

Integrating Information and Communication Technology in Teaching and Learning of Adult and Non-Formal Education

¹Idowu Victor Akinsanya

idowuvictor1234@gmail.com

Department of Adult and Non-formal Education

¹Adediran Elizabeth Morenikeji Titilayo, Ph.D

elizabethadediran2007@gmail.com

Department of Curriculum Studies & Education Technology

¹*School of General Education*

Federal College of Education, Abeokuta, Ogun State

Abiodun Idowu Gbenro, Ph.D

Department of Adult and Non-formal Education

School of Education

Emmanuel Alayande College of Education, Oyo, Oyo State

gbenbiodun@yahoo.com



Abstract

Going by the importance of Adult and Non-formal Education, its delivery should not be handled with kid gloves; rather it should be complemented with modern technologies in order to achieve the set goals. To this end, the paper examines a phenomenon whereby Information and Communication Technology is integrated in teaching and learning of adult and non-formal education. In order to achieve this, the paper outlined the objectives of ICT and discussed the concept of ICT and that of adult and non-formal education under conceptual clarifications. Attributes of ICT, its challenges in relation to the delivery of adult and non-formal education and the different modes of Computer Aided Instruction suitable for adult learning were extensively discussed. Finally and most importantly, the paper discussed various ways through which ICT could be integrated in teaching and learning of adult and non-formal education. Based on the challenges earlier discussed, the paper recommended that Computer and other ICT tools cannot function in vacuum; hence, they need to be effectively manipulated by facilitators before knowledge could be transferred to the

learners. Sequel to this, facilitators are enjoined to go for further studies in order to build their capacity in computer proficiency.

Keywords: adult, non-formal, education, ICT, learning, teaching.

Introduction

The link between the nations of the world is made possible through the advent of Information and Communication Technology (ICT) as information is shared between the citizens of different countries within a twinkle of an eye. Besides, computer technological advancement has added value to almost all facets of human life. Igbinedion and Egbri (2014) listed engineering, banking, health, agriculture, communication, journalism, commerce, marketing, medicine, politics, printing, creative arts and education as areas that have been revolutionized by ICT.

In the area of teaching and learning, ICT has proved to be a major means of solving many problems; especially those problems having to do with assimilation and comprehension of subject matters. Newhouse (2002) affirmed that technology has great potentials to enhance students' achievement and promote classroom learning. ICT devices have unique instructional characteristics that can conveniently promote teaching and learning processes; thereby improving productivity. According to Koledoye, Ekwealor and Imo (2020), ICT devices that can be utilized in educational programmes include computer hardware, computer software, the network and other digital devices like videos, audio, scanners and camera. These devices can convert information in form of texts, sound, motion, amongst others into digital form without stress. In the same vein, Adeyemi and Olaleye (2010) posited that ICT tools such as computer, internet, power point, television, overhead projectors, camera, video, audio C.D, World Wide Web and telephone can be used for learning instruction.

Considering the instructional characteristics embedded in ICT devices, subject matters in adult and non-formal education can be easily comprehended by the adult learners especially when factors like personal characteristics of the learners, level of education of the learners, characteristics of the learning environment and the nature of the curriculum content are put into consideration. Apart from this, ICT devices can serve as change agents in the lives of adult learners by enhancing the quality of education they receive, thus keeping them abreast of the new developments within their immediate environment and the outside world.

Objectives of ICT in Education

According to FGN (2015), the objectives of ICT in education are as follows:

- (i) To facilitate the teaching and learning process.
- (ii) To promote problem-solving, critical thinking and innovative skills.

- (iii) To promote lifelong learning and advance knowledge.
- (iv) To enhance the various teaching/learning strategies required to meet the needs of the population.
- (v) To foster research and development.
- (vi) To support effective and efficient education administration.
- (vii) To enhance universal access to information.
- (viii) To widen access to education and the range of instructional options and opportunities for any-where, any-time, any-pace and any-path learning.

Conceptual clarifications

Information and Communication Technology (ICT)

Information and Communication Technology (ICT) has been defined by many scholars. Ayoola and Yinusa (2015) defined ICT as a term that involves technologies such as internet which is used to communicate and gain access to information. In a broader sense, Aniemeka (2006) defined ICT as convergence of various electronic media with computer at the centre, for the process of collecting, storing, processing and distributing information by electronic means.

Going by the definitions given above, the versatility of ICT knows no bounds since its numerous packages are often applied by government parastatals, corporate bodies, institutions of learning, private organizations, manufacturing industries and a host of others to get their work done with minimal efforts and at a faster rate. Erwat (2007) argued that the introduction of computers, which is the major and most influential technology of the last millennium has made the impact of technology felt in every sector.

ICT encompasses all technologies employed for transmission and dissemination of information to a group of people. These technologies include international network, telecommunication equipment and services, information technology equipment and services, internet service provision, media and broadcasting, commercial information provider and many other related information and communication activities (INASP, 2001 cited in Okwilagwe & Njoku, 2002).

Overtime, ICT has proved to be a major instrument of economic development and social change. These unique characteristics are responsible for the position of the governments, private employers, organizations and many others to upgrade their employees to high profile ICT compliance personnel. Obiozor (2011) submitted that governments in developed and developing societies strive to create opportunities for citizenship participation in ICT training, knowledge and skills acquisition, and general

application and usage of ICT tools to solve problems, promote their wellbeing and enhance national growth.

Adult Education

Different scholars had made concerted efforts to describe adult education. The description given by these scholars are the reflections of their perspectives as regards the subject of discourse. Aliwa (2015) described adult education to include all activities with educational purpose, carried out by people that use their energy to acquire intellectual capability to address their needs. Obidiegwu and Obiozor (2013) defined adult education as organized and purposeful educational activities designed for adults for their personal and societal fulfillment within or out of school which will enable them to adapt to the constantly changing global requirements and needs in order to get them integrated into society and avoid exclusion and marginalization.

Adult education programme, whether formal or non-formal, affords people who are regarded as adults the opportunity to gain knowledge and skills needed to perform functions, carry out some socio-economic activities for self-reliance. Okechi (2004), cited in UNESCO (2011), argued that adult education is the entire body of ongoing learning process or otherwise whereby people regarded as adults by the society which they belong develop their abilities, enrich their knowledge, and improve the technical professional goals or turn them in new direction to meet their own needs and those of the society. Also, Onyenemezu (2012) posited that adult education which may be formal or informal, is education given to any person regarded as adult by society in order to socially, economically and culturally improve and empower him or her so that the person will be able to contribute meaningfully as a useful and acceptable member of the society.

Adult education is structured in such a way that it equips its recipient with social, political, cultural and economic skills needed to survive in the ever dynamic and challenging world. Besides, this form of education is directed towards problem solving and ability to fully adapt to one's environment; contribute to its development and to the development of the nation at large. Aruma (2011) reported that adult and non-formal education includes training for people in employment; the provision of education for the people in employment or workers' education becomes highly imperative in order to enable people keep abreast of recent technological changes and research findings. This will unarguably promote effective service delivery of workers in their various work place in the society (Aruma, 2011).

Educative attributes of Information and Communication Technology (ICT)

Information and Communication Technology has played significant roles in the education sector. Its educative attributes have proved to be the brain behind the successes recorded so far in the education sector. Such educative attributes include:

(i) Medium for exchange of ideas: Scholars all over the world converge virtually to discuss trending issues through exchange of ideas tailored towards solving arrays of societal problems that linger for a long period of time. Bakori (2020) submitted that Information and Communication Technology has great potentials for knowledge dissemination and it brings about new ways in which people can communicate, inquire, make decisions and solve society problems. Besides, individuals do make use of computers as a medium of information exchange; and the interaction between the computer and its users often bring about a change in behaviour.

(ii) Digitization: Learning is better achieved through transmission of contents that are complemented by unique configuration that produces sounds, images, text, graphical presentation, among others. Koledoye, Ekwealor and Imo (2020) argued that there are different ICT devices that can be utilized in educational programmes such as computer hardware, computer software, the network and other digital devices like video, audio, scanners and camera which convert information, text, sound, motion, amongst others into digital form.

(iii) Agent of socialization: The advent of ICT has paved way for different categories of people including the aged to participate in the socialization process. Basically, research has revealed that higher number of people all over the world now engage in electronic banking, sending e-mails, reading of newspapers, browsing of internet and a host of other ICT related activities capable of improving one's social life.

(iv) Innovation: The integration of computers in classroom teaching does not only help to increase the pace at which learners understand and assimilate their subject matters; but also add value and beauty to the teaching and learning process. Through the use of computers, teachers, instructors and facilitators all over the world have acquired a great deal of knowledge in the areas like teaching methodology and the use of appropriate modern instructional materials to create new effects, capable of arousing the interest of the learners to arrive at the desired behavioural change.

Modes of Computer Aided Instruction suitable for adult learning

(i) Dialogue mode and adult learning: Adult learners are mature in their approach to learning. This unique feature is evident in their ability to interact with the computer without much supervision. Dialogue mode of instruction in computer is programmed in such a way that the computer talks to the learners and waits patiently for the learner's response. This type of programmed instruction basically fits learners in Basic literacy classes. Subjects like social studies, languages and elementary science can be

taught through this mode. However, the major constraint of this mode is the English language which happens to be the language of instruction employed by the computer.

(ii) Problem solving mode and adult learning: This type of programmed instruction affords learners the opportunity to supply answer to a particular task by establishing logical steps that may lead to general rather than specific solution to the problem. Problem solving mode is most suitable in post literacy classes. Subjects like mathematics, integrated science and processes in basic and vocational skills can be taught through problem solving mode.

(iii) Tutorial mode and adult learning: The main focus of this mode is to present both textual materials and feedback. The stronghold of this mode is that it is characterized by small steps textual presentation, active learner's participation, frequent feedbacks and reinforcement. Tutorial mode is also suitable for teaching adult learners in subject area like social sciences, sciences, and arts in post literacy classes.

(iv) Drill and practice mode and adult learning: Drill and practice mode consists of set of questions and answers generated by the computer. These questions and answers are provided in varying quantities and degrees of difficulty depending on the individual learners' capabilities and needs. Adult learners in post literacy classes will conveniently learn concepts in subject areas like sciences, languages, social sciences and mathematics through drill and mode practice.

(v) Simulation and adult learning: Simulation is one of the interesting mode of programmed instruction that cannot be easily presented through other media apart from the computer. Learners focus their attention on the stimulated experience which are manipulated through the computer. Learning can be achieved through this mode when skills and concept learnt are integrated in natural situation. Computer games in form of monopoly and scramble are good examples of simulation games. Simulation can be used for teaching adult learners offering mathematics, art and languages in post literacy classes.

Challenges of ICT tools in Adult and Non-formal Education delivery

There are series of challenges working against the integration of ICT tools in teaching and learning of adult and non-formal education in Nigeria. Fasakun (2006) listed policy, planning, infrastructure, learning content and language, capacity building, financing, amongst others, as various challenges which the integration of ICT in adult and non-formal education could face. Some of these challenges are discussed below.

(i) Financial problem: ICT tools are capital intensive; hence one needs a huge amount of capital to procure them. The federal government which happens to be the nation's largest body that finances education is finding it difficult to provide adequate number of ICT tools for the education sector and this has proved to be one of the obstacles retarding the pace of development in the sector.

Adult and non-formal education is not exempted from the shackles of this hydra-headed monster as findings have proved beyond doubt that ICT tools and other facilities vital to its effective delivery are not readily available. Bakori (2020) reported that most adult education centres especially in the rural areas are not equipped with ICT gadgets and tools, computers, internet facilities, assistive technologies like Braille for the visually impaired, mobile wheel chairs for the handicapped adults, amongst others as a result of huge capital involved.

(ii) Shortage of power supply: The epileptic power supply experienced by the citizenry has also contributed to the backwardness recorded in many sectors including education. Without mincing words, ICT tools need constant supply of energy for proper functioning. Going by the challenges posed by the shortage of power supply, the integration of ICT tool in the teaching and learning of adult and non-formal education becomes an uphill task since the alternative energy like petrol and diesel are not cost effective.

(iii) Inadequate number of personnel: Apart from the problem of inadequate experts in computer usage and its integration in learning, facilitators who double as computer experts are also difficult to come by. This simply explains why many of the literacy and vocational centres across the state parade many facilitators that are not computer literate. Bakori (2020) further argued that with respect to challenges of capacity building, adult educators lack professional training facilities for them to be ICT skilled and computer literate. Nnazor (2005) corroborated this position by stating that one impeding factor of ICT integration in adult education is the skill gap of the people implementing it.

(iv) Relevance of software with reference to learning contents and language: In spite of the fact that computer software particularly for instruction in adult and non-formal education are limited in supply, the relevance of the software in respect to the learning content to be delivered and the language of delivery is in doubt. Ideally, many of the computer software for instruction are programmed in English language hence, their comprehension and assimilation could not be guaranteed for non-English speakers. Besides, learning contents in computer software are sometimes structured in such a way that their efficacy in knowledge transmission becomes questionable. Ibeh (2008) asserted that learning contents and language also pose challenge to integration of ICT in adult education.

(v) Poor maintenance culture: The issue of maintenance is a major problem when managing computers for result. The maintenance culture put up by Nigerians is not encouraging and this will definitely reduce the lifespan of the computers. Computer sets in adult education centres are often left in a shamble state. Some are kept in dusty and hot places while many have failed to work due to outdated parts that need replacement. When computers are handled in this manner, their efficiency rate and life span may be jeopardized.

Integrating ICT into teaching and learning of Adult and Non-formal Education

The development of Information and Communication Technology (ICT) has proved to be a blessing beyond imagination to all spheres of life, especially the education sector. Its integration in teaching and learning process has undoubtedly helped to simplify the procedures involved in the comprehension of many subjects. Adult and non-formal education as a broad field of study has unarguably enjoyed the benefits offered by ICT in many ways. This assertion is evident in the growing trends in the integration of ICT in literacy education, extension education, life-skills, vocational education and other non-formal education areas.

Before the advent of internet network, World Wide Web (www) and other sets of new technologies, the delivery of literacy education is being complemented by the use of print media, audio and visual equipment like radio, television, video and projectors. Ewelum (2015) submitted that traditionally, the use of print media, audio materials, radio, television, and video has continued to be the mainstay of every society's literacy teaching and learning, especially by distance. But, as at today, the use of new technologies (ICT tools) has made the delivery of literacy more effective in different subject areas.

ICT tools can be used to retrieve formulas used in solving mathematical problems. Simple mathematical formulas like simple interest, fractions, percentage and others are programmed in the computer to help in simplifying and analysing tasks or problems that may be difficult to solve by learners. Idowu, Oyebiyi and Adeniji (2017) argued that computer has made it easy for students to make use of programmed mathematical instruction in form of symbols, formulas, geometrical shapes, topic analysis and other mathematical concepts relevant to their work.

More so, programmed mathematical games can be used by learners to practice different mathematical skills essential for solving mathematical problems in the real class situation. Fitzgerald and Koury (1996) posited that mathematical games give students feedback such as congratulations, correct, try again, wrong answer, among others. Ideally, computers set the atmosphere for learners to interact with the mathematical games programmed in it. This interaction has subsequently helped learners memorize facts and build skills required to solve various different mathematical concepts (Idowu, Oyebiyi & Adeniji).

Ideally, ICT tools can be used to transmit knowledge through the production of charts, images, pictures, graphs, voice, demonstration or display of skills through practical presentation and a host of other means of transferring knowledge to the learners. For instance, the combination of the aforementioned attributes of ICT tools can be used to

teach topics like control of weeds, crops and animal production, crops and farming systems, irrigation amongst others in agricultural extension education. Through voice, charts, pictures and practical presentation displayed on the screen, learners can easily digest and comprehend the subject matter taught; and they can as well represent such when occasion arises. In the same way, computer can be used to teach life skills and vocational skills to learners.

Ewelum (2015) further argued that the use of computer and other technologies such as interactive video, improves the thinking faculty, skills, problem solving skills and encourages individualized instruction. In the same vein, Sotayo (2008) affirmed the use of computer as an aid to facilitate science teaching of modern science in schools and to develop more effective ways of teaching directed towards improving basic literacy and conceptualized skills, teaching concept, promoting students' enquiry, individualizing instruction, mainstreaming special needs students and matching teaching and learning styles etc.

Besides, through the internet, learners can access quality materials and information in their various locations. This unique attributes of the ICT affords leaners the opportunity to have global knowledge of concepts and practices pertaining to their profession, and they can as well share ideas across the globe. Hilts (1998) submitted that ICT tools, such as the internet that promote cooperative learning allow for rich exchange of information between members of a knowledge community.

Conclusion

Like every other discipline, the teaching and learning of adult and non-formal education requires a sequential and systematic approach; fortified with variety of ICT tools which can convert information to sounds, pictures, images, graphs, texts etc. for quick and easy assimilation of subject matters by adult learners. Without any element of doubt, ICT tools, especially computer make presentation of subject matters in adult and non-formal education more interesting and more purposeful since learning can be better achieved through the combination of all the sense organs.

Recommendations

The following recommendations are made:

- (i) Computer and other ICT tools cannot function in vacuum; hence, they need to be effectively manipulated by facilitators before knowledge could be transferred to the learners. Sequel to this, facilitators are enjoined to go for further studies in order to build their capacity in computer proficiency.
- (ii) The government especially at the state and local government levels should provide adequate funds for the replacement of the worn out computers and other ICT

gadgets in government owned adult education centres across the state. This will pave way for quick and easy understanding of subject matters by adult learners while an increase in the enrolment rate of the learners is also guaranteed.

(iii) Monitoring team in form of task force should be raised to monitor and control the activities and affairs of both human and non-human resources available in government owned literacy and vocational centres. Such monitoring exercise will go a long way to keep the facilitators and other members of staff at the centres on their toes and at the same time, it will ensure the longevity of all the teaching facilities including computers and other ICT tools.

(iv) Going by the epileptic power supply in the country, stakeholders like corporate bodies, non-governmental organizations, philanthropists and well-meaning Nigerians that engage in educational activities are enjoined to form alliance with the government in order to provide adequate capital for the installation of solar energy system in government owned adult and non-formal education centres. This will serve as alternative energy whenever the power supply is cut off.

References

- Adeyemi, T. O. & Olaleye, F. O. (2010). Information Communication Technology (ICT) for the effective management of secondary schools for sustainable development in Ekiti State, Nigeria. *American-Eurasian Journal of Scientific Research*, 5(2), 106 – 113.
- Aliwa, J. (2015). Adult Education: A prelude to national security and development in Nigeria. *Journal of Agricultural and Science Education*, 1(1), 35 – 46.
- Aniemeka, N. E. (2006). *Fundamentals of Educational Technology*. Abeokuta: Peter Nig publishers.
- Aruma, E. O. (2011). The challenges and prospects of adult and non-formal education in Nigerian educational system. A paper presented at 13th Annual National Conference of National Association for Advancement of knowledge (NAFAK), University of Uyo, Uyo, Akwa-Ibom State, 14th – 18th March, 2011.
- Ayoola, R. & Yinusa, A. (2015). The role of ICT in national development. A study of the educational sector in Lagos State. International Conference on African Development Issues (CU – ICADI) Information and Communication Technology Tack. Retrieved from http://eprints.convenantuniversity.edu.ng/5297/.Xccouq80_iu
- Bakori, G. M. (2020). Relevance of Information and Communication Technology in promoting adult education for democratic ideas in Nigeria. *National Council for Adult Education Journal*, 25(1), 55 – 63.
- Erwat, E. A. (2007). Information Communication Technology (ICT) and social transformation. In I.A. Nwazuoke, E. A. Okediran & O. A. Moronkola (Eds.), *Education for Social transformation*. Oyo: Ibadan University printer.

- Ewelum, J. N. (2015). Utilization of Information and Communication Technology in promoting adult and non-formal education in Nigeria. *International Journal of Scientific Progress and Research (IJSR)*, 12(1), 34 – 45.
- Fasakun, N. N. (2006). The challenges of professionalizing adult education delivery in Nigeria: Emerging issues. Paper presented at the Annual Conference of Adult and Non-formal Education, Calabar, Nigeria.
- Federal Government of Nigeria (FGN) (2015). National Policy on Information and Communication Technology. Retrieved from <https://education.gov.ng/wp-content/uploadshtmlAugust2019>.
- Fitzgerald, G. E. & Koury, K. A. (1996). Empirical advances in technology assisted institution for students with mild and moderate disabilities. *Journal of Research on Computing in Education*, 28(4), 526 – 553.
- Hilts, S. R. (1998). Collaborative learning in asynchronous learning network: Building learning communities. Retrieved on 25th April 2015 from <http://ejes.nj.it.edu/httpzcollaborativelearninginasynch.htm.1998>.
- Ibeh, A. E. (2008). *Theory and practice of adult education*. Port-Harcourt, River State: University press.
- Idowu, V. A., Oyebiyi, D. A. & Adeniji, E. O. (2017). Computer aided instruction in mathematical simplification and its significance to learning and capacity building. *Journal of Mathematical Association of Nigeria*, 1(1), 60 – 75.
- Igbinedion, V. I. & Egbri, J. N. (2014). The use of ICT in the teaching and learning in business education programme in University of Benin. *Journal of Educational Thought*, 5(1), 281 – 294.
- Koledoye, U. L., Ekwealor, N. E. & Imo, C. O. (2020). Use of Information and Communication Technology in repositioning adult education for national development among artisans in Awka, Anambra State. *National Council for Adult Education Journal*, 25(1), 291 – 301.
- Newhouse, C. P. (2002). The impact of ICT on learning and teaching: A framework to articulate the impact of ICT on learning in schools. Western Australian Department of Education.
- Nnazor, R. (2005). Adult education in Nigeria: The consequences of neglect and agenda for action. Retrieved July 15, 2015 from <https://www.researchgate.net>
- Obidiegwu, J. U. & Obiozor, W. E. (2013). *Globalization of adult education: Theories and strategies for instructors*. Akwa: One Street Books.
- Obiozor, W. F. (2011). Identification of ICT for development in Nigeria: Utilization, literacy efforts and challenges. *International Journal of Education, Science and public policy in Africa*, 1(1) 113 – 131.
- Okwilagwe, O. A. & Njoku, I. F. (2002). Availability and accessibility of Information Communication Technologies (ICTs) to Nigerian publishers for marketing business. *African Journal of Educational Management*, 10(1), 79 – 92.

Integrating Information and Communication Technology in Teaching and Learning of Adult and Non-Formal Education
Idowu Victor Akinsanya, Adediran Elizabeth Morenikeji Titilayo Ph.D & Abiodun Idowu Gbenro, Ph.D

- Onyenemezu, E. C. (2012). Adult education and the challenges of the 21st century in Nigeria. *Journal of Education and Practice*, 3(5), 1 – 6.
- Sotayo, M. A. O. (2008). Computer assisted programmed instruction and locus of control as determinant of achievement of secondary school students in Physics. *Abeokuta Journal of Multidisciplinary Research*, 1, 3 – 14.
- UNESCO (2011). Adult Literacy and Skills Training Programmes (ALSTP). Retrieved August 19th 2013 from <http://www.UNESCO.org>