# Technological Innovations and Adult Literacy in Rural Areas of Ogun State, Nigeria

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## Abstract

The rural areas in Nigeria still have high level of adult illiteracy despite adoption and implementation of several global agreements for its reduction. This paper focused on the influence of internet and mobile phone technologies on adult literacy programme in rural areas of Ogun state, Nigeria. Using descriptive survey ex-post facto method and modified Technological Innovation and Adult Literacy Questionnaire, data collected from 100 participants were analysed with descriptive statistical tools and PPMC Correlation Matrix at 0.05 level of significance. Results show that internet technology had significant positive influence on adult literacy programme outcome while mobile phone technology also had significant positive influence on adult literacy skills acquisition programme. Therefore, the two null hypotheses were rejected. The implications of the findings of this study are that internet and mobile phone technologies are essential innovations that have assumed prominent positions in the global adult literacy crusade. With the spread across the developed and developing countries, they have the potentials to easily facilitate reduction of global illiteracy rates across different environmental and physical barriers. The paper provides recommendations on the roles of national and international agencies of adult education and literacy.

**Keywords:** Technological Innovations, Adult Literacy, and Rural Areas

## Background

Literacy in Nigeria is still at its lowest ebb despite the country's participation in several declarations and agreements to improve its access to majority of the global population. Specifically, in spite of the Dakar Framework for Action to eradicate illiteracy by the year 2015, the rate of illiteracy in Nigeria still stands at a rate higher than the global benchmark. According to National Bureau of statistics (2010) the national adult literacy rate stands at 57.9%, and in any other language it is 71.6%. There are variations between states with Lagos recording literacy in any language at 87.7% and 80.5% in English. Borno literacy rate is 58.6% in any language and in English it is 38.1% while in Ogun it is 77.7% in any language and it is 66.2 % in English. This disparity also extends to the urban centers with literacy rate in any other language at 83.0% and in English it is 73.6% while in the rural areas literacy in any other language is 65.5% and in English it is 49.5%.

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Some of the attempts made in the past to remedy the situation in Nigeria are in form of major initiatives like the expansion of basic education in 1992 to include pre-primary, primary, the first three years of secondary education (JSS), Mass Literacy for both adolescents, adults and women's education. It also included emphasizing the Mass Literacy, Adult and Non-Formal Education in the National Policy of Education. The efforts include creation of Federal agencies solely responsible for formulation and implementation of adult and non-formal education policies. These include the Federal Ministry of Education, National Commission for Mass Literacy, Adult and Non-Formal Education, National Commission for Nomadic Education and the Universal Basic Education Commission (Olojede, Adekunle & Samuel, 2013). With all these previous efforts not achieving the desired results, it shows that literacy in Nigeria has been hindered by many factors. Scholars identify that social, political, economic and cultural factors are the constraints of literacy in Nigeria. Others are insufficient number and quality of physical infrastructures such as school buildings, school furniture and equipment, lack of books, writing materials and teaching supplies, insufficient number of qualified teachers, lack of adoption of technological innovations, considerable number of early leavers and repetition of grades at the primary and middle levels.

Several studies have been conducted on literacy and information communication technology in literacy training and development such as the publication of United Nations Economic Scientific and Cultural Organisation (UNESCO, 2006) on the using ICT to develop literacy, a randomized study on the use of mobile phone in adult education program in Niger conducted Aker, Ksoll and Lybert (2011) and the study by Ofoegbu and Agboeze (2014) on service delivery for adult literacy programme with focus on resource utilization, entrepreneurship development and wealth creation. However, not so much studies have been carried out on the use of internet and mobile phone technologies in adult literacy education programmes in rural areas. Therefore, this study focuses on technological innovations i. e internet and mobile phone technologies and adult literacy in rural areas of Ogun State, Nigeria. Furthermore, the study assesses the technological innovations deployed for literacy to determine their influence and outcome in the rural areas of Ogun state.

**Objectives of the study**
The specific objectives of this study are:
1. To determine whether there is any relationship between the use of internet technology and adult literacy programme outcome in the rural areas under study.
2. To determine the influence of mobile phone technology on adult literacy skill acquisitions of the participants in the rural areas under study.

**Research Questions**
The study provides answers to the following questions:
i.      Is there any relationship between the use of internet technology and adult literacy programme outcome in the rural areas under study?

ii.     What is the influence of mobile phone technology on adult literacy skill acquisitions of the participants?

**Hypotheses**

H$_{01}$:  There is no significant relationship between internet technology and adult literacy programme outcome.

H$_{02}$:  There is no significant relationship between mobile phone technology and adult literacy skill acquisitions.

**Concepts and Literature Review**

The concept of literacy has expanded over the last 60 years, and its definition has subsequently evolved over time. This evolving definition has in turn led to different perspectives and changes in approaches to literacy education. According to UNESCO (1990), literacy is the ability to identify, understand, interpret, create, communicate and compute using printed and written materials associated with varying contexts. Brammer (2002), states that literacy refers to more than just the ability to read and write. It is the knowledge and skills that students need to perform effectively within a particular environment. UNESCO (2006) defines it as "the ability to read and write with understanding a simple statement related to one's daily life. It involves a continuum of reading and writing skills, and often also includes basic arithmetic skills (numeracy)". In the opinion of Tenibiaje (2012), literacy is considered to be the ability to read and write at a designated level of proficiency. Further, UNESCO (2006) recognizes that "people acquire and apply literacy for different purposes in different situations", and that literacy is not uniform, but is culturally and linguistically diverse. Therefore, the concept of "literacy" as a notion often used today as a substitute for the word "ability" or "competency". For example, "computer literacy" is the ability to use computers, and access and create information through a computer while information literacy refers to the skills required to organize and search for information, while also analyzing that information.

Critical literacy is defined as the ability to engage in critical thinking, and judge the intention, content and possible effects of written material. Mobile literacy refers to the ability to use mobile technology, such as a mobile phone and its non-voice features. Media literacy and research literacy refers to the ability to be a discerning reader and the ability to find various types of information. Cultural literacy is the ability to understand cultural, social and ideological values in a given context. Legal literacy means the knowledge of basic legal rights and how to protect those rights and visual literacy refers to the interpretation of images, signs, pictures and non-verbal (body) language. In the case of computer literacy and information literacy, they are identified as the necessary skills to cultivate emerging knowledge societies; the ability to read and write is a prerequisite for gaining many of these abilities. However, scholars indicate that although learning to read and write requires significant guidance and a degree of formalized education, learning to use a computer and other technological innovations can be an intuitive process. This implies that the various forms of "literacy" associated with the rise in use of new forms of technological innovations, such as "mobile literacy", do not require the same degree of emphasis and investment that learning to read and write requires.

Literacy increases the functionality of individuals thereby guaranteeing human beings and societies to reach their full potential. Olojede, Adekunle and Samuel (2013) note that this is possible because it is also a vital process that enables changes in people's attitudes to achieve ethical awareness, values, attitudes, skills, and behaviour consistent

with the goal of building a more sustainable society. Hence, people are better equipped to participate in decision-making that adequately and successfully addresses environment and development issues around them. Sarfo, Amartei, Adentwi and Brefo (2011) state that technological innovations like information communication technology (ICT) and internet facilities are critical keys to quality education and literacy in both developed and developing countries. In the opinion of Mohammed (2012), online education including adult and literacy through internet consists of all structure of electronic support for teaching and learning purpose. He notes that with this, it transfers the knowledge and skills that are required by users including literacy students.

Consequently, Ofoegbu and Agboeze (2014) note that internet facilities have become veritable tools to reduce the high rate of illiteracy in Nigeria. According to Internet Society (2017), ''the African continent has seen the growth of internet connectivity in recent years, mainly due to availability of undersea cables and ubiquity of mobile phones''. It has been observed there is an upward trend in the number of internet users, however about three-quarters of the African population does not have access to the internet today. Moreover, there is a significant diversity in Africa, with only a few well-connected countries like Kenya, Mauritius, Morocco, Nigeria, Seychelles, South Africa, and Tunisia attaining connectivity level of around half of the population. In Nigeria the population of internet users has grown from 200,000 constituting 0.1% of the national population in year 2000 to 92,699,924 i.e 51.1% of the total national population in year 2015 (Internet Society, 2017). With this, the internet technology can provide the much-needed alternative learning tools for literacy education and contribute to alleviation of the pressing challenges of education sector in Nigeria; like absence of learning materials, limited quality and quantity of teachers and accessibility problem confronting the rural populace. The internet helps to reach more individuals and disseminate content and learning resources, like textbooks, at a lower cost. Under the right conditions, the internet technology removes the barriers to education that marginalized groups, including rural people, women and disabled people, encounter. For the literacy education, lifelong, distance or informal learners, the internet facilitates learning without time or location constraints. It enables a wider array of professional development opportunities for educators and adult learners and allows learners access to global, high-quality education that prepare them for global and national employment (Internet Society, 2017). However, Eynon and Malmberg in Mohammed. (2012) state with the potential effectiveness of internet use in literacy programmes, policy makers should consider its level of adequacy and integrate how to adjust to any limitation into their programme design.

Mobile phone coverage and usage has grown dramatically in Africa over the past decade, and certainly in Nigeria. With its unique features, it has provided a new experience that leads to comprehension and mastery of new skills and knowledge, from literacy programmes. Studies by Ashraf, Gine and Karlan (2005) and de Silva and Ratnadiwakara (2008) show that mobile phones can facilitate rural literacy education through a greater expert orientation. Masuki, Tukahirwa, Kamugisha, Mowo, Tanui, Mogoi, and Adera (2012) recommend that mobile phone utilization can bridge the adult literacy gap. According to them and some other authors, the use of mobile phones is beneficial to people in areas of information literacy, social literacy, and environmental literacy and several skill acquisition. Aker, Ksoll and Lybberty (2011) state that mobile phone is a tool to promote adult literacy and numeracy. They note that use of mobile

phones for literacy education complement traditional literacy classes, thereby providing households with the opportunity to practice their literacy and numeracy skills via calling and SMS. Citing their experience in Niger Republic, ''it addresses an important constraint to previous functional literacy programs, where it has been difficult for adult learners to practice what they have learned by accessing timely, up-to-date, and relevant information in their local languages''. With this possibility, mobile phone can make literacy programs in developing countries easier and students can practice their literacy skills after the course ends.

**Methodology**

This study adopts the descriptive survey design of the ex-post facto type. The population of the study consist all the people in the four rural communities that participated in the adult literacy programmes propelled by internet and mobile phone technologies. Simple random sampling technique was used to select a total of 100 participants for the study. Modified Technological Innovation and Adult Literacy Questionnaire with Four Point Likert Scale was used to collect data and analysis was done with descriptive and Pearson Product Moment Correlation Matrix at 0.05 level of significance.

**Results and Discussion**

Table 1(a) shows the demographic data generated from the respondents in the study area. It shows that eighty-five (85) male and fifteen (15) female constituting 85% and 15% of the total respondents respectively participated in the study. It also reveals that eighteen (18) i. e. 18 % of the respondents were under 30 years, thirty (30) i. e. 30 % were between 31-40 years, twenty-seven (27) i. e. 27 % were between 41-50 years old and twenty-five (25) i. e. 25 % within the range of 51-60 years old. This shows that more male adults showed interest and participated in the literacy programme. The age range also indicates that there were more middle-aged adult's participants in the adult literacy programme.

**Table 1(a): Demographic Information (Respondents Gender and Age)**

| S/N | Demographic Variables | Frequency | Percentage |
|-----|----------------------|-----------|------------|
|     | **Gender**           |           |            |
| 1   | Male                 | 85        | 85         |
| 2   | Female               | 15        | 15         |
|     | Total                | 100       | 100        |
|     | **Age**              |           |            |
| 1   | Below 30             | 18        | 18         |
| 2   | 31-40                | 30        | 30         |
| 3   | 41-50                | 27        | 27         |
| 4   | 51-60                | 25        | 25         |
|     | Total                | 100       | 100        |

**Table 1(b): Demographic Information (Respondents Academic Qualification)**

| S/N | Demographic Variables | Frequency | Percentage |
|-----|----------------------|-----------|------------|
|     | **Academic Qualification** |      |            |
| 1   | Primary Education    | 63        | 63         |

| | | | |
|---|---|---|---|
| 2 | Secondary Education | 34 | 34 |
| 3 | Tertiary Education | 03 | 3 |
| | Total | 100 | 100 |

Table 1(b) above shows that among the respondents sixty-three (63) i. e. 63% has primary school education, thirty-four (34) i. e. 34% has secondary education and eleven (03) i. e. 3% has tertiary education. This result indicates that participants in the literacy programme cuts across those with basic, post basic and higher education.

**Test of Hypotheses**
**Table 2.: Correlation Matrix of the Relationship between Internet Technology and Adult Literacy Programme Outcome**

| | Internet Technology | Numeracy | Production Skills/ Knowledge | Information Literacy | Environmental Literacy | Social and Economic Literacy |
|---|---|---|---|---|---|---|
| 1. Internet Technology | 1 | | | | | |
| 2. Numeracy | .305** | 1 | | | | |
| 3. Production Skills/Knowledge | .355** | .558** | 1 | | | |
| 4. Information Literacy | .395** | .661** | .759** | 1 | | |
| 5. Environmental Literacy | .404** | .624** | .793** | .853** | 1 | |
| 6. Social and Economic Literacy | .116** | .341** | .400** | .448** | .567** | 1 |

**\*\*** Significant at .05 level

Table 2 shows that there is a positive significant relationship between internet technology and numeracy (r = .305), production skills/knowledge (r = .355), information literacy (r = .395), environmental literacy (r = .404) and social and economic literacy (r = .116) respectively. The result indicates that internet technology had significant positive influence on adult literacy programme outcome in the rural communities; therefore, the null hypothesis is rejected. This result corroborates the earlier findings of Sarfo, Amartei, Adentwi and Brefo (2011) that IC/internet technology has remarkable impacts on all curriculum areas including adult literacy programme. The findings of the study conducted by Igwe and Ewelum (2016) further confirms this result by stating that use of computer and the internet technologies for adult learners has significant positive effects on adult learners' attitude and their behaviour.

**Table 3.: Correlation Matrix of the Relationship between Mobile Phone Technology and Adult Literacy Skills Acquisition**

| | Mobile Phone | Numeracy | Production Skills/ | Information Literac | Environmental ntal | Social and Econo |
|---|---|---|---|---|---|---|

| | | | Knowle dge | y | Litera cy | mic Litera cy |
|---|---|---|---|---|---|---|
| 1. Mobile Phone | 1 | | | | | |
| 2. Numeracy | .393** | 1 | | | | |
| 3. Production Skills/Knowledge | .131** | .558** | 1 | | | |
| 4. Information Literacy | .163** | .661** | .759** | 1 | | |
| 5. Environmental Literacy | .128** | .624** | .793** | .853** | 1 | |
| 6. Social and Economic Literacy | .277** | .341** | .400** | .448** | .567** | 1 |

**\*\*** Significant at .05 level

The above Table 3 shows that there is a positive significant relationship between mobile phone technology and numeracy (r = .393), production skills/knowledge (r = .131), information literacy (r = .163), environmental literacy (r = .128) and social and economic literacy (r = -.050) respectively. This implies that mobile phone technology had positive influence on all the dependent variables. Hence, it positively influenced adult literacy skills acquisition in the communities. Therefore, the null hypothesis was rejected. This result is similar to the earlier finding of Aker, Ksoll and Lybberty (2011), which shows that use of mobile phone technology in adult literacy programme had significant impacts on the literacy skills acquisition of adult literacy students in rural areas. Further, this result is corroborated by the findings of Wyche, Densmore and Geyer (2015) that mobile phone adult literacy education programme improved literacy and productive skills of the participants.

**Conclusion and Recommendations**
From the foregoing, it is evident that internet and mobile phone technologies are innovations spreading across the globe. With their spread their relevance in adult literacy education programme implementation is overwhelming. These technologies have been identified as tools capacity to break barriers to the attainment of global adult literacy goals and empowerment of rural people. Therefore, it is recommended that the international and national adult education agencies as well as governments of developing nations should fund the integration of internet and mobile phone technologies in adult literacy education to strengthen the capacity of adult literacy professionals and learners for proper adoption of these technologies.

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