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ICT and Teaching-Learning Curve in Public School: A Case Study Of Government Comprehensive Secondary School, Obio-Akpor, Rivers State, Nigeria.

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ABSTRACT

The 21st century digital era is faced with utilizing ICT in the classroom for aiding teaching and learning opportunities amongst teachers and learners. The roles and challenges of ICT in enhancing the teaching and learning process in a Government Comprehensive Secondary school, Obio-Akpor, Rivers State was carried out. The descriptive survey was used in this research. The simple random sampling method was utilized to collect a sample size of (150) respondents which consists of 115 and 35 females and males respectively. The descriptive statistics of mean, frequency and percentages were used to analyze the collected data. However, the study unveil the gross unavailability of facilities to fully support the implementation and integration of information and communication technology in the school. It also specified the various roles of ICT in education among which are eliminating the barriers of distance learning, making teaching and learning more interesting and impactful, etc. However, studying the issues and challenges related to ICT use in teaching and learning can assist teachers in overcoming the foreseen limitations and become successful technology users. The findings revealed a large percentage of inadequacy in the usage and availability of ICT g adgets for teaching and learning. With the changes in modern technologies, it is recommended that ICT gadgets be provided in public secondary schools in the State for effective teaching and learning process.

Keywords: Information and Communication Technology (ICT), Education, ICT Gadgets.

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1. INTRODUCTION.

Globally, education has become a mainstay for most cultures and a progressive ladder for human society, which aim at facilitating cultural heritage and social development [Wang et al. 2018]. In technological perspective, the past twenty-years education has never changed, however, educational theories and methodologies have paved way for advancement with the resurgence of flipped learning and active learning. In [Common Core & NGSS as cited in Roll & Wylie, 2016], educational goals have drifted from preparation for the workforce in terms of embedded knowledge and granting students access to technological gadgets for expertise and learning-on-the-job in acquiring more skills like digital literacy and artificial intelligence. Recently, advanced technology has become a rapid change in almost every field including education domain with the first generation digital learning and other alternatives as revealed in [Cope, Kalantzis, & Sears, 2020].

Major transformations have also been introduced with the advent of innovative learning management systems such as OnTrack [Cain, 2020] and electronic learning utilizing platform like Future-Learn [Nelson, 2020]. More so, technologists in education tend to unravel the advances in technology and its integration with education. Consequently, the need for digital transformation in education space, new generation AI tools and systems, are of paramount significance in nearly all other industries and trades (Wang et al., 2018). Alternatively, the educational policies of developed countries considered digital competence in education to be essential, and at such invested in training, technological resources for the classroom [5,6], and sustainable educational models. As a result of high-speed internet and mobile technology strategies, digital resources and trends have become highly accessible globally, projecting nearly 50% of the world online (Hern, 2018).

The 21st century demonstrates an information-intensive society with growing requirement of ICT gadgets, artificial intelligence (AI), e-learning, e-classroom, digital forum, e-libraries, e-infrastructure etc. ICT has replaced the conventional teaching-learning method in most developed countries. Recently, face-to-face (F2F) classroom is being replaced by interactive marker board and books and printed materials are being replaced by various online sources. Due to the significant role of ICT in our daily lives, especially in the educational activities, education authorities are making cognizant efforts in implementing the strategies to empower ICT in the traditional teaching and learning process. Information and Communication Technology (ICT), in the education sector plays a vital role mostly in the process of empowering the technology into the educational activities.

The use of ICT in education can add value to teaching and learning, enhancing the effectiveness of learning. However, technology in another side can be the most effective way to increase the student's knowledge and makes them to communicate creatively and think without dependency [1]. Implementing information and communication technology in schools can be used as a communication tool to improve student learning and better teaching techniques. With technological advancement in education, schools' drives towards adopting communication software for transmitting, storing, sharing and exchanging information, thereby compelling many schools to get accustomed to smart technology.

The aforementioned communication software uses computers, the internet, and multimedia as the medium of communication [2]. The integration of ICT in education has added a dimension to learning that was previously unavailable. The invention of this technology into lessons had enhanced students' interest in the subjects being taught and aided technology-enhanced environment, making it more stimulating and engaging than the conventional classroom environment [3] [4]. Besides, technology provides diverse opportunities to make learning effective and more fascinating in terms of teaching same things in entirely different ways. For instance, delivering teaching through gaming, taking students on virtual field trips and using other online learning resources will help to enhance learning skills and yield productive learners with diverse experiences. In this paper, we expound the effectiveness of integrating ICT in education for a better future of learning.

1.1 Study Objectives

The main aim of the study is to expound the place of ICT in public school: A case study of Government Comprehensive Secondary School, Obio-Akpor, Rivers State. The specific objectives include:

- a. The benefits of ICT in the teaching-learning curve
- b. Availability of ICT facilities
- c. The challenges of integrating ICT in public secondary schools

1.2 Research Questions

The following research questions were answered in the study:

- a. What are the benefits of ICT in the teaching and learning process?
- b. What are the ICT gadgets available in the teaching and learning process?
- c. What are the challenges of integrating ICT in the public schools?

2. REVIEW OF RELATED LITERATURE

2.1 ICT Training In Teaching And Learning Process

The incorporation of ICT in education has evolved rapidly with the emergence of online educational resources, exchange of learning and the connections among learning communities [5], [6], [7]. Traditional learning method are faced with challenges such as space-time barriers, the application of technology in education (ICT) provides solution to such challenges and enhanced learning environment [8]. In a study by [9], ICT facilitates collaboration among all agents of the educational community. Similarly, virtual Apps helps to promote students' creativity and experimentation, and allow teachers to create and manipulate their own representations [12].

However, virtual environments have a friendly and intuitive graphical user interface that motivates students and provides a dynamic feedback in encouraging them to persist in problem solving [10,11]. The ICT training of teachers, in addition to providing training and professional development, should provide effective tools for learning various subjects and encourage the integration of new active methodologies in the classroom [22], [14]. Despite this, technological advances poses a challenge to teachers, due to the complexity of the continuously changing software [15,16].

In addition, there is the difficulty to expand ICT knowledge in both their personal and professional environment and training teachers to adapt new methodological strategies in their conventional teaching style [13,18]. Other factors that promote a positive perception of ICT training include flexibility of training programs and personalized training [21], its simplicity and usefulness as compared with traditional methods [20]. In this sense, if teachers are trained as agents of change, then technology will enable innovation and sustainable development in schools [23]. Furthermore, the proper training of ICT in teaching and learning process will effectively promote an inclusive classroom for students with disabilities [19].

2.2 Benefits Of ICT In Education

ICT is important in schools and educational institutions as it assists in carrying out school activities and functions such as record keeping, research work, instructional uses, presentations, financial analysis, examination results management, communication, supervision, management information system, and general school management functions. Several researches revealed that ICT in schools has the potential to improve the teaching learning process in many ways [24].

The benefits of integrating ICT in education include:

- (i) Enhanced classroom learning
- (ii) Technological projected school management and related tasks
- (iii) Facilitates accountability, efficiency and effectiveness in school activities
- (iv) Facilitates the usage of internet and Microsoft Power Point presentations.

ICT acts as a learner-centric platform, facilitating active involvement of students in the learning process. Although, students get motivated when learning activities are challenging, authentic, multi-sensorial and multi-disciplinary but schools tend to witness a higher attendance, motivation levels, academic accomplishments and effective communication integrating ICT programs and projects. Similarly, teachers find ICT to be useful for teaching as well as for personal and professional work. Application of ICT in teaching makes teaching more innovative, interesting, interactive, easy and effective. It complements the traditional teaching learning process. While imparting knowledge with the aid of ICT, educators find that students are more receptive and responsive. Also, ICT can help to impart more information and knowledge to students in a shorter time, enabling maximum utilization of resources and time.

2.2 Challenges In Integrating ICT In Teaching And Learning

Despite the potentials of ICT in enhancing education sector of a country, developing countries like Nigeria found it very complicated in utilizing the potential benefits of ICT in teaching-learning process. The act of integrating the use of ICT into teaching and learning is a complex process which encounters variety of difficulties. Multiple barriers faces the implementation of ICT in schools and other educational institutions in developing countries and these barriers are highly experienced in public schools especially at remote villages and rural areas. In [26] the problems hindering the effective integration of ICT in general educational system in Nigeria are; inexperienced ICT personnel, high cost of ICT gadgets, management's attitudes and beliefs, inadequate and inconsistent power supply, inability to include ICT programs in teachers' training curricula.

In another work by [25] stated that ICT integration are inefficient in terms of human asset advancement as well as skilled educators in utilizing ICT in instructing and learning forms, just as ICT infrastructures. Consequently, the technical challenges faced by most schools both public and private to successfully integrate ICT into learning and teaching in particular, is the high cost of internet bandwidth and it is clear that institutions do not have the technical ICT expertise to produce articulated strategies for the on-going development of their ICT infrastructure. Similarly, a study by [30] identified five barriers related to the implementation of ICT-mediated learning in technical and vocational education: content and curriculum, appropriateness and efficacy of technologies, quality and branding of programs, stakeholders' resistance to innovations, and the digital divide.

The research carried out by [29] also asserted nine of the most common challenges faced by employers who have attempted to use ICTs for workplace learning. These are: lack of time, money and support; technological and systemic limitations; difficulty of using ICTs; no evaluation of outcomes; resistance to change; lack of planning; lack of communication; lack of leadership; and learner resistance. Several authors [27, 28] opined that poor funding, curriculum defect, inequity in urban/ rural deployment of teachers; amongst others are challenges ICT education sector. In [Digital Learning network], the challenges in using ICT in teaching and learning are subdivided into internal factors (lack of trained teachers, multiple jobs, insufficient funds etc) and external factors (unavailability of equipment's, unreliability of equipment, lack of technical support, orthodox and outdated beliefs of teachers, lack of appropriate and updated hardware and software facility, resource related issues and internet.

3. EXISTING TEACHING-LEARNING CURVE IN GOVERNMENT SECONDARY SCHOOL, OBIO-AKPOR.

Presently, the classroom based teaching and learning process is the order of the day in the government comprehensive secondary school, Obio-Akpor, Rivers State. The teachers and learners not only teach in a non-conducive environment but also faces the challenges of over-population of students in the classrooms. Teachers of the present public school do not have access to modern facilities that could aid teaching and learning. Qualified teachers are employed but with no workshop training or provisions of ICT facilities for modern way of improving the learning curve for a more democratic and knowledge-based society. The advent of information and communication technology should be integrated to enhance and revitalized the acai learning process of these public schools. For example, a situation where a teacher of information technology has no computer laboratory facilities for e-learning requirements of inculcating modern education in the teaching process. Students of these public schools are consequently being under taught as a result of inappropriate teaching aids by the government of the state. Figure 1 shows a classrooms-based teaching and learning process of the school under study.



Figure 1: Teacher-learners classroom-based method.

Besides, the present educational system in most public schools in Obio-Akpor Local Government Area, Rivers State, lack efficient staff rooms where teachers are met to operate for a conducive knowledge sharing and development of appropriate lesson plan. Presently, some of the staffrooms lack proper ventilation (infested with mosquitoes and biting insects), dilapidated and broken windows. In a recently surveyed public school, the total number of staff were about 58 with three small offices which can only accommodate limited number of the present staff. Consequently, some of the staff utilizes the 'tree room' where they place a few chairs and tables openly and sit under a tree (See figure 2). Inefficiency in teaching and learning mostly amount to lack of concern in the educational development for an effective installment of the resident's rights to a good educational system. An interview by one of the staff in the school also revealed that majority of the staff constantly break down in health as a result of poor teaching environment.



Figure 2: Staff Tree-Room

3.1 METHODOLOGY

The study was conducted using the descriptive research method. The study population in accessing the training and use of ICT the teaching-learning process comprised of all the students, academic and non-academic staff of the government comprehensive secondary school, Obio-Akpor, Rivers State. The correspondents which is made up of 115 students and 35 teachers were selected randomly from the Government Comprehensive Secondary school, Obio-Akpor, Rivers State. An open ended and well-structured questionnaire was used to gather discrete information from the total of 150 respondents. The instrument is sub-divided into four sections; section A dwells on demographic features of the respondents; section B is on the relevance of ICT in teaching and learning; section C deals on the availability of ICT facilities and D centered on the challenges of implementing ICT in the teaching and learning process in public schools. The principle of Likert Scale of measurement was used to structure the questions while the data collected were subjected to statistical calculation using mean, frequency and percentage. The collected data was analyzed using SPSS.

3.2 Instrument of The Study

A descriptive method design was used for this study. Specifically, the pretest, posttest, nonequivalent control group design was adopted for this study. This design was considered suitable for this study because intact classes non-randomized groups were studied. The researchers used the students in their intact classes. This was to avoid the disruption of the school use where some students would have been denied the opportunity of attending classes when others were undergoing the experiment. The experimental group was the student while the control group was teachers. The respondents were asked to read the statements given and the answers ranged from Strongly Disagree, Disagree, Agree and Strongly Agree.

4. RESULTS AND DISCUSSIONS

Table1. Frequency distribution of the demographic features of the respondents

Features	Frequency	Percentage (%)
Gender:		
Female	76	66.1 %
Male	39	33.9 %
Teacher	35	23.3%
Total	150	
Teachers		
Teaching Experience		
1 - 5	21	14%
6 -12	14	9. 3%
Age		
26- 32	27	18%
26- 32	8	5.3%
Academic Qualification(s)		
Diploma	5	3.3%
Degree(s)	30	20%

The total population sample was 150, the respondents was divided into two groups the experimental group was the student while the control group was teachers. For the experimental group 76 female respondents with a percentage of 66.1 % as compared to only 39 male respondents with 33.9 %. From the sample the overall population with the highest frequency is the female respondent. In the teacher sample, most of the respondents have 1-5 years of teaching experience with 21(14%) followed by 6-12 years of experience with 14(9.3%). There was different age range sample and the academic qualification followed the sample by experience with 5 (3.3%). From the overall population based on the ability of handling ICT in teaching, most of the respondents believed that they possess medium ability with 5(3.3%) followed by high ability in handling ICT with 25 (24.75%) and low ability with 9 (8.91%). From the overall population based on preference of teaching style, more respondents preferred ICT teaching style with (3.3%) as compared to respondents who preferred traditional method of teaching with (66.1%).

Table 2. Effective elements in ICT integration in teaching and learning in government comprehensive Secondary school, Obio-Akpor, Rivers State.

S/N	Sample question	Strongly Disagree	Disagree	Agree	Strongly Agree	Means
1	Lack of supports and equipment from management discourage me from using ICT	4 2.7 %	18 12 %	80 53.3 %	48 32 %	1.71
2	I feel confident Learning with computer.	3 2	47 31.3 %	70 47.6	30 20	1.64
3	The use of ICT enables students' to express their ideas and thoughts better	2 1.3	13 8.7	87 58	48 32	1.84
4	Teaching time are not enough for me to use the ICT for teaching and learning purposes.	2 1.3	38 25.3	80 53.3	25 16.7	1.97
5	The use of ICT enables the students' to be more active and engaging in the lesson.	2 1.3	45 30	76 50.7	28 18.7	2.06

Most teachers agreed that lack of ICT Equipment has discourage them from using ICT for an effective teaching with the sharing mean of 1.71. This situation shows that teachers view the use of ICT in teaching and learning process as something positive where ICT is the aid needed by teachers to ensure the effectiveness of both teaching and learning process but poor management support has discourage them . Next, from the data obtained, it also shows that the use of ICT in teaching enable the students to be more active and engaging in the lesson prepared by the teachers with score mean of 1.84. This is because students are familiar with ICT and they find it easier learning by ICT and allows them to be engage more in the lesson.

5. CONCLUSION

Information and communication technology (ICT) would no doubt enhance teaching-learning curve in public schools in rivers state and others at large. However, several limitations trail the successful and effective integration of information and communication technology (ICT) in teaching and learning process in education. Conclusively, there is a gross unavailability and usage of Information and communication technology (ICT) gadgets for enhancing teaching and learning in the educational system in the area of study.

6. RECOMMENDATIONS

Based on the findings from the study, the following recommendations were suggested:

- i. The government at all levels should make fund readily available to public schools administrators or set up an ICT provisional committee for the purchase and maintenance of ICT's facilities needed for effective teaching and learning within the state.
- ii. All public schools should have access to constant power supply through the provision of power generating plant that could supply power steadily.
- iii. Training and retraining workshops should be organized by the various public schools so as to equip the teachers with relevant and useful competency to update their capacities in the utilization of ICT gadgets for effective teaching and learning process in the schools.

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