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A Critical Overview of the Place of ICT in Education Today: A Nigerian Perspective

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Abstract:

Education has been a core component of societies beginning from the Garden of Eden where God had evening sessions with Adam and Eve, during which knowledge and information were imparted to them. However, Education has taken new shapes and forms in the last 100 years. The education that was brought into Nigeria by the colonialists was the “Brick and Mortar, Chalk and Blackboard” (BMCB) variety. They dispensed knowledge in thatched roof huts, which eventually gave way to the modern buildings we have today.

In most parts of Africa, the style of teaching and the classroom are still much the same as they have been since Western education was introduced into the country. The teacher stands before the students and dispenses the curriculum content in a didactic style, with little time for feedback. ICT has changed all that. The classroom and teacher retain their place but perform different roles. Students are introduced to online resource materials which they can access and study at their own time and pace. The classroom becomes a place for more robust interaction where the teacher becomes more of a guide and overseer, helping his/her students to build on their strengths and eliminate their weaknesses. The problem that this paper highlights is that in Nigeria, the importance of ICT and the fact that ICT has become a driving force in the world have not been recognized. It makes a strong case for educational institutions to adopt ICT into the entire curricular pedagogy. To achieve this, the paper recommend that legislation should be passed to make it mandatory for institutions of higher learning to become ICT compliant within stated deadlines. Second, alternative sources of energy should be sourced, to enable all staff and students of tertiary institutions to utilize ICT in their academic and extracurricular work. Third, indigenous technology should be promoted in order to grow locally generated ICT in order to make it cheaper and bring it within the reach of everyone.

1. The Place of ICT in Education Today

Education is an indispensable tool for socio-economic advancement. (Adeoye, Oluwole and Blessing 2013) opine that “education is one of the most important needs for the well-being of individual (sic) and that of the society. They state that education is a powerful instrument of (sic) social, political and economic progress, without which neither an individual nor a society can attain professional growth. Education is as old as man’s existence on earth. Even in the Garden of Eden, we read that God used to commune with Adam and Eve in the cool of the day. This communing had an educative component because Adam and Eve were taught (or learned) gardening, agriculture, animal husbandry, morality, law etc. Eventually, when they failed the “exams”, they were expelled from the Garden of Eden.

Every society since creation has some form of educational programme or the other. Even though schools as they exist today were absent then, education took place. In Africa, the place around the fire place was the “African University”, where the children would sit at the feet of their parents and be taught history, literature, agriculture, hunting, ethics, *et al.* The African Fireside complemented the village square, where political and judicial sessions were usually held. The young people would huddle together, resting on each other’s shoulders, listening to their parents and guardians. It was a powerful form of mentorship education which ensured the survival of the communities. Education also took place in the farm lands where the younger generation would be taught farming and hunting methods, herbs and their uses, social norms etc. The outdoors thus, provided opportunities for practical education.

Western civilization introduced Western-style schools, with buildings, classrooms, black board and teachers who used chalk. Many of these schools, were under trees or in mud huts. With time, the thatched huts gave way to corrugated iron sheets with cement bricks but the mode of teaching remained the same in all types of educational institutions. Until today, majority of schools and higher institutions in Nigeria are still using the blackboard and chalk.

ICT has changed all that in other parts of the world. ICT is what is driving the world today and has enjoyed a critical mass of usage. It has become an indispensable part of the modern world. In the words of Adeoye *et al.*, (2013).

In fact, culture and society have to be adjusted to meet the challenges of the information age. Information and communication technology ICT is a force that has changed many aspects of people's way of life. Considering such fields as medicine, tourism, travel, business, law, banking, engineering and architecture, the impact of ICT in the past two or three decades has been enormous, (2013).

ICT has redefined the way people live, work and study. Today people who are not ICT compliant, can get consigned into the thrash can of life and be reduced to a primordial existence. Man has traversed many ages: The Stone Age; the industrial age and now the ICT age. We have come to the point where ICT has become an indispensable component of our world today. It is one of the most important driving forces promoting economic growth in the economy, Olaore, (2014:154). It has also become a veritable tool in the educational service delivery system. It cannot be gainsaid that "the use of instructional technology in the higher education teaching and learning processes is still in its infancy", but "ICT... is vital to the progress and development to faculty and students alike". (Ringim, Kanya; 2013). The authors also aver that the role of ICT in education is commonly associated with the process of "educational innovation", a phrase coined by Zohreh & Saedah (2009). By way of expatiation, education being result oriented and being that the goal of education over the years has been to develop human resource capacity, the need to find more effective ways of doing this is inherent in the processes involved in dispensing knowledge. That is why the application of technology to learning is indeed a *fait accompli*. In the West, higher educational institutions

have adopted ICT as a means to impart upon students, the knowledge and skills demanded by 21st century educational advancement. ICT now permeates the education environment and underpins the success of 21st century education. ICT also adds to value to the processes of learning and to the organization and management of learning institutions. All countries must seek to benefit from technological developments. To be able to do so, professionals ... have to be educated with sound ICT backgrounds (SiC) independent of specific computer platforms or software environments to meet the required competencies of the ever-changing global environment. (Ringim and Kanya, 2013).

The introduction of the internet generally revolutionized the capacity of human beings to perform functions and carry out transactions faster and more efficiently. Information dissemination which used to take days, months or years could now be done in a matter of seconds and more people can be reached in as much time. Educational information can also be dispensed in the same manner and learning became endowed with fun and ease with more robust participation. The internet has changed the definition of teaching, the classroom and research. The limitations of space and time have been eliminated. As indicated above, other revolutionized mode of educational interaction on a large scale but Africa is still in its baby steps, still strutting.

In order to propel Africa towards wide ICT compliance, the United Nations set up the United Nations Task Force for ICT Development in Africa on November 20, 2001. During the 2002 summit held in Kanaski's, Alberta, Canada on 26 – 27 June, the Heads of State of the G8 industrialized countries endorsed the programme and implementation of the New Partnership for Africa's Development, (NEPAD). At the African summit held in July 2002 in Durban (during which the African Union succeeded the OAU), the NEPAD Programme was formally adopted by the AU, (Okpaku; 2002). As Okpaku puts it, "the NEPAD programme includes a strong focus on the dual strategy of ICT Development and ICT for Development". ICT development involves the setting up of the infrastructure required to engender the functionality of ICT systems and processed. ICT for development is the utilization of ICT to generate the growth of infrastructure for socio-economic growth.

Okpaku says that:

at the Kenaskit summit, the G8 Heads of State also adopted their own parallel programme to support Africa's initiative. The G8 Africa Plan of Action... also places emphasis on support for ICT Development in Africa and commits the Member States to providing support for enhancing Africa's ability to develop ICT capacity as well as to take advantage of the enabling capacity of information and communications technologies and applications in her drive for competitive development (Okpaku 2002).

Article 5.4 of the G8 Africa Action Plan (AAP) which specifically deals with ICT Development, undertakes to assist Africa to create digital opportunities by Encouraging the Digital Opportunity Task Force (DOT Force) International e-Development Resources Network to focus on Africa and supporting other DOT Force initiatives that can help to create digital opportunities, each building, wherever possible, on African initiatives already underway; The Article states the goals of the AAP thus:

- working towards the goal of universal access to ICT by work with African countries to improve national, regional and international telecommunication and ICT regulations and policies in order to create ICT-friendly environments;
- Encouraging and supporting the development of public-private partnerships to fast-track the development of ICT infrastructure; and
- Supporting entrepreneurship and human resource development of Africans within the ICT sector.

Article 5.5 of the Action Plan encapsulates the corollary purpose of promoting ICT for development by committing the G8 countries to assisting Africa to "make more effective use of ICT in the context of promoting sustainable, social and political development. In specific terms, it hopes to achieve these goals by supporting African initiatives to, and making the best use of ICT to address education

and health issues. It also aims to support African countries to increase access to and the best use of ICT in support of governance by the development and implementation of national e-strategies and e-governance initiatives aimed at increased efficiency and accountability in government.

Okpaku is of the view that African countries are beginning to take advantage of the opportunity – (2002). However, the picture painted by the World Economic Forum Report 2015 is not rosy. To the question, “to what extent do ICTs enable access for all citizens to basic services such as health, on a scale of 1-7, Nigeria scored 3.2, Chad, 3.1, Angola 2.6, and Malawi, 3.1. With respect to internet access to schools, Nigeria scored 3.4, Gabon, 2.2, Buruadi 1.7, Chad 1.5 and Angola 2.4. On the question of the extent to which the use of ICT has improved the quality of Government services to citizens, Nigeria scored 3.3, Chad 3.0, Buruadi 2.8 and Angola 2.8. Regarding Angola, it had been thought that its newly found oil wealth would trigger a social revolution that would affect the quality of education and governance in the country but this has remained a mirage.

A pertinent question at this juncture is as to what the reasons are for the poor ICT rating of African countries. Is it plausible to assert that NEPAD has failed in that area or whether African countries have failed to take advantage of the opportunities offered by NEPAD? This author is inclined to the latter answer. African countries have constantly demonstrated a disposition of beggar lines and ineptitude in being proactive partners with aid agencies and development partners. The attitude has always been to wait and let the partners do everything. In addition, resources are often frittered away on frivolities or sucked by corruption. In Angola for example, a recent IMF Report (2011) indicated that 32 billion dollars of public oil funds were unaccounted for. Gastron reports that the state oil company, Sonangol spent 27 billion dollars on behalf of the Angolan government without accountability.

In view of the growing importance of ICT in the world and being that ICT offers a brand new deluxe type of life that enables more to be done and achieved with less stress and labour, African countries are constrained to do more to utilize ICT in their socio-economic and political life, especially in the area of Education. In Nigeria today, there is much talk about ICT but this author supports the view of Adeoye, Oluwole and Blessing (2013) that “if one looks at the education sector, there seems to have (sic) a little impact of ICT utilization and far less change than other fields have experienced: this is regrettable because of the quality that ICT can add to education. ICT can enhance the quality and quantity of teaching and learning by its fluid style and retails knowledge to consumers within the context of their individual lifestyle and environment. In the words of Davis and Tearle, (1999), in (Adeoye *et al*, 178):

Information and communication technology has the potential to accelerate, enrich and deepen skills, motivate and engage students learning, helps to relate school experience to work practice, helps to create economic viability for tomorrow’s workers; contributes to the total development of the institution; strengthens teaching and learning and provides opportunities for connection between the school and the world.

The authors could not have been more right. It must be emphasized that is the digital age and anyone who is eyeing a place in the corporate world or modern institution or organization of any kind has to acquire an appreciable level of ICT compliance. In a paper delivered during a conference organized by the Faculty of Social Sciences of the University of Calabar on 2-3-16, this author stated that “lecturers who are not ICT compliant and do not make the effort to be, may soon find themselves having to go back to their villages.” ICT competence is almost as necessary today as academic qualifications because most employers of labour require it as a matter of course. For example, many organizations today require CISCO certification as a condition for employment. This opportunity has been made available today by the partnerships that CISCO has entered into with the universities (including the University of Calabar) for the setting up of its academy for this purpose.

Kirschner and Weperies (2003) (in Adeoye: 178) have pointed out that ICT can provide avenues for the facilitation of the professionalism of teachers. The facilitation can be done through training in e-learning programming such as the type provided by Spectrum Nig. Ltd. To schools that utilize its e-learning systems. When teachers become competent in this area, the classroom will become more robust and productive. Needless to say, the students also must have ICT basic competence in order for the classroom interaction to fulfill its full potential of derivable benefits.

Before ICT, schools could only collaborate in a physical way. Collaboration in the areas of sharing curriculum, information and research was done in “hard” fashion – by the physical movement of teachers from school to school along with volumes of written materials. With ICT, such collaboration becomes a “soft” matter, through the net. In like vein, (in Adeoye *et al*: 184) ICT provides opportunities for schools to interrelate with one another through e-mail, chat rooms, WhatsApp and other online avenues. ICT provides quicker and easier access to more expansive and relevant information and ICT can also be used to do multifarious tasks because it provides researchers with a ready source of information such as research reports and findings.

Perhaps the strongest case for ICT in education has been made by Honey and Mandinach (see Adeoye *et al*: 184). They state pungently that it is a tool for addressing challenges in teaching and learning situations. They describe ICT as a change agent, capable of changing the content, methods and overall quality and quantity of teaching and learning, thereby reducing the workload of teachers and ensuring a “constructivist inquiry oriented classroom”. This inquiry orientation is induced by the research habit that exposure to a treasure cove of online knowledge naturally engenders. Such an abundant bunker of educational information that comes with a vast array of choices creates a natural hunger for harvesting and imbibing the knowledge and transports the individual into a brand new world.

Honey and Mandinach (2003) also aver that ICT is a central force for economic competitiveness. The more important ICT becomes; the more students will seek to acquire ICT compliance. The better a person is, the higher the chances of getting better paid employment. This is why this author supports Thierer’s view that if ICT is properly utilized it holds great promise to improve teaching, and learning “in addition to shaping workforce opportunities” (2000).

2. Evolutionary E-Learning Models/Systems

ICT in education pundits and advocates look forward to the day that the traditional classroom will be phased out. They hope that the introduction of e-learning will lead to the attainment of that objective. According to Ayanda *et al* (2011), e-learning is an evolving technology that has become a new paradigm for delivering online and distance learning programmes to users.

Hedge and Hayward (2004), define e-learning as an innovative approach for delivering electronically mediated, well-designed, learner centered and interactive learning environments to anyone, anyplace, anytime, by utilizing the internet and digital technologies with instructional design principles. The delivery of educational content is done through electronic media, such as the intranet, satellite, audio and video tapes, interactive TV, interactive CDs, IPad, Laptops etc. In all this, the web 2.0 tools are of primary significance.

According to Awodele *et al* (2009), web 2.0 is a “concept that has developed some new initiatives in education. They opine that web 2.0 tools have influenced e-learning systems in terms of pedagogy and delivery as a result of a high degree of user involvement and social networking. The web according to them has been established as a major platform for applications in learning. However, there is a temptation for users, especially students to be caught in the bind of using the web for exploratory and entertainment purposes and not as a resource tool. Dalsgaard (2007), expressed his own concern by stating that users should move e-learning beyond learning management systems and engage students in an active use of the web as a resource for “their self-governed, problem-based and collaborative activities”.

Indeed, self governance is the discipline that individual users need, to be able to apply the capacity for resourcefulness and purposeful interface with the net. Of course, we are talking about knowledge, learning and research but many students have been caught in the salacious and smutty labyrinth of highly distracting information that appeals more to baser instincts than intellectual interest – (sex, drugs, violence, entertainment and other forms of information and pictures).

What Dalsgaard means by problem-centered activities is that e-learning should take a structured shape that addresses problems in a situation target approach. At the end of the day, institutions of higher learning have to ask themselves what type of graduates they are churning out of their academic industries. The ICT knowledge acquired in school should be assessed within the context of the specific socio-economic or other milieus needs that species of knowledge. These who fail to see it this way have to content with Oliver (2000), who has stressed that ICT is dominating so much of contemporary life and work. What Mc Causland (in Adeoye *et al*:184) says on this issue is apropos here:

There has emerged a need for educational institutions to ensure that graduates are able to display appropriate level of information, literacy, the capacity to identify, or solve a problem arising from it. The drive to promote such development stems from the general movement among institutions to ensure that their graduates demonstrate not only skills and knowledge in their subject domains but also general attitude and general skills.

The traditional classroom should be reserved a hallowed place in Education’s Hall of Fame. The twenty-by-twenty mud brick room with thatched roof which later gave way to cement and corrugated iron, with the iconic blackboard, duster and chalk has produce millions and millions of educated people in Nigeria. Our physical libraries have been of great utility. But things have changed and this change is not calling for the abolition of the idea of classrooms and libraries. It is just their dimension, definition and description that have changed. With e-learning, the classroom ceases to be limited by space. The classroom now becomes the globe. Granted that the interaction in the physical classroom creates bonding among the students, builds camaraderie and is a highly useful social environment, the changing social strictures and pressures characterized by increase in the cost of living and other demographic challenges require that people should be able to learn and develop themselves by having the benefit of knowledge being beamed to them from a location away from where their economics and demography dictate them to be. This is the distance learning model which will be discussed shortly.

Even then, a typical distance e-learning system requires some form of student- teacher interaction at least a few times within the session. But e-learning does not always have to done via distance. Within the institution, the in-house students can also be served knowledge in the ‘e’ fashion. On this, Adeoye *et al* have this to say;

The impact of ICT on students’ learning and supporting what is being learnt in schools and universities cannot be overemphasized. ICT is supporting changes to the way students are learning as they move from content-centered curricula, to competency – based curricula; associated with the move from teacher – centred form of delivery to student – centred forms.

Though the use of ICT facilitated approaches, competency learning setting now encourage students, to take responsibility of their own learning. However, in the past students had become very comfortable to learning through transmissive modes. Students have been trained to let others present to them the information that forms the curriculum. Moreover, with the emerging of ICT as an instructional medium, many of the strategies employed by both teachers and students in the learning process would be susceptible to rapid changes.

The shift from teacher –centred to student – centred educational service has captured the imagination of a coterie of scholars. Adeoye, *et al*, (2013) are of the view that technology has the ability to promote and encourage the information of education from a very teacher-directed enterprise to one which supports more student-centred models. While Jonassen and Reevegan (1996), in support of this view state that ICT enhances the influence of technology on how students learn. It makes students more apt to ferret new knowledge and makes them enthralled at the thrill of having so much knowledge at their disposal which no teacher can give.

It is for this reason that in the past, educational institutions left students with limited choices with respect to the methods and types of programmes and knowledge sources. ICT provides limitless choices and many above average students are even coming up with innovative devices for learning and accessing sources of educational information.

With respect to distance learning earlier mentioned, Ahmed explicated the scope and method of the scheme so vividly that it bears a *verbatim –and-literatim* representation:

- i. In many instances traditional classroom learning has given way to learning in work-based setting (sic) with students able to assess courses and programmes from their work place.
- ii. That the communication capabilities of ICT provide opportunities for many learners to enroll in courses offered by external institutions, rather than those situated locally.
- iii. That the freedoms of choice provided by programmes that can be accessed at any place are also supporting the delivery of programmes with units and courses with a variety of institutions.

The Online Distance Learning Programme (ODLP) offers prospective undergraduate or graduate students who for one reason or the other cannot do intra-University Programmes, to actualize their aspirations. The flash points of ODLP are: the opportunity to do the courses of higher institutions of learning from anywhere. The Obafemi Awolowo University (OAU) model is a good example. OAU is arguably the leading ICT compliant University in the country today. It has a well-developed ICT system with its own V-SAT access to the internet. Almost all the buildings in the main campus are connected and there are many internet centres in locations around the campus. The Internet Access bandwidth is now over 200 mb/s. This enabled all the residential halls to be linked to the net. Wi-Fi availability is almost one hundred percent.

EduTech Advanced Business Technologies (EABT), an arm of Venture Garden Group was responsible for the establishment of the OAU ODLP. The vision of EABT is to leverage technological innovations to solve the unique challenges of the education sector, including limited classes to quality education. They set up payment systems, course digitization and learning.

As they see it, “the e-learning platform will avail current and prospective students the opportunity to learn without boundaries: with access to lecture videos, lecture notes, revision materials, practice tests and course work on portable offline as well as online devices”. For them, e-learning is the “future mode” of education, a way to solve the problem of access to education for the large number of youth in the country. EduTech (2016). They tailor their education delivery systems to give educational institutions the tools to grow students and provide interactive educational experiences too distant as well as brick and mortar students. Their vision is to leverage technology innovation to eliminate the limitations of space, time and location for education in Africa.

The OAU ODLP started in 2014 and it currently has over two thousand students. Ahmadu Bello University advertized for its first set of ODLP students on June 30 (Punch Newspaper, 28). To the author’s knowledge, Babcock University and the University of Calabar are in the process of setting up their e-learning facilities. It is interesting to note that the National Universities Commission, which abolished the ‘brick and mortar’ distance learning programmes of Universities in 2011 have become seduced by the aura of digital distance education. The NUC granted OAU and ABU license to operate their ODLPs.

The University of Calabar (Unical), is in the process of initiating its internal e-learning scheme. The equipment for it has been supplied by Spectrum Nigeria Limited and training is going on, for the purpose of making the University to become self-reliant with respect to e-learning technocrats. The wholesale digitalization of the Campus (including the halls of residence) is ongoing and will be completed in about two months. The mounting of masts is a key component of the work. Thus, in a short while, the University will have facilities for internal and distance e-learning.

The vision of the Professor Zana Itiunbe Akpagu led Administration is to make Unical the number one ICT compliant institution in the country. In pursuit of this goal, the ICT Directorate of the University has launched a scheme to train fifty (50) staff a week. Thus, in ten months, over two thousand staff would have acquired Basic ICT Competence (BICTC). Side by side with staff training, all students will undergo a cumulative three months of training, to acquire BICTC, in the next session. By the end of next session therefore, every student and staff of Unical is expected to have acquired BICTC. The internal e-learning system would become maximally functional and the Unical ODLP would have admitted its first batch of students. Thus, in two or three sessions, Unical would have achieved its goal of being the number one ICT compliant University in Nigeria, if not Africa. The Vice-Chancellor of the University, Professor Zana Itiunbe Akpagu has constantly made this clear – (Akpagu, 2016).

The case for ICT in education is so strong that this paper calls for a law to be passed, requiring all institutions of higher learning to digitalize their educational service delivery processes. The law, which could be called the “Digitalization of Educational Service Delivery Processes by Higher Institutions Act”, will no doubt revolutionize online learning in the country and improve Nigeria’s score in ICT in Education from the shameful 3 up to 6, on the World Economic Forum’s rating discussed earlier. The world is moving on and Nigeria cannot afford to remain in the primordial backwards of laborious learning. Ahmed shares this view. He says; “taking advantage of technological productivity transformation will help create a convergence between what the society need (sic) to do and what we expect students to do. In this regards, legislators have a big role to legislate on digitizing educational content in order to deliver a world class education for everyone. (Ahmed 2013).

Even if a law is not promulgated, the need for ICT to be adopted by Universities is self compelling. In making their own case, Adeoye *et al* (2013; 181), have opined that “in the year of computers and web networks, the pace of impacting knowledge is very fast and one can easily be educated. One can study whenever he wishes irrespective of whether it is day or night and irrespective of being in Nigeria or Canada...” They state that students are beginning to appreciate the need to engage in learning anywhere, anytime and anyplace. In his own view, Young (2002), states that the flexibility in the use of ICT has heightened the availability of just-in-time learning and provided learning opportunities for many more learner (sic) who previously were constrained by other commitments. In

fact, ICT should not be restricted to higher institutions alone. In the West and Asia, ICT has been introduced in primary and secondary schools, in varying degrees of quantity. At the rate Nigeria is going, when over 80% of children do not even have the opportunity of receiving the traditional “brick, mortar, blackboard and chalk” – (BMBC), education, it is left to conjecture how long it will take for this to happen.

It is pertinent at this juncture to ask what will happen to the classroom in the event of full digitalization of education. There is no gainsaying the fact that “the educational sector in every society is a mirror that reflects the future productive capacity of that society.” (Ahmed, 2013). The traditional BMBC classroom cannot be denigrated in any way. It produced the crop of nationalists like Obafemi Awolowo, Nnamdi Azikiwe, Margaret Ekpo, Professor Eyo Ita, and others who delivered Nigeria from the bear hug of colonialism. It produced virtually every Professor and educated person in the country today. However, there are certain realities that if not embraced, will lead to peril. The internet, especially as it relates to intra-school e-learning does not abolish the classroom – it only and certainly, refurbishes it. The teacher retains his place but his role certainly changes. In Ahmed’s words, “the teacher still remains very significant and cannot be removed from the educational process but the delivery mechanism for learning is constantly changing.” Free teaching videos, such as the ones Salman Khan has released online, play their own role. (www.khanacademy.org) There are people who can learn without a teacher but how many fall into that rarefied species of homo sapiens? No matter how capable a person is to learn on their own, there is that instigating, motivating, mentoring or dilatory component they will miss without an instructor or teacher. The authority and warmth of the teacher in *loco parentis* cannot be replaced by any gadget. With the internet, the teacher’s role becomes that of a coordinator, a good mid fielder who is adept at distributing the ball (the knowledge) to the strikers (the students), to score goals, (pass exams, contribute to the betterment of society, etc.).

Ahmed shares these views. He states:

At the moment, teachers spend more than 50% of their classroom time delivering a lecture. This is somehow a waste of teaching time and talent. Instead, students can look at the lectures themselves online. With online video simulations they can at least rewind and listen to them again. Then, they can spend the time in the classes, doing creative work, discussions and exercises with the teacher’s assistance.

The teacher is therefore like a moderator, coach or guide. He becomes a sounding board for the students because he can test their recall rate and assimilation capability, which enables the students, working at their own pace, to work towards approximating to the expected ideals. The traditional teaching method tends to compel the students to learn at the same speed. This is, of course, not feasible because people have different capacities for assimilation, appreciation, processing and storing of information. There are people (like the late President John F. Kennedy) who can read large chunks of material once and be able to recall them effortlessly, with a high percentage of accuracy. These are the Cheetah – brained people. Unfortunately, there are others who have to read something over and over again to understand and assimilate it – these are the snail – brained people. Thus, e-learning gives the cheetah and the snail a level – playing field.

Another way in which the students and teachers relate online is as clearly indicated by Ahmed thus:

The library, bookstore, forum, etc. can now be personalized and suspended in the online cloud. The digital teacher can now type an assignment and share it with more than a hundred students. All these students could work on one page of the assignment at the same time while chatting with each other. When a student steps out to take lunch for instance, he can come back and rewind what he missed and continue working with the other students on the same single page of the assignment. When all students have completed their assignments, the can grade individual assignment on a software dashboard and all students can have privacy to their scores. Using the same dashboard, the teacher can generate a white board where he can make illustrations to the students, and students from different parts of the world can actually write on the whiteboard, or he can generate a quiz feedback to all students in a multiple choice format to collate their feelings about the assignment. He can also open an online calendar where students can book for time slots to personally chat or see him. The teacher gets an email or forum update 30 minutes before each booking. No paper, no printing, no pen. This sounds like voodoo.

The teacher is also able to track the individual development of the students and assist them to build their strengths and overcome their weakness. Contrary to when the teacher will stand before the class and deliver his “sermon-in-the-class” to the mass of students in a somewhat impersonal officious way, the digital method helps him to assess the students and help them perform better.

3. Challenges of ICT in Education

The primary challenge is the dearth of infrastructure and facilities. In the West and some other parts of the world, ICT has been used in education for many decades. Unfortunately, in Africa it is still being looked at with some awe and trepidation. Ten year olds play with computers and laptops like toys while many Professors in Africa do not even know how to open a laptop. This, of course, is symptomatic of the general state of underdevelopment in the continent. Adeoye *et al* surmise that the reason for this is ‘inadequate funding’ (p. 182).

Of course, poverty plays a very big role in the dismal situation of inadequate infrastructure. The cost of procuring ICT equipment and setting up the ICT systems is prohibitive. Again, that is because none of the components is produced in Africa. When the exchange rate scenario is factored into the tack, the picture becomes clearer. Africa is far behind technologically. It is no more news that the continent is a consumer and importer enclave, with virtually no technological finished product to export. However, Africa has the talent to take part in the technological power play. There are many youths who have “manufactured” one type of equipment or the other. During his tenure as Chairman of the Cross River State Talent Hunt Committee, the author discovered an array of youths who

had patentable inventions of one kind or another. One youth built a satellite dish with local materials, which was displayed in the premises of the Ministry of Youth and Sports Development. The Commissioner at the time, (the late Mr. Ray Obeten) and other dignitaries watched the opening ceremony of the 1988 Olympics live, via the satellite dish. Another youth built a “Keke Napep” using a motor bike engine, and many others. If these youths are provided with the appropriate leverage, and a Japanese – like approach is adopted for technological development, Africa, nay Nigeria can land a man on the moon within a decade.

There is also the challenge of ignorance. Many educated people do not yet understand or appreciate the value, place and basic working of ICT. There is widespread lack of cognate information which has taken the form of apathy and non-challenge. This is, of course, caused by the fact that institutions have not enunciated policies that will compel or better, coerce lecturers and students to give this matter the seriousness it deserves. Hopefully, the introduction of e-learning will motivate them to take steps to become ICT compliant.

Another problem is the deterioration of our educational system. (Ringim, 2013:11). It is now widely known that many JSS and SSS students cannot even write their names. This is worse in rural areas where principals, teachers and parents collude with West African Examination Certificate (WAEC) officials upon payment of “cooperation fee”, to have answers written for them on the blackboard. Such students end up with seven or eight credits but cannot read. It is a herculean task indeed to make such people ICT compliant. Some of this type of students usually find their way into tertiary institutions. In fact, there are many University students who should be sent back to primary or secondary school.

Other challenges include: irregular power supply (which can be surmounted by developing independent power supply sources such as solar or wind); poor funding; and lack of trained personnel, Adeoye *et al* (2013:182). When the basic infrastructure is put in place, the next step would be to make efforts to “explore efficiencies in terms of programme delivery and the capacity of ICT to provide support for customized educational programmes to meet the need of individual learners”, (Adeoye *et al*, 2013). Scholars like Ilechukwu also agree that e-learning is a veritable tool for education services delivery – (2013:343).

As the Minister of State for Education, Professor Tony Gazie Anwukah stated at the opening ceremony of the EBSCO Hosted Capacity Development for Nigerian Universities held on April 12, 2016 in Abuja, “information is an important ingredient for national development”. He stated that “our Universities therefore need to develop robust information resource base that will support them as they seek to be global players. He emphasized that:

In line with the need for our:

In line with the need for universities to be globally competitive, we are directing that the National Universities Commission immediately commence the identification of other sources of information and negotiate and facilitate their availability to the Nigerian university system. In striving to achieve this, we are aware of the challenges of funding and resources. In light of this, the NUC should work closely with key agencies such as the Tertiary Education Trust Fund (TETFUND) to ensure that we build and sustain an excellent information base for Nigerian tertiary institutions. NUC should also explore partnerships with other agencies where necessary, we will be ready to support in the successful implementation of such partnerships.

The case for ICT to be introduced in our educational system was strengthened by the Executive Secretary of the NUC, Professor J. Okojie in his welcome address during the National Stakeholders’ meeting on the Nigerian Research and Education Network (NgRen) held in Abuja on 11 June, 2013, stated that economic development in the 21st century is directly tied to science and technology knowledge (S&T) that can be harnessed within a nation. He explained that countries like South Korea, Japan, China and other have taken to S & T to address the limitations of natural resources. According to him, innovation, knowledge acquisition, sharing is stymied when the required platforms to support them are absent or expensive to acquire. He pungently declared that Nigeria faces specific problems in terms of limited quality of teaching resources, especially S & T teaching facilities and tools. To the dismay of participants, he revealed that there are over 100 Research and Education Networks in the world today and Nigeria remains the biggest country in the world that is yet to commission one. Many countries that are not as endowed as Nigeria or have been grappling with more internal challenges than Nigeria have functional and thriving RENs. Examples include Sudan, Rwanda, Democratic Republic of Congo (DRC), Ethiopia, Kenya, Malawi, Mozambique, Uganda, Somalia, etc. these countries are sharing huge research data, pooled bandwidth, video/audio/data communication, etc. on their RENs. In addition, they have benefited from collaboration with other countries through international leased lines on submarine cables. Such collaborations include remote class participation, remote experimentation, symposia, inaugural lectures, etc., which are currently being done in collaboration with countries like the USA, Germany and France via their RENs.

Nigeria is still embarrassingly far behind in ICT in education. In fact, in the World Economic Forum’s (WEF) 2012 Global Information Technology Report, Nigeria was ranked 112th in terms of Network Readiness. It was beaten by countries such as Rwanda, Namibia, Gambia, Senegal, Kenya, Morocco, Cape Verde, Egypt, Mauritius, Botswana, Ghana and Uganda. The WEF’s Report on Global Competitiveness placed Nigeria 115th out of 144 countries surveyed. If indeed he have a vision of become a significant global player by 2020, this dismal categorization has to be radically improved within the next few years. Vision 2020 is not an open sesame. To achieve it requires concerted, universal, funded and tracked hard work. Universities would serve to take up the gauntlet and blaze the trail.

Before any institution can truly be said to be ICT compliant, there are certain foundational pillars that must be laid primarily, internet facilities must be available, with very robust bandwidth. Bandwidth is simply the capacity of a network to transfer/download or received/ - upload data per second and it is measured in megabits (Mb). Ahmed, (2013: 55). Ahmed has treated this subject in such commendable detail that readers would reap a lot of information in his book. There are many options of course, such as Wi-Fi, intranet etc. but the benchmark is that people should be able to access the net without stress.

Uncial is in the process of mounting masts for robust Wi-Fi availability in phases. The first phase will cover the main campus, library area and hostels. It is only when these are on the ground that e-learning can be introduced and this is a cardinal goal of the Administration of Professor Zana I. Akpagu.

This paper will not be complete without a word on the Cross River State Smart School Project, as presented by Offu E. Aya, the Commissioner for ICT, during the Innovation Africa Digital (IAD) summit held at the Transcorp Hilton Hotel Abuja, from April 18, 2016 to April 21, 2016. He stated that “having the power of computers available for use in schools vastly improves e-schooling capabilities and makes resources readily available for the teacher and students from anywhere. The Government has also launched on increased computer literacy scheme to help women and girls to break through barriers and advance opportunities in science, technology, engineering, math and other areas of science. All these are part of the broader Smart City Project, encompassing projects like the City-Wide Fiber Optic Coverage, fully equipped Data centre, SME Incubation/ talent Hunt Centre, the Tinapa Knowledge City and others.

4. Conclusion

It was Abraham Maslow who said that nothing is as strong as an idea whose time has come. This can be said about ICT. It is what is driving the world today and it is the view of this author that educational institutions should be in the driver’s seat of the locomotive of change. Currently, efforts towards ICT utilization in Nigeria’s educational system are on baby steps stages in some schools and epileptic and cosmetic in others. This scenario does not reflect the central place that ICT has taken in the world. In order for educational institutions, especially universities to attain a satisfactory standard of ICT compliance, the government and regulatory authorities should support the Universities with critical capacities and infrastructure. This should be in the form of adequate funding and provision of equipment for internet availability and hardware such as computers and e-boards and of course solar energy. These radical steps need to be taken concertedly and urgently, even if it means the declaration of a State of Emergency in the area of ICT in our educational institutions.

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