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Information Communication and Technology (ICT) integration in Teacher Education: A necessity for sustainable educational growth.

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The paper analyses the concept of Information and Communication Technology (ICT) in teacher education for sustainable educational growth. It aimed at understanding the need for integrating ICT into teacher education and sustaining it. The influence of ICTs can be felt in their dominance of all areas of human endeavors' where they seem to define and refine interactions, social relations, work processes and standards. ICTs have recorded much success in many sectors and it is the contention in this paper that they can transmogrify the educational sector positively, particularly teacher education. However, ICTs have been identified as having the potential to change the complexion and content of teacher education if the tools are put to work. It is expected that government will provide the required political and economic wherewithal needed for the easy adoption of ICT tools in driving teacher education processes and objectives in India for a sustainable national development. This paper therefore, discusses the inclusion of ICT integration in Teacher Education as a veritable tool for sustainable educational growth. A conclusion is drawn and recommendations are made.

Keywords: ICT, Teacher Education, Development, Globalization, National Development

Introduction

Teachers in all nations constitute a major input in the accomplishment of educational goals and objectives. Observes that teachers constitute not only a vital input to education but also a major drive in the production process and in the determination of the output system.

Information and Communication Technology (ICT) has become, within a very short time, one of the basic building blocks of modern society. ICTs have successfully changed the social, economic and political spaces globally. Through globalization, ICTs have reduced the world to a global clan. Similarly, ICTs have enabled the globalised world become greatly interconnected, interdependent and without borders (Salawu, 2008). ICTs are changing the

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world rapidly, creating a distance-less and borderless world of instantaneous communication (Spence & Smith, 2009). The focus of this paper, therefore, is to examine the role ICTs are playing in teacher education in India. The paper examines the various ways ICTs have proved useful in teacher education in India, the challenges teacher education faces in optimizing the use of ICTs for teaching, research and learning and what can be done to improve the existing situation.

Concept of Teacher Education.

According to Afe (1999), Teacher Education is the component of any educational system charged with the education and training of teachers to acquire the competences and skill of teaching for the improvement in quality of teachers for the school system. Looking from the point of national development, Agogo (2004), looks at teacher education as a process of instilling professional competences relevant to the national development in our would-be teachers, our economic growth and nation building. It should be noted that teacher education extends to the preparation of administrators, guidance counselors, supervisors and personnel needed in achieving nation building.

Form the above definitions, Teacher Education could be seen as an activity which involves bringing in professionalism to teaching through knowledge impartation, skill acquisition, attitudes, aptitudes, adding desirable values in the teaching profession and as well molding destinies in society as a whole.

Teacher Education programme will continue to be given major emphasis in all educational planning because, no education system can rise above the quality of its teacher.

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The National Policy on Education stated that the objectives of Teacher Education shall be:

- To produce highly motivated, conscientious and efficient classroom teacher for all level of our educational system.
- To encourage further, the spirit of equity and creativity in teachers.
- To help teachers to fit into the social life of the community and society at large and to enhance their commitment to national objectives.
- To provide teachers with the intellectual and professional background adequate for their assignment and to make them adoptable to any change situation not only in the life of their country, but, in the wider world.
- To enhance teachers commitment to teaching profession.

Information and Communication Technology

As the name implies, ICT is three-in-one word that has the gateway to the modern information skills. Looking at the name ICT differently:

Information: According to Oxford Advanced Learner's Dictionary, it is said to be news or knowledge given. Technically, information means data or facts that have been processed into a meaningful and useful form to the recipient. It constitutes real facts which can help individual or organization in making better, assertive and successful decision.

Communication: This is the source and way of expressing thoughts and imaginations in such a way that could be learned and understood by the learner.

Technology: According to the National Policy for information technology is computer, ancillary equipment, software and firmware (hardware) and smaller procedure services

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(including support services) and related resource of any equipment or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage manipulation, management, movement, transmission or reception of data or information.

In the context of education, ICT could be said to be technologies for collecting, storing, processing, communicating and delivering information. ICT as a process of creation, processing, storage, retrieval and dissemination of information and data using computer and telecommunication.

Importance of Information and Communication Technology (ICT) to the Teacher.

Teacher and Information cannot be separated from one another. Hence, one can rightly say that the duty of a teacher is information tasking. Ukaeje (2008) notes that, “Education unlocks the door of modernization, but it is the teacher who holds the key to the door”. In the same vein, if we say the child is the center of the educational system, the teacher is the pivot of the education process. In the context of ICT, the teacher needs to be able to transform the classrooms from places of a static one-way flow of information from teacher to the student into a dynamic student - centered learning environment in which learners interact with peers in teaching, both in their own classroom as well as others through the internet and other ICTs.

ICT can be used for direct teaching. This happens by the use of computer in teaching by the teacher with the use of a computer programme called Computer Assisted Instruction (CAI) and Computer Aided Learning (CAL). These are modern methods of using computer as mediating factor in educational process and they are used synonymously. It is a direct two-

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way communication between the learner and the programmed instructional material stored in the computer. CAL also is the use of computer to mediate in the flow of information in learning process. Recent trends have brought about new packages of CAI which has been designed to feature along with Classroom studies, Lectures, Tutorials, Library and Laboratory work as module of individualized curriculum. Internet connectivity is another aspect of ICT which the teacher can also use in carrying out his work. The World Wide Web that consist of large number of networked computers (called host) which serves as the server (a programme which distributes document) or a client (a programme retrieves documents .. The teacher can also send instruction to the student via Electronic mail (E-mail) and they can also answer and send back to the teacher.

It should therefore, be noted that the importance of ICT cannot be ignored in the sense that it does not only influence what the teacher teaches, but it gives a great deal as to how the teacher teaches. The introduction of the personal computers and laptops as essential tools for the work place in the art of teaching and other administrative and research works done by the teacher offers the teacher a wide range of approaches and strategies to be applied in the course of teaching. It also offers a good aid in the development of application to enhancing curriculum. The teacher with the use of ICT, explores the use of new working tools, also has access to teaching and learning resources through the internet and Local Area Network (LAN).

The Present Status of ICT in Indian Education

In the present day society, computer is no longer a specialized tool used only by scientists but an instrument now been extended to education, commerce, banking, industry,

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administration, governance, health sector to mention a few. As a developing nation is getting stronger by the day but one important index of strength is the quality of education provided her citizenry. Today, in most developed countries, nearly every aspect of human life including education is ICT driven. The education sector in still lags behind in this aspect of technology. However, concerted efforts are being channeled towards this direction by the Teachers Registration for optimal productivity. The teachers teaching these students and pupils Who are not skilled in computer education and application. This calls for the urgent need to address the present situation as teachers constitute a major influence on the use of ICT in the teaching and learning process.

ICT Resources for Sustainable Development

Computers: Computers are no longer just mathematical tools but essential management resources. As we all may know, different operations can be handled more efficiently using Computers. With the computer, such activities as information generation, processing, analyzing, storage and communication for sustainable development could be executed easily. The greatest assets of the computer are speed, cost-effectiveness and optimal utilization of available resources. Some other computer accessories worthy of mentioning are CD.ROM, diskettes, flash drive, etc.

The Internet: This has proven to be the most valuable vehicle for accelerated information flow. According to Ogbomo (2004), it is a network of computers that communicate with each other, often over telephone lines. The potentials of the internet lies in the provision of global platform for information sharing among organizations and individuals. Information sharing creates awareness, ensures continuous use of products and services, provides feedback and

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support for organization. The contention here is that any organization or government that has current and useful information is empowered to enhance productivity and good governance.

Electronic Mail (E-mail): This is the most widely used resource of the Internet. It is provided for sending and receiving mails (messages) through electronic devices. Intra and inter organizational communication has been made faster and cheaper. E-mail has become the life-wire for many business and organizational communication.

World Wide Web (WWW): World wide web is also an Internet-based resource. It is a utility based on hypertexts (Hypertexts simply documents through keywords in document or page). A visit to a website helps individuals or organization to locate products, information, pursue political or social agenda and transacts business (Chilvetalu, 2003). From the above,

ICT for Good Governance and Sustainable Development

The potential attributes and benefits of ICT to policy makers in the society have been accepted as imperative paradigm (Attama and Owolabi, 2008). In all intents and purposes, ICT is the acclaimed engine room of modern day global development and sustainable growth (United Nations Conference on Trade and Development, 2005). In the same vein, Anehobi (2007) maintains that no institution or organization can still rely only on the traditional printed information resources to perform efficiently.

The infusion of ICT into public administration enhances efficiency in the delivery of services to the people. Heber (2011) in his own view maintains that ICT helps in taking high quality decisions and at the same time saves time .ICT is a strong tool for sustainable development and improving governance, widening democratic space, increasing productivity, administrative effectiveness and cost savings (Adamali, Coffey and Safdar, 2006). It is not

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surprising therefore that the application of ICT in governance is engendering much concerns in many countries of the world.

ICT Application in Education

Most of the discussions and initiatives on ICT in Education tend to focus on the use of ICT for teaching and learning only (The Commonwealth of Learning, 2006; Becta, 2004; Akale, 2003). From the earliest times, educational interest in technology has always centered on the instructional application of such technology to improve teaching and learning. The case of the computer provides a perfect illustration of this point. Long before the emergency of ICT, educational interest in the computer centered on its instructional applications as exemplified by computer-assisted instruction (CAI), computer-aided testing (CAT), etc.

It is perhaps easy to understand why the emphasis at the basic and secondary education levels should exclude research application of ICT. The primary responsibility of the teachers at these levels is defined exclusively in terms of teaching. However at the teacher education level, teachers' primary responsibility is of a tripartite nature involving teaching, research and community service. In effect it can be suggested here that any approach to ICT adoption at the teacher education level that stressed only instructional applications and ignores research applications, will be grossly inadequate in meeting the needs of both students and teachers.

ICT applications run through the entire gamut of the educational research process. The advocacy for the indispensability of ICT in educational research can be further strengthened by the following arguments that tends to underscore the values derivable from applying ICT in educational research:

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- It reduced time and cost of conducting educational investigation.
- Data sets and library resources can be shared by institutions in different locations
- Educational researchers have easy access to current literature materials
- Data sets, irrespective of size can be stored and retrieved when needed.
- Researchers in different locations can collaborate more easily, etc (Nworgu, 2007)

Ijafuyi and Adebajo (2006) while speaking on the usefulness of ICT in sustainable development advised on the need for a well-equipped ICT centres in all educational institutions to enable them live up to their social and political responsibilities.

Problems Facing Teachers in Regards to ICT

Identification of a problem goes a long way in solving the problem. However, the importance of ICT will be determined by the ability of teachers to use it to achieve the purpose which it is meant for. The use of ICT for development of Teacher Education in India depends on the Socio- economic and technological factor which should be considered when providing opportunities for using ICT within institutions. Thus, Education is a veritable tool to knowledge economy and we need educated and skilled labour force to achieve it.

- Lack of the Knowledge of ICT is a major problem facing the present day teacher due to the fact that there is no proper in-service training on ICT.
- The few modern teachers who are willing to acquire ICT knowledge have no access to computers.
- Lack of funding of teacher education is another major factor facing teachers as there might not be adequate equipment for learning.

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Probable Ways of Improving ICT integration in Teacher Education in India for Sustainable National Development

Based on the problems highlighted above, the following ways are hereby suggested through which the influence of ICT on teacher education could be improved:

- There is urgent need to review our educational policy strategies and techniques as well as the teaching methodologies of developing our teachers.
- There is need to introduce the teaching of ICT in the school curricular at all levels of our educational system with emphasis on practical application.
- ICT as a course should be made compulsory for lecturers and students of teacher education programme as these students will graduate to teach our school children in schools.
- Supportive infrastructures such as electricity and telecommunication services should be improved and adequately enhanced for effective services.
- The ICT professionals should be encouraged through good remuneration based on improved salaries and conditions of service.
- ICT facilities should be made available at affordable price to be procured by teachers at government subsidized rates.
- ICT centers should be established at all strategic and governmental levels to provide services to people especially the teachers. While there are clarion calls on the government to get connected to the internet, non-governmental organizations should be encouraged to assist in connecting the nation to the internet (Adako, 2006).

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- Re-orientation and re-directing our value system towards the latest development around the world will put our teachers in a state of readiness to whole heartedly embrace the E-Teaching technology. This could be achieved through teacher in-service training programmes such as conferences, seminars and workshops that are based on ICT and teaching and learning process in schools.

Conclusion

The importance of ICT integration in teacher education to improve the quality of teaching and learning process in schools cannot be over-emphasized. The relevance of India in the educational development programme in the 21st century solely depend on the degree of free flow research works and ideas, findings and innovation in education and curriculum information. These can be fully achieved through full integration of the nation into the global highway which is ICT oriented. ICT should be more emphasized in teacher education programme. ICT should always be seen as a tool for teachers to use and no as a substitution for teachers for a sustainable national development. Government intervention in the areas of funding and providing necessary infrastructures to ensure success of ICT in teacher education programme in India must be urgently addressed. Indian government should stop paying lip-service to ICT but rather make frantic efforts to develop and sustain ICT policy in the nation's educational programme. This will go a long way to effectively implement the use of ICT in teaching and learning process in all spheres of our educational system. More also, this will help to guarantee the success of the new teaching technology and teachers will be forced to be abreast with the modern development in the global educational standard, of which ICT plays a vital role.

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Recommendations

Teacher Education Institution's Curriculum should be developed and funded to ensure that teaching and learning process within teacher education / in-service training programs are well packaged to prepare future teachers for the use of ICT as this will bring a good end-product on the students and national development.

- Adequate number of computers should be made available to the teachers in schools as well as instructors to guide them.
- There is need for every teacher to own personal computer for easy accessibility to educational information on the internet.
- Awareness should be created as well as motivation of teachers through workshops/seminars/conferences on a regular basis in order to develop their interest.
- Fluctuations in the power sector is a serious problem, therefore there is need for constant power supply in all institutions as it is a condition for any form of computerization and accessibility of information as far as ICT is concerned.
- It is time for teachers to rise up to the challenges of ICT and attack it with all courage and boldness in order to meet up with the latest Global Trend.
- The knowledge and use of computer should be made compulsory and criteria for the recruitment of teachers.
- Teachers really have to rise up to the challenges of changes in technology. The world is coming to an era where every activity is going virtually electronic. Banking, trading, education, conferences etc. are now being heavily transacted through ICT. Teacher and teacher education therefore, should not be left out, it is not a game of choice or top up, it

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is now a life style that promotes all aspect of education, socio-political, economic and cultural life of a nation. It is indeed great to say that the inclusion and funding of ICT in teacher education curriculum will serve as a veritable tool for sustainable development in India.