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# The Implementation options of ICT in Enhancing Teaching and Learning in the Classroom Setting

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**Abstract**

*Countries all over the world are at different stages of integrating information and communication technologies (ICT) into everyday practice including teaching and learning. The emerging development has given rise to new educational needs as well as to new leaching method which the contemporary teacher education programme in Africa must embrace. This part of the world where education and schools have remained the last vestige of traditional cultures and the teacher training programme broken from the old media and methods so as to embrace new teaching and learning technology. This paper therefore, examines the technological evolution in education and the relevance of ICT to teacher education. Finally, it highlights the new teacher's role in 21st century.*

**Keywords:** Implementation options, ICT , Teaching and Learning, Classroom Setting.

## Introduction

Implementation has been variously defined by scholars to mean the processes of carrying out a well thought out plan with the intention of achieving sets of organizational goals, aims, aims and objectives.

Tune and again, the history of educational thought shows that technological invention has been the mainspring of culture change, technological ingenuity is revolutionizing society and in fact education. Countries across the world are at different stages of integrating information and Communication Technologies (ICT) into everyday practice, including teaching and learning. This development that given rise to new educational needs as well to new teaching methods and strategies which the contemporary teacher trainer in Nigeria must not refuse to be part of. This is only possible where these teachers perceive and accept the urgent need for the integration of technology into education as an alternative methodology for delivery of instruction to teacher trainees (Lawal, 2006).

This trend therefore, in teacher's exploitation of advances in science and technology is towards globalization and information Technology (IT) – which now pervade and enhances productivity in virtually all facets of human endeavour, particularly in teaching industry. Its driving force perhaps makes Edozie (2003) describes ICT as the even improving and ever reducing the world to a global village. From simple audio-visual media to the fascinating appeal of the television and now to satellite communication, the world has been reduced to one big village. The big challenge before educators is how to imaginatively deploy these fruits of human ingenuity to further simplify the process Education.

As the societal level, expectations of what teachers should know and he able to do are increasing every year. Teachers do not only have to know the subject matter and basic pedagogy. They are also expected to model higher order thinking processes, work in interdisciplinary teams and demonstrate leadership and communication skills. At the same time, they are supposed to deliver better student results on standardized tests, while

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addressing large societal problems (e.g.) HIV/AODS, Conflict resolution disintegration of families, etc), unfortunately, the contemporary traditional teacher training approaches are also known to be too pessimistic in here perception and attitudes to change. (Lawal, 2006).

This is particularly so when it comes to playing key roles in allowing computer technology to permeate their professional practice and development. They argue low level of connectivity, low ratio-of personal computers per household and all these influence greatly their level of readiness to join the global coach.

**Technology Evolution in Education**

The advent of the printing press revolutionized education and universalized access to information through the printed text. Printing technology has produced the conventional textbook, structured lexis programmed texts, comics and many other forms of printing-based formats. (Nwaboku, 2006).

These include 'vehicles for research dissemination such as printed journals photography and other technologies like the microchip and digitalization which have also enhanced the capabilities of the print media.

The success recorded in language teaching in the 60s and the 70s can be attributed to photography supported Tape/slides or films and film-strips used in teaching, in combination with the complementing strategies. The "Mr, Thibaul" tape slide packages used for French teaching in the 60s and 70s are still fresh in one's memory.

The information and communication Technologies (ICTs) revolution started with mass media forms like the radio. Nwabolu (2006) observes that the old technologies of radio and television have been used all over the world to address instructional problems. Of course, the answers have always been blowing in the wind since the era of educational radio.

**The New Technologies for Classroom Implementations**

The new technologies presuppose the old technologies, like the book, filmstrips, radio sets television monitors, projectors etc. They have been used to mediate the form and character of education processed and they have been shown to significantly improve teaching and learning. The new technologies refer mainly to "The computer and related communication equipment and software that enable' one computer to communicate (network") with other computers. (UNESCO, 1998) (ICTs).

Over the years, there have been tremendous improvements in computer technology in terms of size, data-processing power, capabilities and convenience of use standard desktop, laptop, personal computers and notebooks, which are generally affordable, have replaced the mainframe computers of the early 1980s also, digitization has made it possible to store data in multimedia formats on compact discs (CDS).

On the software side, significant improvement is being made in (a) The case of interaction between the computer and the user.

(b) The development of programmes of interactive self-instruction for users and

(c) The ease of communication and networking with other computers. It is now possible to like with the "books" and "notepads" of the users or indeed with whole libraries. Particularly significant is the development of the internet and worldwide web, which makes it possible for anyone with a computer plus a modem and a telephone line to access geographically, distributed and interconnected "virtual" worldwide library of documents (UNESCO). 1998. Adeyemi, 2003.

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**Applications of ICT in the Classroom Setting**

It the other technologies have been shown to enhance teaching and learning in the classroom the potentials of the new technologies are much more, even though the empirical evidence in support is still not overwhelming (Ajeyalmi, 2002). The following are the roles of the new technologies in education as highlighted by (Edozie, 2003 and Ajayalemi 2002).

1. **Computer-Managed Instruction:** There are computer programmes that have taken over the onerous classroom management functions of the teacher. Such functions include generating and administering tests, grading and reporting, summarizing the results and providing feedback on text results. Using appropriate programmes and the scanner, it is now possible to scan, score and produce the results of multiple-choice tests written by several weeks of manual marking. Properly programmed data can also provide individual tests and quizzes which are unique to the students and to the subjects-matter, as well as interactive quizzes that give immediate diagnostic aid to the student.
2. **Computer-Assisted Instruction:** This type of application varies iron the simple 'drill and practice' programmes meant for repetition and consolidation skills to the complex tutorials. The drill-and-practice programme gives students opportunity to work many examples repeatedly and provides them feedback that tell them when mistakes have been made and how to complete the work correctly. Tutorials, on the other hand, guide the learning paths of students. Under computer assisted instruction, the computer can also be made to generate a large number of problems, keep records, determine success levels of students and provide references to non-computer sources of assistance. Opportunities are thus provided for learning new information and for individualizing the processes of learning and assessment,
3. **Simulation, Modeling System and Micro-worlds:** Simulations are presentation of a part of reality. Learners can gain understanding of the reality by manipulating the representation. They can serve as a bridge between reality and the student's mental of the system. Part of reality which could not be studied, especially in the sciences, for reasons of safety, ethics, cost, lack of equipment o scale as well as abstract concepts can now be simulated using appropriate software. Students can build their own model of a part of reality and gain an understanding of complex reactions in a system through dynamic modeling. Similarly, through creating imaginary world. (micro-worlds). Students can investigate scientific problems, develop hypotheses, design experiments to test their ideas, and use feedback to reflect on their conceptions of a phenomenon.
4. **Microcomputer-based laboratories:** In the sciences, it has become easiest to repeat experiments, measure different variables all the same time, use a very short or long time range, store, retrieve and analyze data, and represent data graphically using the microcomputer as the laboratory instrument of a sophisticated calculator.
5. **Databases:** The World Education Report found that, as a result of digitization and the convergence of media technologies that has made it possible for text, audio and video materials tp be stored together on compact disc the computer has emerged-as a potentially powerful and convenient means of delivering support and enrichment for existing curricular, especially so, for distance education. Information from various areas of knowledge is available in databases that can be retrieved and used by the learner in supplementing lecture materials and practicing problem solving skills thereby having an opportunity to access databases contain in an interesting and relevant teaching learning materials in the new virtual global library.

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**6. Tools:** The teachers and students need to be computer-literate to be able to effectively utilize the potentials of the computer in education. Thus, many school systems have used the computer mainly as a means of ensuring that students acquire a minimum level of computer literacy. General application software such as Microsoft world for training students in word processing and spreadsheets, which can be used to calculations are commonly used.

Computers are a valid instructional resources as they can be used for teaching and learning. It is comparable to the library and laboratory and is capable of enriching and extending learning experiences. Computing systems with demonstration and display capabilities may be used for dynamic illustration to complement conventional instruction or be made directly accessible to students for heuristic experimentation and problem solving. Computer can assist instruction and help students to learn directly with or without the teacher computers assist in individual learning.

Computers help to reduce monotony in the classroom and not only arouses attention, but helps to sustain it. Since feedback is almost immediate, it can have a high motivational input in learning and fosters continuous learning. This is why students spend hours in the computer because by motivation, they proceed to new learning tasks Computer therefore accelerate learning.

**The Emergent Roles of Teachers**

Without mincing words, the job definition of the teacher is changing. One teacher in a classroom cannot plan curricula, design the machines, design instruction prepares software and manage the classroom. For efficiency, there has to be a division of labour. So within a school system, there would be need for specialization. For instance, a teacher would either be a computer programmer, an instructional material production specialist of an instructional methods specialist. A well-equipped school could need a media librarian whole duties would include accessing information from system like the internet and making it available for instruction. The possibilities are limitless. (Nwboku, 2006).

With the amazing low of financial allocation to the education sector, is at all levels are unable to cope with the provision of ICTs to school. Hence, there is short falls in educational demands and suppliers which has created gaps and opened up lucrative industries in the education sector for more discerning entrepreneurs. TCT-related enterprises are for now owned by non-educationists who may not be full aware of the instructional need and gaps, and ICTs application in education. The good news is that opportunities now abound for more discerning teachers to veer from the normal school roles and take advantage of the existing gaps created by ICTs demands.

Nwaboku (2006) observes that teachers can now be trained through entrepreneurial programme on the possibilities for private sector participation in educational provision and support to the Nigerian school system such programmes me tide.

* Establishment of new type schools
* Production of Instructional materials
* Provision of educational hi-tech Infrastructure
* Training outfits
* Internet publishing
* Educational consultancies

Some of them are discussed in turn.

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**Establishment of Information Age schools:** Private sector participating in the expansion of access to schooling is very evident in all states. Only a few of these utilize ICTs in school processes, others, decorate schools with computers. Most schools run same programmes without any areas of specialization like football academy, science school, etc. The need for individualization of instruction is still not appreciated or practiced. This of course, according to Nwabuoku (2006) leaves the opportunity for individuals to run specialized, purpose built schools, e.g. nursery school of music, of junior hi-tech, and individualize instruction as appropriate.

**Educational Consultancies:** ICT-competent teachers can serve as consultants providing technical advice and services for schools and individuals. There are also vacancies in the sector for research and data analysis services to institutions and individual. There is also a place for consultants in quality control, training, etc. in ICTs – applications for teachers and individuals, and the planning and supervision of installations, especially for new hi-tech institution. An ICT-competent teacher could also provide academic information/management services.

**The Teacher Entrepreneur:** Apart from the computer revolution another driving force behind social development is entrepreneurship. Developed countries thrive on the initiative and creativity of individuals who cash in on the opportunities created by technological advances to create an industry. Entrepreneurial education has therefore become an important aspect of the curriculum at all levels in development conscious communities. Entrepreneurship in the education sector cannot be left to non-educators who do not understand the conditions of learning,

**Internet Publishing:** There is need to establish websites for Schools Institutions, Associations, Web publishing, Online Collaboration etc. for academic purposes.

**The Demand of Computer and Virtual Education for the "Willing:" Teacher Trainer**

Having presented the potentials of computer and virtual education, one strongly believes that both the "willing" teacher trainer and other teachers described by Me Kienzie in Lawal (2006) as "technology reluctant" require special attention because they have special needs and interests that must be addressed with respect and ingenuity if we expect to see such teachers embrace the new technologies being placed in their classrooms, this is particularly when one recollects the fact that effective handling of efficient performance.

They need to realize and accept that e-learning, internet surfing can only build on a set of basic computer literacy skills, indeed for them to partake and benefit from any form of technology based learning, they must be computer literate. This position is corroborated by Kante and Svani (2001) aptly when observed that programmes like the world (http:www.world-links.org) which focuses on teacher-professional development in the use of technology in the classroom, do not use e-learning as a medium of instruction until participating teachers have gone through two phases (separated by at least six months of practice time) of face-to-face training and computer literacy package.

Digital literacy is therefore a major prerequisite for any meaningful e-learning and CALL package. The teacher trainer is not only expected to become empowered in the use of desktop applications, but also in the use of technology the internet, and tele-collaboration, with the intent of improving classroom teaching and learning.

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Teacher trainers need what Karsarti in Lawal (2006) calls techno-pedagogical ability, which is essential for integrating the technologies involved in education and virtual education into their teaching practice.

**Conclusions**

The outcome of the write-up is to yield an exciting new perspective on open curriculum and benefit education. The mesh networking capabilities would allow for "child-2-child" sharing and continue to work even //hen the processor is powered down/what a wonderful "groundbreaking technology". Even if this project is not feasible it is obvious from what we have discussion so far that internet is an inevitable strong mode of communication that has several uses for teaching and learning in the classroom setting. In many developed countries, internet is a tool commonly used by teachers virtually every day in the classroom. In many African countries, like Nigeria, many teachers and students are still coping with limited access to computers and the internet Students and teachers are often motivated and encouraged by the power of ICT. It is therefore, not out of place or "waste of money "for the College/Schools. Management, Faculties and even schools to provide the teachers with support they need to master (heart of surfing, browsing, computing and networking for the purpose of enhancing effective and efficient learning in the classroom settings.

**Recommendations**

Most of what we have advanced so far in this paper might sound like "mission impossible" to the target audience. But it is very possible and practicable if the following suggestions are taken.

Computer science should become a primary and secondary schools subject. This will afford them to be used with the nitty-gritty of internet.

Universities and Colleges of Education should have a cyber café, where teachers and student would obtain current information. Thanks to TetFund efforts made is this direction.

Lecturer/teachers should be made to undergo an I.T. training and such should serve as a prerequisite for promotion. We should not be surprised that before two long lecturers, teachers, would find themselves instructing their students to surf the web and download the latest information from the internet on a particular topic he has competed teaching them.

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