

# Use of Information Communication Technology for Teaching by N-Power Teach Beneficiaries of Public Primary and Secondary Schools in Nigeria

Janet O. Adekannbi and Adeola Oluwatosin Makinde

Africa Regional Centre for Information Science, University of Ibadan, Nigeria.

E-mail: janet.adekannbi@gmail.com, deomak11@gmail.com

**Abstract** - This study investigated the use of mobile devices for teaching by N-Power Teach beneficiaries in public primary and secondary schools in Nigeria. Descriptive survey design was adopted, and 50 beneficiaries were selected using multi-stage sampling. Data collection was through interview and data collected were transcribed and analysed using Nvivo 12 software. Findings revealed that the main ICT tool accessed by the beneficiaries was the N-Teach application (a pre-installed application) which contains textbooks, video, audio materials. The devices were reportedly used for preparing lesson notes and instructional materials. Beneficiaries reported being confident in the use of these devices for teaching, however, beneficiaries in secondary schools reported having primary school teaching application tools on their devices. School administrators reportedly had positive attitude to the use of the devices while few had initial rejection. Challenges reported in the use of the devices included poor power supply, insufficient data and network failures.

**Keywords:** Information and Communication Technology, Teaching and learning, N-Power Teach Beneficiaries, primary and secondary schools, Nigeria

## I. INTRODUCTION

The integration of information and communication technologies into all levels of education can be a major boost in the educational development of any country. The adoption and use of ICT in education can have a positive impact on teaching, learning, and research. ICT affects the delivery of education and enable wider access to same; it also influences the way students are taught and how they learn, hence, providing a profound impact on the process of learning and thereby offering new possibilities for learners and teachers (Syed, 2010).

The use of ICT in education at the basic level was introduced by the Federal Government of Nigeria in 2016 under the National Social Investment Programme (NSIP). The basic objective of the programme is to tackle poverty and hunger across the country. The suite of programmes under the NSIP focuses on ensuring a more equitable distribution of resources to vulnerable populations, including children, youth and women. Since 2016, these programmes combined have supported more than 4 million beneficiaries' country-wide through a fair and transparent process supported by the Ministry of Budget and National

Planning (MBNP) and other notable ministries, departments and agencies with aligned goals.

One of the programmes under the NSIP is the N-Power Job Creation Programme. The objective of this programme is to imbibe the learn-work entrepreneurship culture in youths who are graduates and undergraduates between the ages of 18 – 35, at the same time reducing poverty and improving livelihoods of unemployed youths. The N-Power programme is also a portfolio of many programmes which include N-Power Creative, N-Power Agro, N-Power Build, N-Power Health, N-Power Junior, N-Power Teach, N-Power Tech, N-Power Health and N-Power Tax. N-Power Teach programme is a paid volunteering programme of 2-year duration which is designed to assist young Nigerians to acquire and develop life-long skills for becoming change makers in their communities. N-Power Teach beneficiaries are deployed as teaching assistants in primary and secondary schools around Nigeria to improve basic education delivery. They do not replace the current teachers but support and assist with teaching, school management and other functions within the schools. These beneficiaries are given mobile devices with application programmes for teaching pupils as well as the beneficiaries' personal development. The mobile devices contain an N-Teach application which provides instructional materials including educational national policy, national curriculum, and effective use of the curriculum, lesson plan and notes as well as textbooks. They also contain software like kids' zone, as well as others that teach pupils pronunciation, typing and practical interactive lessons for class activities. The N-Teach application also has classroom teaching and management module which prepares the beneficiaries for the classroom teachers. The module trains them on classroom teaching and management, teaching the lessons and managing challenging situations.

In 2016, the Federal Government engaged the first batch of 200,000 N-Power Teach beneficiaries, while an additional 300,000 were enlisted in 2017. All these beneficiaries were deployed to public primary and secondary schools. The first batch of 200,000 completed their 2-year duration in 2018. However, little is known about the use of these devices by the beneficiaries. Studies have shown that applying ICT tools in teaching and learning has not only expanded

learning opportunities thereby making education accessible to more people, but it has at the same time created an environment in which students actively participate in the learning process (Anikweze & Kanu, 2018; Alenezi, 2019). However, the use of ICT for teaching and learning can sometimes result to frustration on the part of many teachers who do not have adequate knowledge of electronic media technologies like computer, internet, and education software (Abdullah & Jantan, 2019). Other barriers to the integration of ICT in the classroom are insufficient technical support at school, little or no access to internet and ICT tools and the shortage of class time needed to learn using ICT while in the classroom. Added to these are, lack of confidence on the part of the teachers and resistance to change from traditional pedagogical methods to more innovative technology based teaching and learning methods by both students and academics (Salehi & Zeinab, 2012; Ghavifekret al., 2016).

In view of the huge amount being spent from time to time by the Federal Government on the N-Power Teach project, especially on the devices given to the beneficiaries, it is important to assess how the beneficiaries use their mobile devices; what they use them for, and the effectiveness of the use of these devices. Hence, this study investigates the use of mobile devices for teaching by N-Power Teach beneficiaries by answering the following research questions.

1. What types of ICT tools do N-Power Teach beneficiaries have access to on their mobile devices?
2. What do the beneficiaries use the ICT tool on their mobile devices for and the frequency of use?
3. What is the extent of pupils' interaction with the devices?
4. What is the perceived self-efficacy of the beneficiaries in the use of their mobile devices for teaching and learning?
5. What is the perceived impact of the use of mobile devices on teaching and learning?
6. What is the attitude of the school administrators towards the use of the mobile devices for teaching by the N-Power Teach beneficiaries?

7. What are the challenges to the use of mobile devices for teaching by N-Power Teach beneficiaries?

The remainder of this paper is organized as follows: the following section presents the methodology for the research, followed by the findings and discussion, conclusion, and recommendation sections.

## II. RESEARCH METHODOLOGY

This study utilized survey design using the qualitative approach in investigating N-Power Teach beneficiaries in public primary and secondary schools in Egbeda Local government of Oyo State, Nigeria. Egbeda Local Government, Ibadan was purposively selected because it is one of the local governments with the highest number of public primary and secondary schools in Oyo State. The local government also has one of the largest populations of N-Power beneficiaries in Oyo State. The population of 506 beneficiaries in Egbeda Local government are spread across 76 and 25 public primary and secondary schools, respectively.

A total of 50 beneficiaries (primary schools 30, secondary schools 20) were selected to participate in the study. According to Ritchie et al. (2003), there is a point of diminishing return to a qualitative sample such that having more data does not necessarily lead to more information. Hence, qualitative sample can often reach a saturation point at a sample size of less than 50. Moreover, Green and Thoro good (2009) added that in qualitative studies, little that is new comes out from data collected after interviewing some 20 respondents. Hence, the sample size of 50 beneficiaries was considered adequate. Multistage sampling was adopted in selecting the respondents. First, the total of 101 public schools were classified into 4 groups based on their location: rural public primary schools (RPPS), urban public primary schools (UPPS), rural public secondary schools (RPSS) and urban public secondary schools (UPSS) (Table I).

TABLE I SAMPLING PROCEDURE

Group	School Sampling		Beneficiaries' Sampling
	Stage 1	Stage 2	Stage 3
RPPS	32	6	12
UPPS	44	9	18
RPSS	8	2	8
UPSS	17	3	12
Total	101	20	50

At the second stage, 20% of schools in each group was randomly selected as follows, nine (9) public primary schools in urban area, six (6) public primary schools in rural area, three (3) public secondary schools in urban area and two (2) public secondary schools in rural area. At the third

stage, convenience sampling was applied in selecting two (2) beneficiaries from each of the selected primary schools, while four (4) beneficiaries were selected from each selected secondary school (Table 1). Only N-Power Teach beneficiaries who had completed the 2-year duration were

purposely selected. In the selected schools, the Head Mistresses/Masters and Principals were the first point of call. These in turn informed the researchers about the beneficiaries who qualified to participate in the study.

Data collection was carried out using one-to-one interviews. This enabled the beneficiaries to freely express their views on the use of their mobile devices for teaching. The interviews were conducted in English language and questions on the interview schedule included the type of ICT tools beneficiaries had access to on their mobile devices, as well as how and what they use these tools for. Questions were also asked on the beneficiaries' self-efficacy in the use of these devices as well as on the attitude of school administrators towards the use of the devices. Responses by the beneficiaries were recorded. Recorded data were transcribed and analyzed thematically using Nvivo software for qualitative analysis. Thematic analysis is

a qualitative analytic method for: identifying, analyzing, and reporting themes within data. The themes capture something important about the data in relation to the research questions and represent some level of patterned response or meaning within the data set (Braun & Clarke, 2006). Results from Nvivo analysis are displayed as word frequency counts and word clouds.

### III. RESULTS AND DISCUSSION

#### A. Demographic Characteristics of Respondents

This section presents findings on the gender, place of primary assignment and years of beneficiaries teaching experience using frequency count and percentage. Table II reveals that 40.0% respondents were males while 60.0% were females; 60.0% taught in primary schools while 40.0% of the respondents taught in secondary schools.

TABLE II SOCIO- DEMOGRAPHIC INFORMATION OF THE RESPONDENTS

Respondent's Demographics	Variable	Frequency	Percentage (%)
Gender	Male	20	40.0
	Female	30	60.0
Place of Primary Assignment	Primary School	30	60.0
	Secondary School	20	40.0
Total		50	100.0

#### B. Types of ICT tools on mobile devices of N-Power Teach beneficiaries

Output from the query on word frequency using Nvivo software is presented in Table 3, showing the types of ICT tools that the beneficiaries had access to on their mobile devices. The table shows frequency of words not less than 10. The word 'n-teach application' had the highest occurrence of 40, followed by 'Samsung' (31), 'Search engines' (28) and 'Tecno' (13). N-Teach application is a pre-installed application which contains textbooks, video, audio

and nursery rhymes that the beneficiaries use in teaching. Search engines on these devices also included Google Chrome, Opera mini and Mozilla Firefox. Samsung and Tecno phones were the common brands for the mobile devices and these also usually come with the products' pre-installed applications. This explains the high frequency of 31 and 13 for Samsung and Tecno respectively. Other ICT tools on some of the devices included Microsoft word, Microsoft excel, Microsoft PowerPoint, Whatsapp, Face book Brian software and textbooks as shown in the Nvivo word cloud.

TABLE III WORD COUNT OF THE ICT TOOLSON MOBILE DEVICES

Word	Count	Weighted Percentage (%)
n-teach application	40	24.39
Samsung	31	18.90
Search engines	28	17.07
Tecno	13	7.93

According to Mbalamula (2016), technologies including audio and video available and accessible on computers, laptops and tablets are increasingly used to support learning. The pre-installed n-teach application which is the main teaching tool for the beneficiaries also included necessary

materials for Basic 1 to 6 in all subjects at the primary level. Also included in this application is a platform which enables the beneficiaries to engage in practical training on managing and controlling class activities. Many of the beneficiaries

were equipped with the necessary tools to carry out their teaching activities.

**C. Use of ICT Tools on N-Power Beneficiaries’ Mobile Devices and Frequency of Use**

Findings showed that the following themes were dominant in the Nvivo output: prepare lesson note and plan (35), as

instructional material (25), to download materials (textbooks, picture and diagrams) (19), teach, train self on how to teach, manage and control classroom (19). Most of the beneficiaries reported using the ICT tools for teaching: every day, almost every day, almost every time, every time and frequently. Few however used them occasionally ((Table 4).

TABLE IV WORD COUNT OF USES OF ICT TOOLS AND THE FREQUENCY OF USE

Word	Count	Weighted Percentage (%)
Prepare lesson note and plan	35	26.12
As instructional material	25	18.66
Download materials	19	14.18
Tot each	19	14.18
Everyday	10	7.46
Almost everyday	4	2.99
Almost every time	4	2.99
Every time	4	2.99

Below are some of the responses given by those that used their devices frequently to prepare lesson notes, as instructional material and to teach.

*“I do use N-Teach Application to prepare my lesson note. I use search engines to search for additional knowledge. To write lesson note, to show them pictures I downloaded from the internet (as instructional material) and also for calculation, daily”* (Male, United Baptist School, PakuAwaye, RPPS)

*“I use the textbook downloaded on the N-Teach Application to teach and I search on the internet on what to teach the pupils. I also use it to prepare the lesson plan, nearly every day”* (Female, Community Primary School I, Ayepe, UPPS)

Generally, findings showed that most of the beneficiaries regularly used their mobile devices for teaching and learning. This however contradicts an earlier study by Ali (2015) which reported that the rate of using ICT in teaching at the basic level is low. The study was carried out among 180 schools in Nigeria, under the Universal Basic Education (UBE) programme. The study noted that there existed a general need for computer education among pupils and teachers. However, the current study observed that the N-Teach beneficiaries actively used their mobile devices for teaching activities. A probable reason for this finding is that the fact that the mobile devices were freely given to them by the Federal Government primarily for this purpose is an incentive for them to use the devices as expected. Perhaps a contrary finding would have been observed if the cost of owning the mobile devices was borne by the beneficiaries.

Some respondents in secondary schools reported using mainly the search engines on their mobile devices. The reason expressed by the beneficiaries was that the N-teach applications on their mobile devices were for primary school curriculum whereas these beneficiaries were in secondary schools. This was a common observation among N-Teach beneficiaries in both rural and urban areas. Hence, many of them relied on textbooks provided by the schools they are assigned. Below are some representative responses:

*“I use the search engines to search for related topics and to prepare my lesson notes. However, the textbooks on the N-Teach Application are for primary school while am appointed to a secondary school. I use it to prepare lesson notes, once in a while”*(Female, Community Secondary School, Adegbayi, UPSS)  
*“Actually, the N-Teach Application is not that effective because the textbooks there are not for secondary school but meant for primary school. So, I only use the search engine for materials I need in class. I use it to prepare my lesson note. I use it for my personal technological development, to search for information online and to prepare myself for class management and control almost every time”* (Male, Community High School Egbeda, RPSS)

A previous study by Kwache (2007) noted the need for inspection and evaluation that will not only ensure that ICT curricula are adhered to but as well as certain that the right equipment is procured and delivered. It appeared that in the current study, due diligence was not carried out before the mobile devices were given to these N-Power Teach beneficiaries, which led to their having the wrong ICT tools for teaching and learning.

**D. Extent of Pupils’ Interaction with the Mobile Devices**

The Nvivo word cloud in Figure 1 shows that the main interaction pupils had with

the mobile devices were in viewing diagrams. Many other pupils also watched subject related videos on these mobile devices, whereas some pupils engaged in internet searching.



Fig.1 Pupils’ interaction with mobile devices

Below are responses provided by the respondents on the extent to which pupils interact with the beneficiaries’ mobile devices:

*“Yes, they do. They make use of it with me. Maybe I want to show them something such as an organ or diagram of the human body”.* (Female, NUD Bale, Egbeda, RPPS)

*“Yes, if I download materials to show them in class. For example, when I downloaded the constitution of Federal Republic of Nigeria to explain the topic of human right”* (Female, Urban day Grammar School, Junior, UPSS)

Some of the beneficiaries however reported not allowing the pupils to interact with the devices. The main reason given was the fragility of the devices. Others also reported not taking their devices to class.

*“Yes. Not directly giving it to them because the mobile device is fragile, but I show pictures downloaded to them in groups if need be”* (Female, Community Primary School II, Isebo, UPPS)

The use of ICT is increasingly becoming an integral component in teaching and learning processes even at the basic level (UNESCO, 2018). Interactive audios, videos and pictures on mobile devices are excellent tools for learning during class time. It was interesting to observe that many of the beneficiaries allowed their pupils to enjoy this

interaction. This most probably suggests that the beneficiaries understood their role in the teaching and learning process.

**E. Perceived self-efficacy of N-Power Teach beneficiaries in the use of their mobile devices for teaching and learning**

The following themes were identified from the qualitative data collected on the perceived self-efficacy of the beneficiaries in the use of their mobile devices for teaching and learning: very easy, don’t need help, consult colleague (if there is any challenge), easily, easy, straightforward, so easy, so quick, user-friendly. Table 5 shows that ‘very easy’ (86) had the highest occurrence, followed by ‘do not need help’ (42), ‘consult colleague’ (6), ‘easily’ (5), ‘easy’ (4), ‘straight forward’ (2).

Table V shows that generally the beneficiaries found their devices very easy to use. This was the finding in both primary and secondary schools located in urban and rural areas of the local government. The following are responses by some of the beneficiaries.

*“I don’t need any help except the data to access the internet, very easy, as a computer literate I find it very easy. I go online for solution”*

(Male, Urban Day Grammar School Junior, Old Ife Road, UPSS)

TABLE V WORD COUNT OF THE PERCEIVED SELF-EFFICACY OF BENEFICIARIES

Word	Count	Weighted Percentage (%)
Very easy	86	48.59
Do not need help	42	23.73
Consult colleague	6	3.39
Easily	5	2.82
Easy	4	2.26
Straightforward	2	1.13

Few respondents who need help usually consult their fellow N-Power beneficiaries.

*“No one is an encyclopaedia of knowledge, whenever I need an assistance, I walk up to my colleagues who know better than me.”*

(Male, IDC School I, Olubadan, UPPS)

*“I am computer literate, but if I have problem in operating the mobile device, I do take it to my colleague for help”* (Male, United Baptist School, PakuAwaye, RPPS)

There exist diverse views on the role of self-efficacy on the use of technology by teachers. According to Tweed (2013) and Tilton and Hartnett (2016), self-efficacy is significantly related to classroom technology use by teachers. Kent and Giles (2017) found that 95% of pre-service teachers reported some confidence in their ability to select and utilize technology in teaching. A contrary study by Hickson (2017) reported that self-efficacy does not influence the ability to integrate technology within the classroom. However, majority of the beneficiaries in the current study reported a high level of self-efficacy in the use of their mobile devices. A plausible reason for this finding is that the minimum

requirement for N-Power beneficiaries is a degree at the university level or higher national diploma at the polytechnic. Hence, many of them are experienced enough to navigate the mobile devices and use for their teaching activities. It was also observed that the fact that some of them consulted colleagues for help did not diminish their self-efficacy as most times such consultations were made on few technical issues.

#### **F. Perceived Impact of Mobile Devices on Teaching and Learning**

Themes identified as showing the perception of the beneficiaries on the impact of the use of their mobile devices include the following: teaching and learning made easy, teaching and learning made more effective, teaching made more explanatory, eases preparation of lesson note, student gain more, interesting learning, teachers getup dated (on body of knowledge), exposes students to ICT, reduces burden of carrying textbook, get (provides) better teaching aid, gives reliable information and make learning retentive. A look at the word count frequency in Table6 shows that teaching and learning made easy (14), teaching and learning more effective (13) and teaching more explanatory (10) had the highest occurrences.

TABLE VI WORD COUNT ON THE PERCEIVED IMPACT OF USE OF MOBILE DEVICES

Word	Count	Weighted Percentage (%)
Teaching learning easy	14	23.33
Teaching learning more effective	13	21.67
Teaching more explanatory	10	16.67
Eases preparation of lesson note	6	10.00
Student gaining more interesting learning	5	8.33

It was interesting to observe that no beneficiary reported any negative perception. Some of the responses as shown below revealed that the beneficiaries believed that their use of the devices has positively impacted on them personally and the pupils they teach. These responses were also observed among beneficiaries in rural areas.

*“Yes. It helps the pupils to easily identify what they see. It gives more explanation and illustration on what the pupils see. It makes me to be better off as a teacher*

*because I can easily connect to the internet and learn more.”*

(Female, Community Primary School II, Isebo, UPPS)

*“Yes, it reduces the burden of carrying textbooks around for you can access the textbook on the mobile device. It encourages the pupils when they see what we are teaching and help in retaining what they see”*

(Male, Place of Primary Assignment: IDC Primary school Olujinle, RPPS)

Findings from this study agree with previous studies that have reported on the impact of ICT on teaching and learning. According to Brinkley *et al.* (1999), electronic tools can make classes more efficient; lectures more compelling, informative, and varied; reading assignments more extensive, interesting, and accessible; discussions

more free ranging and challenging; and students' papers more original and well researched. More studies have continued to show that use of ICT in teaching and learning can result in a meaningful teaching and learning experience for teachers and students (Montrieux *et al.*, 2015; De Sousa *et al.*, 2017; Slavin, 2018).

**G. Attitude of the School Administrators towards Beneficiaries’ use of Mobile Devices for Teaching**

Findings showed that administrators of most of the schools where the beneficiaries serve were supportive in the use of the mobile devices for teaching, to the extent that some of these administrators would also appreciate the Federal Government of Nigeria extending such initiative to the

regular teachers. However, some were initially opposed to their use but later changed their attitude when they observed the positive impact of the use of the mobile devices for teaching. These findings are represented by the following themes: positive, supportive, not supportive first, ‘negative at first’, ‘later positive’ and ‘negative at initial’. Table VII shows the word count on the attitude of the school administrators.

TABLE VII WORD COUNT OF THE ATTITUDE OF THE SCHOOL ADMINISTRATORS

Word	Count	Weighted Percentage (%)
Positive	29	47.54
Supportive	15	24.59
Not supportive at first	9	14.75
Negative at first	5	8.20
Later positive	1	1.64
Negative at initial	1	1.64

Table VII shows that the themes ‘positive’ (29) and supportive (15) had the highest occurrences. These were followed by ‘not supportive first’ (9), ‘negative at first’(5),‘later positive’ and ‘negative at initial’ each occurred once.

Previous study by Serhan (2007) showed that school principals who had attended an educational technology training workshop in the United Arab Emirates had positive attitudes toward the use of technology in teaching and were willing to support its use in their schools. However, responses on school administrators’ initial negative attitude showed that this was based on the fear of the mobile devices replacing the traditional method of preparing physical lesson notes. This is shown in one of the responses below:

Some of the responses showing the positive attitude of school administrators include the following:

*“They are supportive, but they want the Federal Government to provide such for them to aid their teaching too”* (Female, Community Primary School I, Ayepe, UPPS)

*“It is supportive because the mobile device is reflecting on the academic performance of the pupils. The school administrators appreciate the initiative, their attitude is positive “* (Female, Community Primary School II, Isebo, UPPS)

*“They love it. The school also has a functioning computer laboratory, so they encourage the use of the mobile device for teaching.”* (Male, Community Secondary School, Olaogun, UPSS)

*Change is not an easy thing to imbibe. Naturally, people threaten when they see a change in all sectors. When you bring a new thing to a sector, people will not quickly adapt to the change because they are used to the former way. At first the administrators were not supportive because they thought teaching profession will be robbed of the physical method of doing things. They made it appear as if the young teachers are lazy and not abiding by the rules of the teaching profession but they later accepted the use of the mobile devices for teaching as a result of the seminal I organized titled ‘Teachers and online resources’.”* (Male, Community Primary School, Alarere, UPPS).

Findings from the current study are not surprising as a recent study by Ngwenya and Pelsler (2018) proffered a

likely reason for this observation. According to the study, there is a significant relationship between administrators' ICT competencies, acceptance, and ICT utilization among secondary schools in Bulawayo Zimbabwe. While the school administrator's possessed moderate ICT competencies, their attitude towards the utilization of ICT were indifferent, which led to low level of acceptance of ICT utilization among them. It is also likely that the few

administrators who initially opposed the use of the devices did so due to their inadequate competency in the use of ICT.

#### **H. Challenges Affecting Beneficiaries' Use of their Mobile Devices for Teaching**

Respondents were asked of the challenges encountered while using their mobile devices for teaching. Table 8 shows the word frequency of themes identified in the Nvivo analysis.

TABLE VIII WORD COUNT OF CHALLENGES AFFECTING BENEFICIARIES' USE OF MOBILE DEVICES FOR TEACHING

Word	Count	Weighted Percentage (%)
Poor power supply	30	38.96
Insufficient data	8	10.39
Network failure	8	10.39
No challenge	7	9.09
Durability	5	6.49
Fragile	4	5.19
School administrators' initial negative attitude	4	5.19
Cost of maintenance	2	2.60

The theme with the highest occurrence was 'poor power supply' (30), which is distantly followed by 'insufficient data' (8), 'network failure' (8), 'durability' (5), 'fragile' (4), 'school administrators initial negative attitude' (4) and 'cost maintenance' (2). There were also 7 counts of 'no challenge', showing that those beneficiaries did not encounter any challenge in their use of mobile devices for teaching.

Some responses of the beneficiaries are shown below.

*"Insufficient data, costly maintenance, accessibility to repair faulty tab and insufficient power supply."*  
(Male, St. Brendan's School II, Ikumopayi, RPPS)

*"Being rural area, internet access failure and poor power supply"*  
(Male, United Baptist School, PakuAwaye, RPPS)

*"At first the school administrators were the challenge. Poor power supply. The mobile device is fragile, so you need to handle with care."*  
(Female, Methodist Primary School, Olodo, UPPS)

*"Poor power supply, and insufficient data, the device is also fragile."* (Female, Urban day Grammar School, Junior, UPSS)

It is not a surprise that poor power supply was reported by many of the respondents as the major challenge to the use of their mobile devices. Generally, the problem of inadequate power supply has been perennial in several places in Nigeria irrespective of whether they are rural or urban locations. Previous studies have noted poor power supply as a major hindrance to use of ICT for teaching and learning (Omotosho *et al.*, 2015; Gertrude, 2015; Ezugwu *et al.*,

2016). Many of these studies were conducted in Nigeria. Moreover, lack of public community facilities has been reported as one of the challenges to the use, adoption, and implementation of ICT in education in Africa (Barakabitze *et al.*, 2019). However, while the problem of inadequate power supply has been reported as the major challenge to ICT use in teaching and learning, other problems that have been reported include lack of ICT infrastructure in learning institutions; technology affordability and accessibility, teachers' lack of knowledge and skills and inadequate technical support (Siddiquah & Salim, 2017; Chowdhury *et al.*, 2018; Barakabitze *et al.*, 2019).

#### **IV. CONCLUSION AND RECOMMENDATIONS**

This study assessed the use of Information and Communication Technology for teaching by N-Power Teach beneficiaries in public schools of Oyo State, Nigeria. Findings showed that all the 50 N- Power beneficiaries were in possession of their mobile devices given as part of the N-Power programme by the Federal Government. However, not all beneficiaries had the n-teach application, the main pre-installed application, on their mobile devices. An important observation was also the fact that the same n-teach application was installed in mobile devices of beneficiaries in both primary and secondary schools. This application contained materials that could only be used in teaching primary school pupils. Thus, N-Power beneficiaries and pupils in secondary schools could not benefit from the use of these teaching applications. This raises an urgent need for the Federal government of Nigeria to carry out an investigation of the suitability of the tools the beneficiaries are equipped with. It is not just enough to distribute technologies that would have little or no use for the beneficiaries. This is especially important since the

Federal Government in June 2019 announced the commencement of another phase of the programme.

The study also observed that while most of the beneficiaries allowed pupils' interaction with the devices, some exclusively used the mobile devices for themselves. A primary reason for this action is the fragile nature of the mobile devices. It is imperative that vendors of mobile devices for this N-Power initiative give a consideration to the quality of packaging for these devices. Higher quality packaging that does not predispose the devices to easy breakage in the event of a fall should be used. It is not appropriate that pupils remotely interact with the different applications on these mobile devices due to fear of breakage. This study also suggests that the Federal Government should ensure that the configuration of the mobile devices given to beneficiaries is only amenable to applications and features that facilitate teaching and learning activities alone and not for other uses. This will significantly reduce some beneficiaries' attitude of leaving their devices at home for only their personal use.

Many of the administrators in the schools of the beneficiaries were supportive of their use of the mobile devices for teaching activities. However, some showed initial apathy to the use of these devices. The implication of this is that probably those administrators are yet to appreciate the place of ICT in education. Hence, this demands a further step to be taken by the Federal Ministry of Education, which is a sensitization programme for these school administrators on the activities of the N-Power beneficiaries. This will promote synergy and working towards a common purpose on the part of administrators and N-Power beneficiaries. Nigeria continues to grapple with the problem of unstable power supply, and this was observed in this study where a high number of beneficiaries reported poor power supply as a major challenge to their use of the mobile devices. The need for the Federal Government and other related agencies to urgently take steps to improving the electricity situation in the country cannot be overemphasized. There is very little that can be accomplished in terms of inclusion of ICT in education without this aspect substantially taken care of.

This study has focused on N-Power beneficiaries in only one local government in Nigeria. This is considerably small compared to the population of beneficiaries in the country. The N-Power programme is an initiative in providing employment for graduates who could not be employed in the formal private and public sector. It is the right step in the right direction in not just providing more human resources to strengthen the educational sector, but also integrating technology into the delivery of education across the nation, and thereby reducing poverty. Hence, further studies are suggested in different zones of the country. This will provide an all-inclusive overview of the N-Power Teach programme especially as the Federal Government has identified this initiative as a positive step in poverty reduction.

## REFERENCES

- [1] Abdullah, N.K.& Jantan, H. (2019). Benchmarking the potential educational technology competency standard based on TPCK in Malaysia for local higher education institutions. In Mat Noor A., Mohd Zakuan Z., Muhamad Noor S. (eds) *Proceedings of the Second International Conference on the Future of ASEAN (ICoFA) 2017*.
- [2] Alenezi, A. (2019). Effectiveness of educational technology applications in Saudi Arabian secondary schools. *Journal of Informatics and Mathematical Sciences*, 11(2), 221-233. <https://www.rgnpublications.com/journals/index.php/jims/article/view/845>.
- [3] Ali,H.O. (2015).The use of information and communication technology in technical and vocational education: The case of universal basic education (UBE) schools. *American Journal of Educational Research*, 3(7), 868-872.<http://pubs.sciepub.com/education/3/7/9/index.html>.
- [4] Anikweze, C.M.& Kanu,A.C. (2018).Information and Communication Technology (ICT) and 21stCentury education in Nigeria.*International Journal of Innovation and Research in Educational Sciences*,5(6).[http://ijires.org/administrator/components/com\\_jresearch/files/publications/IJIRES\\_1375\\_FINAL.pdf](http://ijires.org/administrator/components/com_jresearch/files/publications/IJIRES_1375_FINAL.pdf)
- [5] Barakabitze, A.A., Lazoro, A.W., Ainea, N., Mkwizu,M.H., Maziku, H., Matofali, A.X., Iddi, A. & Sanga, C. (2019).Transforming African education systems in Science, Technology, Engineering, and Mathematics (STEM) using ICTs: Challenges and Opportunities.*Education Research International*, 2019, <https://doi.org/10.1155/2019/6946809>.
- [6] Braun, V.& Clarke, V. (2006). Using thematic analysis in psychology.*Qualitative Research in Psychology*, 3(2),77-101.
- [7] Brinkley, A., Dessants, B., Flamm, M., Fleming, C., Forcey, C.& Rothschild, E. (1999).Usingelectronic resources for teaching.*The Chicago Handbook for Teachers: A practical guide to the college classroom*. ISBN: 978-0-226-07511-2, 143-167.
- [8] Chowdhury, S.A., Arefin, A.S.M.S. & Rahaman, M. (2018). Impacts of ICTintegration in the higher education classrooms: Bangladesh perspective.*Journal of Education and Practice*, 9(32), 82-86.
- [9] De Sousa, L., Richter, B.& Nel, C. (2017).The effect of multimedia use on the teaching and learning of Social Sciences at tertiary level: A case study.*Yesterday and Today*,17,1-22.<http://www.scielo.org.za/pdf/yt/n17/02.pdf>.
- [10] Ezugwu, A.E., Ofem, P.O., Rathod, P., Agushaka, J.O.& Haruna, S. (2016). An empirical evaluation of the role of Information and Communication Technology in advancement of teaching and learning. *Procedia Computer Science*, 92, 568-577.
- [11] Gertrude, K. (2015). Maximizing the effects of collaborative learning through ICT.*Procedia-Social and Behavioral Sciences*, 176, 1005-1011.
- [12] Ghavifekr, S., Kunjappan, T., Ramasamy, L. & Anthony, A. (2016). Teaching and learning with ICT tools: Issues and challenges from teachers' perceptions. *Malaysian Online Journal of Educational Technology*,4(2), 3857.<https://files.eric.ed.gov/fulltext/EJ1096028.pdf>.
- [13] Green, J. & Thorogood, N. (2009). *Qualitative methods for health research* (2nd ed.). SAGE.
- [14] Hickson, R.S. (2017). The relationship between self-efficacy and teachers' ability to integrate technology.Ph.d Thesis, Liberty University.
- [15] Kent, A.M.& Giles, M. (2017). Preservice teachers' technology self-efficacy.*SRATE Journal*26(1),9-20.<https://eric.gov/?id=EJ1134392>.
- [16] Kwacha, P.Z. (2007). The imperatives of information and communication technology for teachers in Nigeria higher education. *MERLOT Journal of Online learning and Teaching*, 3(4), 359-399.
- [17] Mbalamula, Y.S. (2016). Role of ICT in teaching and learning: Influence of lecturers on undergraduates in Tanzania. *Advances in Research*, 8(3), 1-11.
- [18] Montrieux, H., Vanderlinde, R., Schellens, T. & De Marez, L. (2015). Teaching and learning with mobile technology: A qualitative explorative study about the introduction of tablet devices in secondary education.*PLoS ONE*, 10(12). <https://doi.org/10.1371/journal.pone.0144008>.

- [19] Ngwenya, B.&Pelser, T. (2018). Competencies, Attitudes, Acceptance and Their Impact on ICT Diffusion in Educational Institutions in Bulawayo, Zimbabwe. *Progressio: South African Journal for Open and Distance Learning Practice*, 40(1). <https://doi.org/10.25159/02568853/4770>.
- [20] Omotosho, A.O., Lateef, E.B., Amusa, O.I.& Bello, T.O. (2015). Information and communication technology adoption and use among students of a Nigerian University for distance learning. *Library Philosophy and Practice*, 1246. <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=3303&context=libphilprac>.
- [21] Ritchie, J., Lewis, J. & Elam, G. (2003). Designing and selecting samples. In Ritchie, J. and Lewis, J. (Eds.), *Qualitative research practice. A guide for social science students and researchers*. SAGE, 77-108.
- [22] Salehi, H.& Zeinab, S. (2012). Challenges for using ICT in education: Teachers' insights. *International Journal of e-Education, e-Business, e-Management and e-Learning*, 2(1), 40-43. <http://ijeeee.org/Papers/078-Z00061F10037.pdf>.
- [23] Serhan, D. (2007). School principals' attitudes towards the use of technology: United Arab Emirates Technology Workshop. *The Turkish Online Journal of Educational Technology*, 6(2). <https://files.eric.ed.gov/fulltext/EJ1102467.pdf>.
- [24] Siddiquah, A.& Salim, Z. (2017). The ICT facilities, skills, usage, and the problems faced by students of higher education. *EURASIA Journal of Mathematics, Science and Technology Education*, 13(8), 4987-4994.
- [25] Slavin, T.M. (2018). The advantages of using electronic gadgets in teaching in school. <https://classroom.synonym.com/advantages-electronic-gadgets-teaching-schoolADE7895103.html>.
- [26] Syed, N. (2010). An effective use of ICT for education and learning by drawing on worldwide knowledge, research, and experience: ICT as a change agent for education. <https://www.nyu.edu/classes/keefe/waoe/amins.pdf>.
- [27] Tilton, J. & Hartnett, M. (2016). What are the influences on teacher mobile technology self-efficacy in secondary school classrooms? *Journal of Open, Flexible and Distance Learning*, 20(2), 79-93.
- [28] Tweed, S.R. (2013). *Technology Implementation: Teacher Age, Experience, Self-Efficacy, and Professional Development as Related to Classroom Technology Integration*. Electronic Theses and Dissertations. Paper 1109. <https://dc.etsu.edu/cgi/viewcontent.cgi?article=2266&context=etd>.
- [29] UNESCO's International Institute for Educational Planning (2018). Information and communication technology (ICT) in education. <https://learningportal.iiep.unesco.org/en/issue-briefs/improve-learning/curriculum-and-materials/information-and-communication-technology-ict>.