International Journal of Innovative Education Research 12(4):83-90, Oct-Dec., 2024

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DOI:10.5281/zenodo.14018482

Impact of Information and Communication Technology Utilization for Enhancement of Learning Delivery Outcomes in Adult Education Programmes in Rivers State

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ABSTRACT
This study evaluated the impact of Information and Communication Technology (ICT) utilization on enhancement of learning delivery outcomes in adult education programmes delivery in Rivers State, Nigeria. The study adopted descriptive research survey design. To this four research objectives, four research questions and one hypothesis guided the study. The population of the study comprised all 3,176 students from ten adult education centres in Rivers State, Nigeria out of which two hundred and seventy (270) representing 8.5% of the entire population was drawn as sample for the study, using proportionate sampling technique. The instrument used for data collection was a four-point scale constructed by the researchers. The questionnaire was validation by three experts selected from the Department of Adult Education and Community Development in the Rivers State University. The instrument yielded a reliability index of 0.82, using test- retest method and Pearson's Product Moment Correlation Statistics. The research questions were answered using mean and standard deviation while the hypothesis was tested using z-test statistics at 0.05 level of significance. The findings indicated among others that there is no significant difference between the mean ratings of responses on the utilization of information and communication technology and enhanced learning outcome in adult education programmes delivery in Rivers State, Nigeria. It was recommended among others that more generous financial support should be made available by the government to provide the basic Information and Communication Technology infrastructural facilities, develop more staff skills and expertise for global competitiveness.
Keywords: Information and Communication Technology, enhanced learning delivery outcome, adult education programmes

INTRODUCTION

At the turn of the century, the pervasive influence of information technology (IT) has penetrated almost all the nooks and crannies of human life. It is clear that this development informed the reason why many organizations have invested in information technology (IT) to support their primary business processes and to achieve a competitive advantage. It is observed that information technology facilitates competitive advantage by giving users new ways to adapt, innovate and reinforce (Porter & Millar, 2015).

Given the development accounted for in the paragraph above, one observes that the phenomenon that is taking the center stage in it outsourcing is Information and Communication Technology (ICT). Information technology is the term commonly used to address the replacement of tasks, hitherto done in offices, individual set-up and business premises by smart machines, e-mail, GSM programmable telephone, automatic banking system, computer terminal etc. By way of a definition, Furht and

Escalante (2010) see ICT as computer related technology used to process, manage, store and transit data. It is seen as a motivator, as it is opening up wider access to learning and providing new ways of delivering adult education in Nigeria.

The use of ICT is more prevalent in education than ever before. This is due in part to the dramatic change in the work place. It is evident that people need to possess information and communication technology skills to meet the demand in every job sector. In response, every institution are providing members with access to computers and offering them training in ICT skills. However, the change in education is not only driven by the work place. They are also influenced by the benefits this technology presents to learning institutions. Learners enjoy easy completion of tasks and activities using the computer. They benefit greatly from drill and practices software designed to reinforce knowledge and skills in a range of subject areas. Moreover, specialized hardware and software meets the needs of learners with a diverse range of learning and physical disabilities.

Adult education is the practice of teaching and educating adults. This often happens in the workplace, through extension or continuing education courses at secondary schools, at a college or university. Other learning places include folk high schools, community colleges and life-long learning centers. The practice is also referred to as training and development. It has also been referred to as Andragogy (to distinguish it from pedagogy). The medium of instruction, information and communication technology used are correspondence, radio, television and every other electronic learning system. We have the sandwich programme organized by various institutions of higher education in the country for adults who are on the job and as well can afford it. We also have the women adult education and nomadic education programme.

Adult education is expected to address the socio-economic, cultural, political and environmental problems besieging humanity in their various societies. This is so because adults are the major occupants of the production sectors of the economy. Fasakun (2016) observed that adult education is not only concerned with preparing people for life but rather helping or assisting people (adults) to live more successfully as useful and acceptable members of the society and contribute meaningfully to the development of those societies. As can be seen from the information above, adult education should be re-positioned to effectively launch the present adults into the orbit where they can respond to the challenges brought in by information and communication technology in order to make meaningful contributions to national development. Nzeneri (2010) clearly stated that:

> our 21st century is characterised by an upsurge of information technology which dictates the pace of development and surely we have not stopped talking aboust technological transfer. A century where communication and infrastructural facilities such as telephones, fax and computer networking are tools that are turning our world into a global village, where classroom may no longer play prominent roles as major access to education.

From the above information, we can see that the internet has been beneficial in mobilizing people globally at the grassroots to take a common stand on global issues of common concerns. Igbo (2018) observed that adult education is an instrument for helping the active population worldwide with information and communication technology (ICT), which is a decisive tool for the smooth integration of Nigerian economy in the global economy.

With the invention of information and communication technology, adult education practices have now changed in its delivery of operations, activities and programmes. In the practice of adult education, various types of technologies are used to aid the services it rendered. Everyday new technological advances affect the way information is handled in adult education centers (i.e. Continuing education centers through online learning). The impacts of new technologies are felt in the practice of adult education in every aspect. Computing technology, communication technology and mass storage technology are some of the areas of continuous development that reshape the way adult educators' access, retrieve, store, manipulate and disseminate information to their learners or clients. Adult education is an integral part of institutions of higher learning that equip the adult with everything he needs for life in order to be relevant to his society by helping to solve some of its problems and contributing to the development of himself and the nation at large. Thus, for adults not to be left out in what is happening in the world they are to key-in into the use and application of this technology and this can only be achieved through the integration of ICT into adult education in Nigeria. This study,

therefore, focuses on the evaluation of the impact of the use of ICT on enhanced learning outcomes in adult education programmes in Rivers State, Nigeria.

Concept of Information and Communication Technology (ICT)

The word information is facts or details about something. Communication means the principles of transmitting information and the methods by which it is derived as print, radio, television, or internet. To ibukun (2017), communication is the basis and medium by which the activities of an organization are initiated and operated. Adamu (2021) described communication as data communications or telecommunications, which refers to the transmission of data and information between two or more computer using a communication channel such as a standard telephone line.

Information and communication technology is a term that frequently lacks adequate definition. One of the main reasons is the breadths in scope that this term encompasses. It includes both the hardware and software associated with the computer. However, to make this discussion intelligent and clearly identify the challenges and prospects of integrating ICT into adult education in Rivers State, it is necessary to conceptualize ICT at this point Onyekwe (2016) sees ICT as a broad based electronic technology that is used for collecting, storing, processing and transmitting information in various forms. ICT is therefore a technology that generally supports the individual' s ability to manage and communicate information electronically. According to Meadowcroft (2019) ICT is the technology used to store, manipulate, distribute or create information. Marzelle quoted in UNDP (2012) states that ICTs are both traditional (such as radio, television, dance, drama folklore, print and fax) and new devices such as the internet, the world wide web, electronic mail, teleconferencing, and distance learning tools such as CD-ROMs, hypertext, IPOD , virtual classroom etc.

Information and communication technologies (ICTs) are electronic and non-electronic technologies, infrastructure, systems, and services used to publish, store, retrieve, and transmit information, to communicate ideas, and to generate knowledge World Bank (2022) defines ICT as the convergence of activities that facilitates capturing, processing, transmission and display of information through digital electronic devices, telecommunication, internet, world wide web, virtual realties and cyber space , adoption and exploitation of knowledge through open and distance education. Information and communication technologies perceived in this way can give a boost to adult education delivery.

The Utilization of ICT in Adult Education Programmes in Rivers State

The education industry in Nigeria as well as the whole world has achieved astronomical transformation, especially since the introduction of information and communication technology. ICT has indeed brought a significant paradigm shift from the traditional method of teaching and learning to the modern method where computer technology is utilized and playing major role. It has created significant and pertinent impact in educational institutions and other indispensable sectors existing for man's survival. ICT has created meaningful impacts which cannot be over-emphasized. Hawkins (2020) believed that the emergence of information and communication technology has given teaching and learning environment a tremendous new looks suitable for acquisition of knowledge, skills, and ideas etc to take place.

In adult education, facilitators and learners are major human elements in the utilization of computer technology driven devices. It has enhanced teaching-learning process and made it more consequential where facilitators and learners can be in the comfort of their homes or anywhere else and receive instructions and share ideas without interfacing with each other. This aspect of teaching and learning benefits the adult learners as they are homogenous group who learn at their pace.

Adult education plays a critical role in promoting lifelong learning, improving skills, and enhancing personal and societal development. It caters to individuals who may not have had the opportunity to engage in formal education or wish to upgrade their knowledge and skills in response to evolving societal demands. In rivers state, adult education is a pivotal tool for community development, addressing literacy gaps, and fostering social and economic progress.

The integration of ICT in adult education programmes has revolutionized learning processes, enabling access to digital resources, online platforms, and interactive learning tools (Ase, 2022). ICT enhances flexibility, allowing adult learners to engage in self-paced learning, attend virtual classes, and access educational materials from remote locations. The use of information and communication technology in adult education programmes delivery has widened the learners' ability to think and act when handling issues related to computer package and skill acquisition which enable the individuals

to have capacity to access and apply information with the aid of computer so that they can be relevant in global economy. The emergence of some of the new technologies, particularly the internet and the World Wide Web, supports the use of more collaborative, contextualized approaches (World Bank, 2022). The technology can enable learners to take active role in the learning process, Despite the benefits, the effective utilization of ICT in these programmes faces several challenges. One of the primary barriers is inadequate infrastructure, which includes insufficient access to reliable internet connections and digital devices. Many adult learners, particularly in rural areas, struggle to participate fully in ICT-enabled learning environments due to the lack of proper technological resources. Another challenge is the lack of digital literacy among both educators and learners. Many adult education facilitators lack the necessary ICT skills to integrate technology effectively into their teaching, and adult learners may also struggle to navigate digital platforms (Ebijuwa, 2018). However, Ebijuwa went further to mention that electricity which must be available for 24hours, lack of technical-know-how, inadequate personnel on the ground to go for training, inadequate and unreliable ICT infrastructures etc as barriers to infrastructural utilization in Nigeria.

Additionally, financial constraints play a crucial role, as acquiring and maintaining up-to-date ict tools can be expensive for adult education programmes, limiting their widespread adoption. Furthermore, resistance to change and inadequate institutional support hinder ICT adoption.

Statement of the Problem

There are enormous benefits accruable from the use of ICT in the delivery of adult education. Adult education is also a vital tool for economic, social and political development. It has also been established that the ways adult education programmes are delivered determine the effectiveness of such programme. In Rivers State, information and communication technology has been used in delivering of various adult education programmes and the rationale for the integration of ICT in adult education is to create viable and lucid awareness among facilitators and learners to access international standard. It was meant to provide an avenue for global competitiveness among learners. But it is a pity to state that this mission has not seen the limelight as it has recorded enormous failure. The effective utilization of the veritable tools of ICT for enhanced learning outcome has been bedeviled with key barriers such as limited access to technological infrastructure, high costs of digital devices, bad network, and inadequate training for both educators and learners on the use of ICT tools. Additionally, the digital divide between urban and rural areas exacerbates the inequality in access to ICT resources, hindering the potential of these technologies to enhance learning outcomes. Though, scholars in the past must have examined the utilization of ICT facilities in adult education but this work will evaluate how the impact of ICT utilization on learning outcomes in adult education programmes in Rivers State, Nigeria.

Purpose and Objectives of the Study

The purpose of the study is to evaluate the impact of ICT utilization on learning delivery outcomes in adult education programmes in Rivers State, Nigeria. Specifically, the study seeks to:

1. find out the ICT facilities available for enhanced learning outcome in adult education programmes delivery in Rivers State, Nigeria.
2. determine the ways utilization of the available ICT facilities brings about enhanced learning outcome in in adult education programmes delivery in Rivers State, Nigeria.
3. Identify the barriers to effective utilization of ICT for enhanced learning outcome in adult education programme delivery in Rivers State, Nigeria
4. examine the possible means of managing ICT facilities for enhanced learning outcome in adult education programmes delivery in Rivers State, Nigeria.

Research Questions

1. What are the ICT facilities available for enhanced learning outcome in adult education programmes delivery in Rivers State, Nigeria?
2. What are the ways utilization of the available ICT facilities brings about enhanced learning outcome in in adult education programmes delivery in Rivers State, Nigeria?
3. What are the barriers to effective utilization of ICT for enhanced learning outcome in adult education programme delivery in Rivers State, Nigeria?
4. What are the possible means of managing ICT facilities for enhanced learning outcome in adult education programmes delivery in Rivers State, Nigeria?

Hypothesis

The hypothesis was tested at 0.05 level of significance.

There is no significant difference between the mean rating of respondents' opinion on the impact of ICT utilization on enhanced learning outcome in adult education programmes delivery in Rivers State, Nigeria.

METHODOLOGY

This study adopted a descriptive survey research design. The population of the study comprised two thousand six hundred and ninety eight (2,698) academic staff in three public universities in rivers state, Nigeria. A sample size of two hundred and seventy (270) respondents was selected representing 8.5% of the entire population using proportionate sampling technique, out of which 143 are male and 127 are female. Two hundred and seventy copies of the questionnaires were sent out to the respondents, out of which 259 copies were completed and retrieved for data analysis. Evaluating the Impact of Information Technology Utilization on Learning Outcome in Adult Education Programme Delivery Questionnaires (EIITULOAEPDQ)" was validated by two experts in the Department of Educational Psychology (Measurement and Evaluation). The instrument yielded the reliability index of 0.82 using Cronbach alpha. Section A contains bio data while B contains questions that elicited information on utilization of ICT for enhanced learning outcome in adult education programmes delivery. The instrument was patterned according to modified Likert four point scale type of Strongly Agreed, Agreed, Disagreed and Strongly Disagreed which are 4,3,2, and 1 points respectively. The instruments were administered by the researchers and three research assistants. The research questions were answered using mean and standard deviation while z-test was used to analyze the hypotheses at 0.05 level of significance.

RESULTS

Research Question 1: *What are available ICT facilities for enhanced learning outcomes in adult education programmes delivery in Rivers State, Nigeria?*

Table 1: Mean and standard deviation response on the availability of ICT facilities for enhanced learning outcomes in adult education programmes delivery

S/N	Items	Male			Female		
		Mean	SD	decision	Mean	SD	decision
1	Internet is a tool of ICT for enhanced learning outcomes	3.16	.76	Agreed	3.08	.72	Agreed
2	Facilitators uses projector sometimes in programme delivery	2.96	.68	Agreed	2.80	.60	Agreed
3	Radio can be used in educating adults.	3.40	.86	Agreed	3.28	.82	Agreed
4	Adult education programme can be delivered through television	2.98	.78	Agreed	3.04	.74	Agreed
5	Print media/online materials are part of ICT tools for enhanced learning	3.26	.79	Agreed	3.18	.77	Agreed
	Grand mean	**1.152**		**Agreed**	**3.076**		**Agreed**

Table 1 reveals that all items (1-5) had mean scores above the criterion mean of 2.50. In summary, with the grand mean of 3.152 and 3.076 for male and female respectively, the respondents agreed that the above items are the available ICT facilities that can enhance learning outcome in adult education programme delivery in Rivers State, Nigeria.

Research Question 2: *What are the ways utilization of ICT facilities brings about enhanced learning outcome in adult education programmes delivery in Rivers State, Nigeria?*

Table 2: Mean and standard deviation of respondents' opinion on the ways utilization of the available ICT facilities brings about effective learning outcome

S/N	Items	Male			Female		
		Mean	SD	decision	Mean	SD	decision
6	Utilization of ICT facilities offer learners control over lesson content.	3.19	.82	Agreed	3.14	.80	Agreed
7	It brings about learning sequence.	3.04	.78	Agreed	3.02	.76	Agreed
8	It enables learners to be competent in ICT.	3.68	.98	Agreed	3.60	.86	Agreed
9	It brings about pace of learning.	3.46	.83	Agreed	3.42	.80	Agreed
10	It creates experiences in meeting personal and societal learning objectives.	3.80	.96	Agreed	3.74	.902	Agreed
	Grand mean	**3.438**		**Agreed**	**3.384**		**Agreed**

Table 2 reveals that items (6-10) had mean scores above the criterion mean of 2.50. In summary with the grand mean of 3.438 and 3.384 for male and female respondents respectively, it is adjudged that all of them agreed that the above items are the ways utilization of the available ICT facilities can bring about enhanced learning outcome in adult education programme delivery in Rivers State, Nigeria.

Research Question 3. *What are the barriers to the effective utilization of ICT facilities for enhanced learning outcome in adult education programmes delivery in Rivers State?*

Table 3: Mean and standard deviation response to research question three.

S/n	Items	Male			Female		
		Mean	SD	Decision	Mean	SD	Decision
11	Lack/inadequate technological tools such as projectors, television	3.8	.842	Agreed	3.84	.83	Agreed
12	Inadequate funding is one of the challenges	3.72	.804	Agreed	3.68	.79	Agreed
13	Lack/inadequacy of experts to operate these tools in adult education centres	3.68	.88	Agreed	3.64	.852	Agreed
14	Epileptic power supply distorts the use of computers in our centres	3.82	.101	Agreed	3.80	.98	Agreed
15	Bad network	3.84	.104	Agreed	3.78	.102	Agreed
	Grand mean	**3.772**		**Agreed**	**3.748**		**Agreed**

Table 3 shows that all items (11-15) had mean scores above the criterion mean of 2.50. In summary with the grand mean of 3.772 and 3.748 for male and female respondents, it is adjudged that the above items have been agreed by all of them as the barriers to effective utilization of ICT facilities for enhanced learning outcomes in adult education programme delivery in Rivers State, Nigeria.

Research Question 4 : *What are the possible means of managing ICT facilities for enhanced learning outcome in adult education programmes delivery in Rivers State, Nigeria?*

Table 3: mean and standard deviation response on research question three.

S/n	Items	Male			Female		
		Mean	SD	Decision	Mean	SD	Decision
16	There should be periodic maintenance of the facilities	3.82	.101	Agreed	3.80	.98	Agreed
17	There should be adequate monitoring of the facilities and its accessories.	3.84	.104	Agreed	3.78	.102	Agreed
18	Adequate training of learners and facilitators on ICT skills	3.68	.88	Agreed	3.64	.852	Agreed
19	Available facilities should be handled with care.	3.8	.842	Agreed	3.84	.83	Agreed
20	Adequate funding	3.72	.804	Agreed	3.68	.79	Agreed
	Grand mean	**3.772**		**Agreed**	**3.748**		**Agreed**

Table 4 shows that all items (15-20) had mean scores above the criterion mean of 2.50. In summary with the grand mean of 3.772 and 3.748 for male and female respondents respectively, it is adjudged that the above items have been agreed on as the possible means of managing ICT facilities for enhanced learning outcome in in adult education programme delivery in Rivers State, Nigeria.

Test of Hypothesis

Null Hypothesis 1: There is no significant difference between the mean ratings of the opinions of male and female respondents on the ways utilization of ICT facilities can enhance learning outcome in adult education programmes delivery in Rivers State, Nigeria.

Table 4: z-test statistics of the mean responses of male and female academic staff on provision of e-learning facilities

Respondents	N	Df	Mean	sd	P-value	Z-cal	Z-crit	Decision
Male	132		3.152	.774				
		257			5>0.05	0.813	1.96	Ho
Female	127		3.076	.730				retained

Data in table 5 revealed the z-test analysis of difference between the mean scores of the male and female respondents on the ways utilization of ICT can enhance learning outcome in adult education programmes delivery in Rivers State, Nigeria. The result showed that z-calculated value of 0.813 is less than the z-critical value of 1.96 at degree of freedom of 257 and at 0.05 level of significance. Hence, the null hypothesis is retained. Therefore, there is no significant difference between the mean rating of male and female respondents opinion on the ways utilization of ICT can enhance learning outcome in adult education programmes delivery in Rivers State, Nigeria.

DISCUSSION OF FINDINGS

The first finding of this work revealed that the ICT facilities that can enhance learning outcome in adult education programme delivery in Rivers State, Nigeria are: radio, television, projectors, print media/online materials. This finding is in consonance with the opinion of World Bank (2022) that ICT is the convergence of activities that facilitates capturing, processing, transmission and display of information through digital electronic devices, telecommunication, internet, World Wide Web, virtual realties and cyber space.

The second finding of this study revealed that effective utilization of ICT facilities offer learners control over lesson content, brings about learning sequence, enables learners to be competent in ICT, brings about pace of learning and creates experiences in meeting personal and societal learning objectives. This finding corroborates the assertion of Hawkins (2020) that the emergence of information and communication technology has given teaching and learning environment a tremendous new looks suitable for acquisition of knowledge, skills, and ideas etc to take place.

The third finding of the study revealed that the barriers to effective utilization of ICT facilities for enhanced learning outcome in adult education programmes delivery in Rivers State, Nigeria include: lack/inadequate technological tools such as projectors, television, inadequate funding, lack/inadequacy of experts to operate these tools in adult education centres, epileptic power supply distorts the use of computers in our centres and bad network. This is in support to the findings of Ebijuwa (2018) that electricity which must be available for 24hours of the day is one of the basic problems that Nigeria has with infrastructural facilities. He went further mention factors as lack of technical-know-how, inadequate personnel on the ground to go for training, inadequate and unreliable ICT infrastructures etc as barriers to infrastructural utilization in Nigeria.

The fourth finding revealed that the possible means of managing ICT facilities for enhanced learning outcome in adult education programmes delivery in Rivers State are: periodic maintenance of the facilities, adequate monitoring of the facilities and its accessories, adequate training of learners and facilitators on ICT skills, handling available facilities with care, and adequate funding.

Finally, the hypotheses tested at 0.05 level of significance revealed that there is no significant difference between the opinion of male and female respondents on the ways utilization of ICT facilities can engender enhanced learning outcome in adult education programmes delivery in Rivers State, Nigeria. This finding is in agreement with the assertion of Ase (2022), who opined that the provision of ICT facilities in a specialized institution brings about greater enthusiasm and high level happiness to both the staff and students as well as enhancing knowledge.

CONCLUSION

It is evident from the findings of this work that information and communication technology has contributed immensely to the delivery of adult education programmes. There is remarkable rise in the use of ICT, many adult education programmes and activities are now ICT driven; talk of correspondence education (distance and Open University), extension education programme etc. This has led to the speed on acquisition, processing, programming and dissemination operations. The importance cannot be overlooked and underestimated; therefore, adult education centers in Rivers State should be provided with sufficient and adequate ICT facilities in order to produce learners who are abreast with the current global educational trend and standard for global competitiveness.

RECOMMENDATIONS

Based on the findings and conclusion, the following recommendations were made.

1. More generous financial support should be made available by the government to provide the basic ICT infrastructural facilities.
2. Short computer training and retraining programmes should be organized from time-to time to assist adult facilitators and educators who do not have knowledge and computer skills. This will also aid awareness of computer potentials and capabilities.
3. Orientation programme on the use of computer and ICT generally for adult education programmes should be conducted and made compulsory for new entrants into the profession.
4. Effective and efficient power supply should be provided to check the menace of frequent electricity power failure and more so electricity gadget should be worked on so as to avoid interrupted network. In the same vein, the government should address the problem of erratic power supply more seriously not through military order but through research and development.

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