

## Constraints of Information and Communication Technology on Teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Nigeria

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### Abstract

The menace of Covid-19 pandemic affected almost every sector of the economy including the educational sector which resulted to the closure of educational institutions particularly in Nigeria. Hence, the ensuing paper investigated the constraints of information and communication technology on the teaching of physical and health education in Adeyemi College of Education, Ondo, Ondo state, Nigeria. A descriptive research design was adopted and the research data was collected using a well-structured and self-developed questionnaire and validated by the researcher's supervisor for appropriateness. One hundred and Fifty (150) respondents were selected who took part in the study. A self-developed questionnaire of 4-points likert type rating scale with reliability coefficient of 0.84 was used to collect data from 150 respondents selected through a multi-stage sampling technique. The data for the study were collected using inferential statistic of frequency count, mean and simple percentage to analyze the data collected on the demographic characteristics of the respondents while descriptive statistics of Pearson Product Moment Correlation (PPMC) test was conducted to test the hypothesis formulated in the study at 0.05 alpha level of significance. Four hypotheses were formulated and were all statistically significant at 0.05 alpha level of significance. On the basis of these findings, it is therefore recommended that physical and health education be included in the curriculum at all levels of education and taught effectively and efficiently maximizing the use of ICT, qualified and experienced physical and health education teachers that are ICT compliant be employed to teach the subject matter in schools, the government should provide computers and other necessary ICT equipment and facilities to the students while policy makers should come up with policies that will effectively make ICT available to all educational level. In conclusion, the study revealed that there is significant relationship between the use of Information Communication Technology and effective teaching of Physical and Health Adeyemi College of Education, Ondo, Ondo state, Nigeria.

**Keywords:** constraints, ICT, network, android, teaching and learning.

### Introduction

There should be no constraints in the human mind except the ones man refuse to solve. The whole world bowed to the sudden emergence of COVID 19 and the constraints that came with the menace. According to United Nations Educational Scientific and Cultural Organisation (UNESCO) (2020), the constraints and eventual closure of the educational institutions affected more than 70% of the world's student population with almost a total collapse in the educational sector due to lack of facility and infrastructure for Information and Communication Technology (ICT) aided educational system in Nigeria. Abechi and Adalakun (2018) opined that students from privileged backgrounds who

enjoyed parental support had little or no loss to count with the surge of the pandemic educationally as the students had other options despite the closed school doors, the learning opportunities of ICT came to the fore, whereas students from disadvantaged backgrounds often remained at the mercy of the closed down schools waiting for a resumption date to be announced by the government. This constraint among others exposed the many inadequacies and inequities in the education systems from access to the broadband and computers needed for online education, and the supportive environments needed to focus on learning, up to the misalignment between resources and needs (Alabi and Ashayan, 2014) and (Keita, 2019).

In September 2000, a United Nation millennium summit for world leaders took place at United Nations Headquarters in New York where eight goals were drawn to be achieved by 2015 to solve the world development challenges which were popularly known as the Millennium Development Goals (MDGS). These challenges are mostly concentrated in the developing countries like Nigeria as one of the Sub-Saharan African countries most unlikely to achieve the MDGS by 2015 because of ICT backwardness. However, Nigeria setup an agenda which includes vision 2020, yet the deficiency in provision of ICT for schools cannot be overemphasized. (Ayalogu and Aniodo, 2020). Ozakwe, Garous and Obafemi (2016), affirmed that for proper and effective utilization of ICT in the education sector for teaching and learning, availability of electricity should be constant, acquisition, deployment and management of ICT resources and services for teaching depend on electricity. In the same vein, Mehlitz (2021), revealed that poorly maintained equipment and poor network infrastructure are prominent obstacles to the integration of ICT tools in teaching, poor technical equipment would make negative impact on teacher's desire to integrate ICT tools in teaching all other subjects, technological and science laboratories are run using electricity, computers cannot operate without electricity even if all the equipment required are present.

The benefits of ICT in enhancing the educational system are in no small measure, Chien, Wu, & Hsu (2014) articulated that the presence of ICT in education allows for new ways of learning for students and teachers. E-learning or online learning is becoming increasingly popular and with various unprecedented events taking place in the world presently, this does not only open opportunities for schools to ensure that students have access to curriculum materials whilst in the classroom but also allows ensure that students outside the classroom such as at home or even in hospitals can learn. Chan (2021) also stressed that ICT in education brings inclusion, promotes higher order thinking skills, enhances subject learning as well as develop ICT literacy and ICT capability. Dudeney (2010) also agreed that ICT encourages collaboration, motivates learning, ICT in education improves engagement and knowledge retention, ICT use allows for effective differentiation instruction with technology. It is also good to know that ICT integration is a key part of the national curriculum.

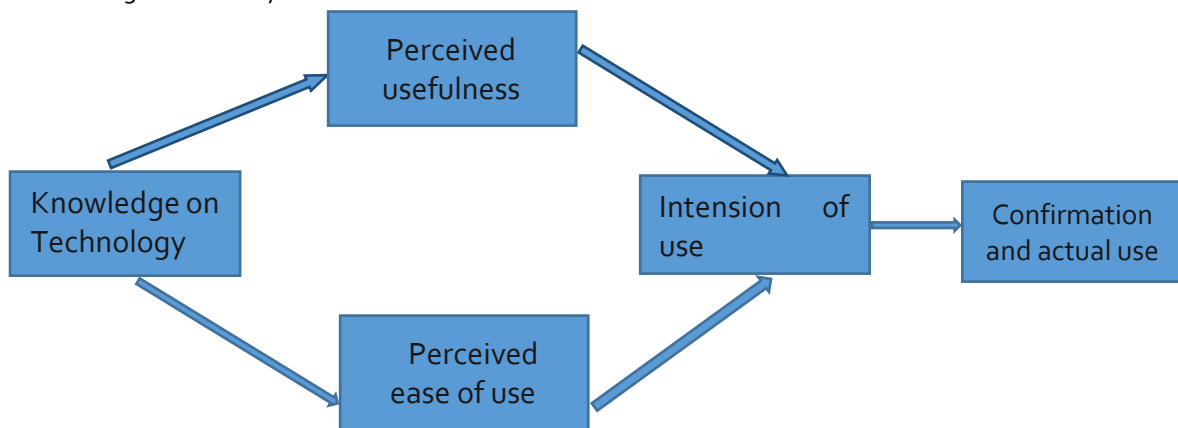
At the tertiary-level of education, Okhiria (2019) explained that the National Universities Commission (NUC) in Nigeria prescribed at least one computer to every four students and one PC to every two lecturers below the grade of lecturer 1, one Personal Computer (PC) per senior lecturer and one notebook per reader or professor. NUC went further to establish e-learning platforms fitted with twenty smart boards in twelve Federal universities for the promotion of the use of ICT in teaching and learning. Majority of the Nigerian universities have not achieved this recommended system ratio, however, some have made giant or notable strides in campus wide area networking and e-learning course deliveries. Institutions like Obafemi Awolowo University (OAU), University of Ibadan, University of Lagos and University of Nigeria, Nsukka among few others can boast of a developed ICT system with a personal Very-small-aperture terminal (VSAT) access to the internet and a campus wide intranet services. Very few Public higher institutions in Nigeria are capable of meeting the ICT

needs of staff and students. The question now is what happens to the rest institutions? Many university lecturers and students patronize commercial cyber cafés in town before having access to the internet or buy private models to be able to connect to the internet. The private universities seem to be better off with 24-hour internet connectivity (Majekodunmi, 2020).

Adeyemi College of Education is a foremost teachers’ training institute in Africa since 1964, it is a pacesetter in academic excellence in Africa and it is a Federal Government higher education institution located in Ondo City, Ondo State, Nigeria. It is affiliated to Obafemi Awolowo University for its degree programmes. It was established to produce qualified teachers to teach in secondary schools and teachers' training colleges and to conduct research and experiments on methods of teaching at all levels of education in Nigeria. In view of these challenges, it becomes imperative to carry out this study.

**Conceptual Framework**

The Conceptual Framework For the purpose of this study in light of constraints of ICT in enhancing a quality teaching and learning experience in schools, two theories of Diffusion of Innovations by Rogers (2003) and Technology Acceptance Model (TAM) by Davis (2003), has been identified and adapted to the research setting as the conceptual framework for this research. Rogers’s theory stated as the process by which an innovation is communicated through certain channels and over time among the members of a social system. The process starts with knowledge of the first channel that represents characteristics of the decision making unit by the ICT users in order to integrate the technology for effective teaching. And it ends with confirmation by the users to accept the technology and integrate it accordingly against any form of constraints. The TAM theory comprises of various parts which is representing the process of ICT acceptance by the users including; behavioral intension, perceived usefulness and perceived ease of use. While, perceived usefulness refers to the degree to which person believes on the benefit from the use of a particular technology by enhancing effective teaching, perceived ease of use refers to the importance of a technology in being user friendly for the users.



*Source: Conceptual framework of study Davis 2003 & Rogers 2003*

**Research Objectives**

The specific objective is to:

1. Examine the constraints of Information Communication Technology on the teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.

### Research Questions

1. Will there be any significant relationship between the use of Information Communication Technology and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria?
2. Will there be any significant relationship between availability of network and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria?
3. Will there be any significant relationship between the level of compliance of students and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria?
4. Will there be any significant relationship between poverty and the teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria?

### Hypotheses

The following research hypotheses were formulated and tested at  $p < 0.05$  level of significance:

1. There is no significant relationship between the use of Information Communication Technology and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.
2. There is no significant relationship between availability of network and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.
3. There is no significant relationship between level of compliance of students to e-learning and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.
4. There is no significant relationship between poverty and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.

### Methodology

The study adopted a descriptive survey research design because it was an investigation in which self-reported data were collected from sampled participants in describing the population on the relevant variables of interest. In getting respondents for this study, purposive sampling technique was used in selecting the department of Physical and Health Education. Simple random sampling technique was used to select twenty (20) students from each level making sixty (60) NCE students. Simple random sampling technique was also used to select thirty five (35) students each from each level, making one hundred and forty (140) B.Ed students. Hence, a total of two hundred (200) respondents took part in the study. A self-designed questionnaire tagged constraints of Information Communication Technologies on teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria (CICTTPHE) was used to elicit information from the respondents. The instrument consisted of two sections identified as sections A and B. Section A: contained information on demographic characteristics of the respondents such as sex, level of study, age, and academic. The respondents are expected to tick from the options as applicable. In section B, the items were designed to ask specific questions from the respondents on constraints of Information Communication Technologies on teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria. The twenty-item questionnaire in this section were assessed on a four-point rating scale ranging from 4 strongly agreed, 3 agreed, 2 disagree and 1 strongly disagree. The validity of the instrument was ascertained by relevant experts in the field of Health Education and ICT. A reliable coefficient of 0.84 was obtained through the use of Pearson Product

Moment Correlation (PPMC) analysis. Therefore, the instrument is considered adequate and appropriate enough to be used for data collection for the study. Copies of the questionnaire were administered to the respondents and the respondents independently spent not more than five minutes on the average to carefully and accurately complete the questionnaire as it decreases the possibilities of sharing of opinion and discussing the questionnaire items before submission.

**Data Analysis**

Descriptive and inferential statistics were used to process the data collected. The general questions were analyzed using the descriptive statistics of frequency counts, percentages and mean, while the hypothesis formulated were tested using Pearson Product Moment Correlation (PPMC) test at 0.05 level of significance.

**Results**

**Research hypothesis 1:**

There is no significant relationship between the use of Information Communication Technology and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.

**Table 1: Pearson Product Moment Correlation test showing relationship between use of Information Communication Technology and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.**

Variable description		Use of ICT	Effective teaching of PHE
Use of ICT	Pearson Correlation sig. (2-tailed)	1	0.494**
	N	200	0.000
	Mean	3.2920	200
	Std. deviation	0.40509	
Effective teaching of PHE	Pearson Correlation sig. (2-tailed)	0.494**	1
	N	0.000	200
	Mean	200	
	Std. deviation	3.7333	
		0.53928	

\*P<0.05

The results in table 1 showed that the Pearson Product Moment Correlation test was statistically significant [ $r=0.494$ ,  $P< 0.05$ ]. Therefore, the research hypothesis which states that there will be no significant relationship between use of Information Communication Technology and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria was rejected.

**Research hypothesis 2:**

There is no significant relationship between availability of network and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.

**Table 2: Pearson Product Moment Correlation test showing relationship between availability of network and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.**

Variable description		Availability of network	Effective teaching of PHE
Availability of network	Pearson Correlation	1	0.171**
	Sig. (2) tailed		0.036
	N	200	200
	Mean	3.38	
	Std. Deviation	0.4340	
Effective teaching of PHE	Pearson Correlation	0.171**	1
	Sig. (2) tailed	0.036	
	N	200	200
	Mean	3.3333	
	Std. Deviation	0.4454	

\*P<0.05

The results in table 2 showed that the Pearson Product Moment Correlation test was statistically significant [ $r=0.171$ ,  $P < 0.05$ ]. Therefore, the research hypothesis which states that there will be no significant relationship between availability of network and effective teaching of Physical and Health Education in Adeyemi College of Education was rejected.

**Research hypothesis 3:**

There is no significant relationship between level of compliance of students to e-learning and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.

**Table 3: Pearson Product Moment Correlation test showing relationship between level of compliance of students to e-learning and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.**

Variable description		Compliance of students to e-learning	Academic performance
Compliance of students to e-learning	Pearson Correlation	1	0.299**
	sig. (2-tailed)		0.000
	N	200	200
	Mean	3.40	
	Std. deviation	0.4420	
Academic performance	Pearson Correlation	0.299**	1
	sig. (2-tailed)	0.000	
	N	200	200
	Mean	3.1233	
	Std. deviation	0.6475	

\*P<0.05

The results in table 3 revealed that the Pearson Product Moment Correlation test was statistically significant [ $r=0.299$ ,  $P < 0.05$ ]. Therefore, the research hypothesis which states that there will be no significant relationship between level of compliance of students to e-learning and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria was rejected.

**Research hypothesis 4:**

There is no significant relationship between poverty and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.

**Table 4: Pearson Product Moment Correlation test showing relationship between poverty and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria.**

Variable description		Poverty	Effective teaching of PHE
Poverty	Pearson Correlation	1	0.516 **
	Sig. (2-tailed)		0.000
	N	200	200
	Mean	3.52	
	Std. deviation	1.4862	
Effective teaching of PHE	Pearson Correlation	0.516**	1
	sig. (2-tailed)	0.000	
	N	200	200
	Mean	3.2167	
	Std. deviation	0.7694	

\* $P < 0.05$

The results in table 4 showed that the Pearson Product Moment Correlation test was statistically significant [ $r=0.516$ ,  $P < 0.05$ ]. Therefore, the research hypothesis which states that there will be no significant relationship between poverty and effective teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria was rejected.

**Discussion**

The study focused on the constraints of Information Communication Technology on the teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Ondo state, Nigeria. Hypothesis one revealed a strong significant relationship between use of Information Communication Technology and effective teaching of Physical and Health Education in Adeyemi College of Education. The test revealed that the Pearson Product Moment Correlation test ( $r=0.494$ ) obtained was statistically significant at 0.05 level. To corroborate the findings of this result, Emenari (2019), explained that Information and communication technologies (ICTs) are very helpful technologies that cannot be ignored in Africa especially for development in all sectors knowing that it is one of the main driving forces that can bring about development and changes particularly in the education sector in this present digital age such as the use of radio, television, telephone, mass media, short message services (SMS), world wide web (www), search engines, packet digital assistants, cameras, videos, email, computer, contact data bases, all forms of online contact and systems, CD-ROM, DVD and so on because ICT covers a wider range of equipment and services. In

agreement to Emenari (2019), Kohbi and Kwameh (2020), further explains that nations that embraced ICT have a good remarkable story to tell in the area of education advancement, the rapid development of ICTs continues to have major influence on the livelihood of people across the world. Hypothesis two showed a strong significant relationship between availability of network and effective teaching of Physical and Health Education in Adeyemi College of Education. The test revealed that the Pearson Product Moment Correlation test ( $r=0.171$ ) obtained was statistically significant at 0.05 level. To support the findings of this result, Sansanwal, (2017), and Stanescu, Stoicescu and Ciolca (2020) argued that although ICT holds great potentials in supporting and augmenting existing educational and national development efforts in Nigeria, challenges like lack of stable electricity, high cost and unstable data, among others remain. Hence, if these challenges are not addressed the effectiveness of ICT for the teaching and learning programme will be reduced considerably. In agreement to the assertion of Stanescu, Stoicescu and Ciolca (2020), Robinson, Valeri, Cave, Starkey, Graux, Creese, & Hopkins (2019), affirmed that developed countries with stable power and structured ICT programmes, records enviable achievements especially in the area of teaching and learning and in other spheres of governance.

Hypothesis three also showed a strong significant relationship between level of compliance of students to e-learning and effective teaching of Physical and Health Education in Adeyemi College of Education. The test revealed that the Pearson Product Moment Correlation test ( $r=0.299$ ) obtained was statistically significant at 0.05 level. In line with the findings of this result, Ozakwe, Garous and Obafemi (2016), opined that acquisition, deployment and management of information technology resources and services for teaching and learning depend on factors like electricity, good network, technical knowhow of teachers and level of compliance of students to e-learning, whereby poorly maintained equipment and poor network infrastructure are obstacles to the integration of ICT tools in effective teaching. Poor technical equipment would make negative impact on teacher's desire to integrate ICT tools in teaching all other subjects. Technological and science laboratories are run using electricity. Computers cannot operate without electricity even if all the equipment required is present. A number of students and even teachers today have never use computer and they are terribly shy when they are confronted with this new technology and the terminology associated with using them.

Hypothesis four revealed a strong significant relationship between poverty and effective teaching of Physical and Health Education in Adeyemi College of Education. The test revealed that the Pearson Product Moment Correlation test ( $r=0.516$ ) obtained was statistically significant at 0.05 level. In line with the findings of this result, Adu, and Olatundun (2018) highlighted that globalization and technological changes created a new global economy powered by technology, fueled by information and driven by knowledge. The emergence of this new global economy has serious implications for the nature and purpose of educational institutions however, poverty is a major obstacle to achieving effective teaching with the use of ICT in developing countries of the world.

### Conclusion and Recommendations

The findings of this study clearly showed that the variables of use of ICT, availability of network, level of compliance of students to e-learning and poverty showed a strong significant relationship with effective teaching of Physical and Health Education in Adeyemi College of Education. On the basis of these findings, it is therefore recommended that

1. Physical and health education be included in the curriculum at all levels of education, taught effectively and efficiently maximizing the use of ICT.



2. Qualified and experienced physical and health education teachers that are ICT compliant be employed to teach the subject matter in schools.
3. The government should provide computers and other necessary ICT equipment and facilities to the students.
4. The government should make the internet accessible and affordable in all schools
5. Policy makers should come up with policies that will effectively make ICT get to all educational level.

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