachers.

Limited access to the internet: High cost of internet installation makes it difficult for an average Nigerian to have reliable cost effective internet connectivity. Most Nigerians cannot afford computing and telecommunication resources. Moreover, cybercrime, hacking, ATM fraud and general identity fraud theft are on the increase.

Teacher training in ICT: Due to lack of initial training, many teachers are unable to integrate ICT in their teaching practice. Teachers require continuous training program to keep abreast with more sophisticated equipment such as interactive whiteboards and effect e-learning materials. Thus, lack of training in digital literacy, lack of pedagogic and didactic training in how to use ICT in the classroom are some of problems militating against equitable utilization of ICT for quality education. Most teachers are not computer literate and this might not be unconnected with the non-inclusion of ICT in teacher training program in school curriculum at all levels of education in Nigeria.

These factors enumerated buttress the fact that education in Nigeria is bedeviled with total lack of equity in the distribution and utilization of ICT's among teachers and students at all levels of education. A situation where there is no regular power supply both in the urban and rural areas and where most of the populace are living in abject poverty with barely enough to feed the family and pay children's school fees makes inequity and inequality in ICT utilization in education imperative. This is most obvious in secondary schools all over the country where both students and teachers are lagging behind in the level of application of ICT in the teaching learning process due to lack of it.

VI. Implementation issues in ICT utilization in Nigerian schools

Ejiroghene(2021) observe that Nigeria is still experiencing delay in ICT implementation and this continues to expand the divides between digital and information, and access to ICT facilities is a major challenge facing Nigerian schools. She also observes that problems such as poor policy, strategies for implementing projects and poor level of funding information infrastructure are militating against the efforts. Ibara observed that in Nigeria, education is grossly underfunded and has affected many areas such as the funding of ICT training and retraining of teachers, and development of software packages. He notes that the current level of funding education in Nigeria with decreasing budgetary allocation to the education sector is a major constraint to the provision of ICT facilities in schools. For instance, the Federal budgetary allocation to education for several years running are far below the 26% education funding benchmark stipulated by the United Nations Educational Scientific and Cultural Organisation (UNESCO). Moreover the effects of the underfunding are felt most in the tertiary institutions where computers are needed for instruction and global information. Also one observes that ICT has not been fully integrated into the curriculum of primary and secondary school education in Nigeria. Not until the national policy is reviewed to fully integrate ICT in the curriculum, the problem will still linger

According to Kapur (2019:5) when implementing measures to promote quality of education through ICT there are certain aspects to be taken into account and these are as follows:

Defining learning Objectives: one of the primary learning objectives of educational institutions is to ensure that the teaching and learning processes are organized in a way to lead to effective growth and development of students – ICT utilization in the teaching and learning processes helps to improve the quality of education and the achievement educational goals and objective.

Leadership Skills: When ICT is utilized within the curriculum and instructional methods then the teachers and principals are required to work in collaboration and integration with each other. Leadership work with members of staff to ensure that they are well equipped and trained in the use of technologies to enhance students learning and help them achieve their goals and objectives.

Decision Making Process: When ICTs and other modern, scientific and innovative methods are introduced to bring about improvements in the quality of education, decisions making process should take into consideration age, class of students, learning abilities, financial resources and overall environmental conditions.
Working Environmental Condition: The school learning environment, both the classrooms and the libraries should be big enough to make computers available.
School Resource: Both human resources and financial resources are needed to facilitate ICT implementation in the classroom for equitable and quality education.
School Context: Within the school context, there are a number of factors that influence the quality of education through ICT such as school location, size, number of classrooms, number of students, teachers and staff number average, pupil socio-economic status and the overall environmental conditions.
When the aforementioned factors are not put into consideration, efforts channeled towards implementing equity and quality through the utilization of ICT's in teaching and learning activities is bound to end in failure.
According to the Federal Ministry of Education (2019:7-8) implementation of ICT in education is plagued with many challenges. These include the following:

i. **Policy:** Inadequate policy implementation
ii. **Institutional and Administrative Capacity:** Although, capacity building of teachers in ICT is being done, a good percentage of teachers are still not proficient in ICT. There is also an insufficient pool of ICT professionals in the sector. These weaknesses are compounded by inadequate ICT infrastructure for teaching, learning, research and educational administration in some institutions.
iii. **Regulation:** Information and computer technology education, especially at the non-formal education sub-sector is still largely non-standardized, uncoordinated and unsupervised. This has resulted in the proliferation of computer training outfits which offer all sorts of certificates and programmes based on curricula that are undefined.
iv. **Curriculum:** There is a generally lack of regular review and updating of existing IT curricula, especially at the tertiary level, to meet changing societal needs. There is also low capacity of curriculum developers and implementers. The challenge of outdated curriculum is even more pronounced in view of the dynamic nature of information technology.
v. Efficiency and effectiveness in the use of IT: Teacher educators and teachers are concerned more with efficiency rather than effectiveness when they adopt ICT in education. Thus ICT is used to make their jobs easier instead of making learning more effective. As a result, the teaching/learning process has not embraced current educational paradigm which emphasizes student-centered instruction with the teacher as facilitator rather than the teacher as the source of knowledge.
vi. **Equity Issues:** There is a great dichotomy between urban and rural schools and between public and private schools with regards to availability of ICT personnel and resources. Urban schools and private schools tend to have more ICT personnel and resources as well as power supply.
vii. **Research:** There is low research on ICT in education. These policy makers are not able to assess the impact of ICT on the education system.
viii. **Funding:** Although funds are being provided for ICT in education, they are largely inadequate to provide the drive necessary to position the sector for the attainment of the national goals.

The foregoing reveals that the state of ICT in education in Nigeria falls below global standards.

i. According to the policy thrust. Government should build and encourage the development utilization and sustenance of the ICT manpower required to achieve an ICT enhanced education.
ii. Establish and sustain a common ICT infrastructure platform for education at all levels.
iii. Ensure and encourage research and development (R&D) in ICT and ICT in education.
iv. engage in and encourage regular stakeholder's consultations (including the private sector), sensitization of the learning community, public awareness and inter-governmental relations to achieve a broad-based consensus on ICT in education.
v. Provide appropriate legal, regulatory and security framework to ensure that ICT in education and the conduct of related activities are focused on ICT enhanced education; and
vi. Use M & E as a veritable tool in ICT in education for tracking policy implementation, efficient service delivery and compliance.

After several years of making these policies, one observes with dismay that the Nigerian government have failed to implement them. The education sector is still grossly underfunded and there is inequitable distribution of ICT materials; a big divide continues to exist between schools in urban and rural areas in terms of internet connectivity and a massive divide also exist between private and public schools in the country.

Most teachers and students cannot afford to own personal computers and access to data is still unaffordable.

According to UNESCO (2020) global estimates suggest that 826 million students are without a household computer, 706 million lack internet mobile 39/49 networks. Without adequate information and communication technology (ICT) devices internet/mobile network access, education resources and teachers training students cannot partake in distance education to continue on their learning trajectories. At the risk of being left behind are students from resource-poor areas, remote rural areas and low increase household. In addition learners with disabilities or those who use a different language in the home than in school will require more individualized support. They also observe a substantial digital divide in access to ICT between countries. For example according to estimates from the Int'l communication Union (ITU), 21% of learners in Africa cannot be reached by 39 remote mobile networks. In terms of internet access, 82.2% of households in Africa lack access in the home. They also note that under Sustainable Development Goal (SDG) 4 which is to ensure inclusive and equitable education and promote lifelong learning opportunities for all, government have committed both to increase digital skills and expand ICT infrastructure in schools. However, beyond the provision of access and ICT equipment in education, nothing is done to support learners by building their ICT capacity/skills. During the period of school closures due to covid-19, it was obvious that teachers require training in the use of distance learning platforms to ensure that teaching and learning continues, as many of them had not received basic teacher training in ICT use. It is therefore disheartening that many teacher training program do not include the use of ICT in education to develop appropriate learning and teaching skills.

Another challenge is equity, including financial, gender and racial fairness in access to education. In Nigeria, many middle-income parents send their children to private schools which diminish the support for maintaining the quality of public schools. In addition girls from poor homes and children from marginalized communities sometimes have limited access to quality education. Oka (2019) observes that poor quality of education is the result of non-application of ICT and it is one of the biggest problems plaguing the school system.

Equity recognizes the fact that in most schools, students will come from a variety of backgrounds – some more privileged than others. They have different needs and must be provided with individual resources. Another challenge facing equity and equality in education is poverty. 60% of the most disadvantaged students come from low-income houses or communities because their families might have very limited budgets, it can be difficult to provide the students with equitable resources. The communities often have the challenge of retaining high quality teachers. In equitable communities, everyone has the opportunity to succeed regardless of their original circumstances. Being equipped to promote diversity and provide for students from all background makes for an environment where students feel comfortable and have better emotional regulations. (http:www.waterford.org/education/equity).

Furthermore Thompson and Thompson(2018) observe that equality and quality work for all students and help all communities to reduce the social effects of poor educational attainment. According to them, one of the hardest – hitting impacts of poor education on communities is the failure of having a well educated workforce. Communities cannot attract new business especially high-tech businesses moving in and establishing jobs. They pointed out that throughout the educational community; there is a correlation between children living in poverty and poor educational attainment.

Akans & Egbo (2017), Oka (2019) & Ademiluyi (2019) observe that ICT facilities are barely available, grossly inadequate and largely unutilized in teaching all the subjects in most secondary schools in the federation. ICT is used to prepare students for future jobs, improve students achievement, promote active learning strategies, individualize student learning experiences encourage co-operative and project-based learning, develop student independence and make the learning process more interesting. Akanbi & Akanbi (2012) observe a digital crack between urban and rural schools as a result of (inequitable distribution) various challenges experienced in the rural communities. Even though the National Policy on education stipulates that government should provide the necessary ICT facilities and training needs in secondary schools, one observes a low level of equity and quality in the availability and utilization of ICT facilities in Nigerian schools. One also observes that Nigerian is still lagging behind in the provision and utilization of ICT facilities for the citizenry.

Olibie, Eziuzo and Enueme (2013) observe that these educational resources are either inadequate or lacking as a result of lack of funds, creating inequalities in the education sector. There is shortage of teachers in area of great demand and use of non-professional teachers/quack in subject areas. There is inequitable distribution of teachers, technological equipment like computers, or learning software and audio-visual materials. Other areas are:

i. Lack of funds to upgrade obsolete computer and quality of teachers have created inequitable and poor quality of education.

ii. There are inequities and poor quality of education due to lack of teachers training and professional development in the face of modern ICT gadgets to be applied in the classroom to enhance learning.

iii. Teaching staffs that graduated from a polytechnics/colleges of education are discriminated upon because their education or certificate as regarded as poor quality. Hence, a lot of disparity, discrepancies and

discrimination between the universities and other streams. HND/NCE graduates are not allowed to do their Master'sDegree programme until they do a diploma in education giving rise to inequalities between HND/NCE holders and B.Sc/ B.A./B.Ed holders.

- Inequities also exist between the private and public schools, urban and rural schools. Due to poor salaries and lack of motivation of teachers, intelligent and capable teachers usually look for greener pastures elsewhere creating a dearth of quality teachers. Also private schools in a bid to maximize profit go for low quality teachers.
- Inequity and quality of education are also affected by lack of funds to buy or maintain ICT materials in the school.

. The educational disparity between the north and south has created educational inequalities and marginalization.

Based on the foregoing, one can deduce that equity and quality through the utilization of ICT's can only be obtained in an education system where there is equitable distribution of ICT peripherals to students and teachers across all the levels of education in the country. Similarly, the attainment of equity and quality through ICT utilization in education will still remain a mirage if teachers, students and technicians are not given adequate and constant training on ICT use in the face of new technologies that keep creeping into the industry. Therefore, implementation issues emanating from the government has been the major plague impeding on proper establishment of equity culminating in poor quality of education in the country.

VII. Conclusion

There is a growing demand for information and computer technologies education in Nigeria with the emergence of the computer age. The government has made concerted effort to ensure that the education sector is not left out as laudable policies have been enacted to facilitate ICT utilization. No doubt, both teachers and students need to be ICT competent to thrive in this technology era. However, problems such as inadequate supply of ICT tools and equipment; irregular power supply; lack of maintenance culture; teachers lack of skill in ICT use; students lack of interest in the use of ICT applications, weak ICT policy and inability of government to implement the policies have fuelled drastic effect on ensuring equity and quality in ICT utilization in the Nigerian education sector. Therefore, there are noticeable inequities and poor quality of education due to under utilization of ICT.

VIII. Recommendation

1) Government should embark on free distribution of computers to students and teachers at all levels of education to bridge the gap and encourage ICT based education through lowering the cost for consumers to gain access to online data needs.
2) Digital technologies need to be integrated within the school curriculum to create effective student learning experiences.
3) Policy makers must give policies that will ensure long term sustenance of ICT projects. When taking decisions of ICTs to acquire, planners should not only consider cost factor but also availability of spare parts and technical support.
4) There is a strong need for sustained investment and commitment to research and development in ICT. Government should engage in periodic public awareness campaign and sensitization for effective participation of stakeholders in the execution of ICT in education policies and strategies.
5) There is the need to renovate the old buildings and ensure proper electricity and ventilation and security of ICTs in all the schools in Nigeria.
6) Technical support specialists should continually be trained for the installation, operation and maintenance of ICT equipment, network administration and network security.
7) To ensure equity, incentives to make disadvantaged students access high quality schools should be made available.
8) Government should provide adequate funds into the Nigerian education system to ensure equitable distribution and utilization of ICT facilities for quality education at all levels in the country.

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