ICT in Schools, the Politics of Laptop Distribution: Implication on Students' Academic Performance in Osun State Secondary Schools, Nigeria

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Abstract: The study was conducted to assess the impact of mini-laptop computers (Opon Imo) distributed to public schools' students on their academic performance in Osun State secondary schools. The quasi-experimental research of the descriptive survey type was the design of the study while the population of the study was made up of 24975 2431 and 22750 students who sat for the WASCE examinations in the years 2011, 2012 and 2013 respectively in Osun State secondary schools. A census sampling technique was used in making use of the results of all the students who sat for the examination in the core subjects of the three years. In those years, candidates were stratified into Arts, Commercials and Science subjects. Students' examination scores and grades in WASCE in the years 2011, 2012 and 2013, as well as a self-designed proforma, were used as instruments in the study. Frequency counts and percentage scores were used in analyzing the data collected. Findings indicated that personal computer (open IMO) usage was not improving students' academic performance in Osun State secondary schools. In the study, it was recommended that the government in Osun State should endeavor to always involve the teachers in formulating policies that will affect their job performance in the schools. Teachers in Osun State secondary schools should be trained to be computer literate and should be given a laptop each, as it was given to students. Seminars and workshops should be organized from time to time for the teachers to improve their skills and update their knowledge in the manipulation of ICT equipment in schools amongst others.

Keywords: Personal computers, academic performance, mini-laptop, moral behavior

1. INTRODUCTION

The role of education is indispensable in the economic, social and political transformation of any nation. Also, access to a computer and its usage at every level of educational system will go a long way in actualizing the system's goals and objectives, most especially in secondary schools of the 21st Century. This has necessitated the adoption of computers in education as a strategy for instructional delivery at various educational levels. According to Moursund (2005), information acquired through digital technology has the capability of promoting innovation, increase productivity and enriching the quality of lives.

Furthermore, Moursund (2005) posits that the application of ICT in education has the potential of contributing substantially towards improving the educational system. According to Rikala, Vesisenaho, and Myllari (2013), contemporary students are regarded as "digital natives" due to their commitment to the use of ICT tools. In the view of Singh and Chan (2014), integration of ICT in the classroom environment provides opportunities for students to learn and operate in the information age.

The computer can help facilitate the knowledge-constructed classroom. Some researchers (e.g. Bork, 1985, Laboratory for Comparative Human Cognition, (1989), Papert, (1980), and Ragosta, (1983) have maintained that computers have influential effects on the teaching and learning processes. They have added that with the use of computers in the classroom, schools would become more student-centered and that more individualized learning would take place than ever before in the student-centered classrooms of today. With the aid of the computer, students can collaborate, think critically, and able to find alternative solutions to problems (Jaber,1997). Research done by Dwyer, Ringstaff, and Sandholtz (1991) has indicated that computers can be used in collaboration for all subject areas, but that teachers have to take into account the different styles of teaching and the students involved in this learning. This

type of teaching requires a change in the teacher's method of teaching and learning, the amount of time needed to learn how to use the technology, and the location of models that work with the technology (Sheingold & Hadley, 1990).

Negroponte, Resnick, and Cassell (1997) argued that the laptop computer could enable students to become more active and independent learners. According to them, the Internet will allow new ''knowledge-building communities'' in which children and adults from around the globe can collaborate and learn from each other. They are of the view that computers will allow students to take charge of their learning through direct exploration, expression, and experience. This shifts the student's role from ''being taught'' to ''learning'' and the teacher's role from an ''expert'' to a ''collaborator'' or a ''guide''.

It is also important to note that, despite several positive contributions of computer usage to educational development in this age, students must be conscious of the damage which the usage of a laptop computer in schools could possibly cause to their academic performance and improvement. Olofinniyi, Fashiku, Fashiku, and Owombo (2012) have concluded that the personal access of students to Global System for Mobile Communication (GSM) and computer devices in schools has done more harm than good in academic achievements of students in secondary schools in Ondo State. This is because laptops gave rise to more negative attitudes and behaviors than positive ones, which included distractions in secondary students when they were supposed to be busy with their lessons or works in the classroom.

Fried (2008) concluded in his findings that the more students use their laptops in classes, the lower their class academic performances in schools. Other negative impacts of this device on the moral and academic performance of students as highlighted by Fried (2008) include: watching pornography films while in class, at school and at home; playing games, and listening to music at the expense of personal study time and homework or assignments. As it is clear, the larger percentage of students of secondary schools in Nigeria are teenagers and adolescents and, therefore, full access to a personal computer could endanger their education, and precisely, their academic performance. It also encourages moral decadence in the society as a result of too much exposure to foreign cultures and values through access to computer usage.

The potential for the laptop to distract students may be the most significant drawback of its use. Hembrooke and Gay (2003) set out to systematically investigate students' multitasking behavior, as they found evidence that students were "engaged in computing activities that were often unrelated to the immediate class lecture and tasks." Barkhuus, (2005) also observed that students with laptops in class were surfing the internet, emailing, watching films, playing computer games or writing assignments during their lessons.

The issue of globalization and the need for every nation to be relevant in the global environment requires the incorporation of ICT into the teaching-learning process. However, the level of its integration into the classroom is still below expectation in Nigeria. The United States National Centre for Educational Statistics (2005) observes a wide gap between the inherent benefits of ICT in education and the level of its adoption in schools despite considerable investment in it by various countries. The above postulation also applies to Nigeria where the traditional mode of instructional delivery remains the order of the day despite the government's various positive ICT policies.

Academic performance, according to the Cambridge University Reporter (2003), is frequently defined in reference to examination performance, where examinations could be categorized into two important groups that include internal and external examinations. The internal ones are a series of mid-tests, assignments, class works, terminal and promotional examinations; while, external examinations are conducted by examination or professional bodies, such as West African Examination Council (WAEC), National Examination Council (NECO), Joint Admission and Matriculation Board (JAMB) and the likes, which are saddled with the responsibilities of conducting examinations for the final year students of secondary schools in order for them to gain admission into higher institutions of learning (Adepoju 2012).

In 2011, recognizing the importance of good students' academic performance at all levels of education as a powerful instrument for national progress and development, Osun State government held an education summit. The summit was called for in that year due to the deterioration observed in Osun State public schools, which was found simply unacceptable. For instance, public education in the State was observed to be poorly managed and only children whose parents could not afford the financial implications of a private school were left in public schools. The students, especially pupils in primary schools, were roughly dressed and mal-nourished. Equall many school buildings were dilapidated, and students' performance both at the internal and external examinations were abysmally poor. There were no instructional materials, while the tuition fees in the state-owned institutions were beyond the reach of most Osun state citizens. However, regardless of the poor educational system, the parents were forced to struggle to pay tuition fees for their children.

In response to all the forgoing, the education summit came up with a reform blueprint and some policies to overhaul public education in the State, where education policies included the introduction of laptop usage in secondary schools by the senior secondary school students.

The government of Osun State in Nigeria given this took a bold step to incorporate digital technology-based learning into high schools in the State through the invention of a "tablet of knowledge" popularly called "Opon Imo". The "tablet of knowledge" is in the form of a mini I -pad with a touch screen Android processed e-learning device. It is a "stand-alone" educational multimedia e-learning content platform with preloaded applications for the West African Examination Council (WAEC) and Joint Admission, and the Matriculation Body (JAMB) approved textbooks.

The tablet of knowledge is divided into three major content categories which are: textbooks, tutorials and practice questions coupled with audio voiceover and video tutorials. It also has a dictionary, Bible, Quran, health books, and some educational games but is internet de-activated to avoid distraction which could emanate from students access to the internet at that level. The tablet according to the government was meant to ease the problem of students' carrying a heavy bag of books to school, and to allow access to relevant textbooks in different subjects, thereby leading to improved academic performance. It was distributed to senior secondary two students in batches, to be collected back from them after their final year examination at senior secondary three. It is worthy to note that the incorporation of technological tools into the teaching-learning process did not eliminate the role of teachers in instructional delivery in the impacted schools. On this note, it is quite imperative to assess the extent to which the desire of Osun State Government in incorporating ICT-based learning into secondary schools in the State is achieved and to what extent is its impact on students' academic performance

2. RESEARCH QUESTION

What is the impact of the tablet of knowledge on students' academic performance in   Osun State Secondary schools where it is distributed?

3. METHODOLOGY

The design of this study was quasi-experimental research of the descriptive survey type carried out by making use of three intact graduating sessions of final year students from Osun State secondary schools. Pre–laptop and post- laptop distribution results of the students in the years 2011 and 2013 (controlled groups) were compared with their performance in the year 2012 (experimental group) when the tablet of knowledge was introduced into schools. The population of this study was made up of 24975, 2431 and 22750 students who took the West African School Certificate Examination (WASCE) in the years 2011, 2012 and 2013 respectively in Osun State secondary schools. A census sampling technique was relied on in making use of the results of all the students who had sat for the examination in the core subjects of the three years. In those years, candidates were stratified into Arts, Commercials and Science subjects/tracks. Students' examination scores and grades in WASCE in the years 2011, 2012 and 2013 as well as a self-designed proforma were used as instruments in the study. The examination questions for the scores used in the study were standardized through an established norm. Therefore, its reliability and validity had been ensured before use. Frequency counts and percentage scores were used in analyzing the data collected.

4. RESULTS AND DISCUSSION

The results of the data collected are displayed in the tables below, followed with a discussion in the next section.

Table 1. Percentage Analysis of Students' Scores in West African School Certificate Examination in Five Core Art Subjects for Three Consecutive Years in Osun State Secondary Schools

Subject	2011			2012			2013		
	No Reg.	No Passed	%	No Reg.	No Passed	%	No Reg.	No Passed	%
Eng	24975	10125	41	24311	7125	29	22750	4605	20
Math	2482	6519	26	24588	6947	28	22670	6379	28
Gov	7960	3699	46	8559	2319	27	830-9	4263	51
CRS	2859	1231	43	2833	1142	40	2997	1150	38
Lit	4195	1174	28	4630	784	17	5131	477	9

Source: Osun State Ministry of Education, Science, and Technology, Department of Planning Research and Statistics WAEC Analysis.

Table 1 indicates that 41% of the students passed the English language examination in the year 2011; while, 29% and 20% of them passed the subject at credit levels in the years 2012 and 2013. In mathematics, 26% of the students passed the exam in 2011; while, just 28% of them passed at credit level in the years 2012 and 2013 respectively. In Government, 46% of the students passed at credit levels in the year 2011; while, 27% and 51% passed in the years 2012 and 2013 respectively. In Christian Religion Studies (CRS), the passing rates were 43%, 40%, and 38% respectively in the three years. In English Literature , 28% of students passed at credit level in the years 2011; while, only 17% and 09% passed in the years 2012 and 2013 respectively.

Table 2. Percentage Analysis of Students' Scores in West African School Certificate Examination in Five Core Commercial Subjects for Three Consecutive Years in Osun State Secondary Schools

Subject	2011			2012			2013		
	No Reg.	No Passed	%	No Reg.	No Passed	%	No Reg.	No Passed	%
Eng	24975	10125	41	24311	7125	29	22750	4605	20
Math	24782	6519	26	24588	2947	28	22670	6379	28
Acc	6919	2328	24	7539	6545	48	7092	1852	26
Com	7818	2238	29	8252	3864	47	7516	1805	24
Eco	25197	9200	57	3342	6545	28	22166	9020	41

Source: Osun State Ministry of Education, Science, and Technology, Department of Planning, Research and Statistics WAEC Analysis

In Table 2, 41% of students who registered for the English language exam passed with credits; while, only 29% and 20% passed in the years 2012 and 2013 respectively. In mathematics, 26% of the students had credits in 2011 and 28% passed the subject at credit levels in each of the year 2012 and 2013. Twenty Four percent of students had credits in Accounting in the year 2011 and 28% and 26% passed it in the years 2012 and 2013. In Commerce, the passing percentages were 29%, 47%, and 24% respectively in the years 2011, 2012 and 2013. Additionally, 37% of the students passed Economics in the year 2011; while, 28% and 41% of them passed it at credit levels in the years 2012 and 2013 respectively.

Table 3. Percentage Analysis of Students' Scores in West African School Certificate Examination in Five Core Science Subjects for Three Consecutive Years in Osun State Secondary Schools

Subject	2011			2012			2013		
	No Reg.	No Passed	%	No Reg.	No Passed	%	No Reg.	No Passed	%
Eng	24975	10125	41	24311	7125	29	22750	4605	20
Math	24782	6519	26	24588	6947	28	22670	6379	28
Bio	24609	5267	21	24887	3565	14	22402	6435	29
Chem	11877	5144	43	11276	2877	26	10231	5055	49
Phy	11751	6699	57	10754	5811	54	10024	3441	34

Source: Osun State Ministry of Education, Science, and Technology, Department of Planning, Research and Statistics WAEC Analysis

In Table 3, 41% of the registered students for the English language passed at credit level in the year 2011; while only 29% and 20% passed in the years 2012 and 2013 respectively. In mathematics, 29% of the students had credits in 2011 and 28% passed the subject at credit level in each of the years 2012 and 2013. Twenty-one

percent of the students passed Biology at credit level in the year 2011; while 14% and 29% passed it in the years 2012 and 2013 respectively. Forty three percent of the students passed Chemistry at credit level in 2011 while 26% and 49% passed it in the year 2012 and 2013 respectively. In Physics, 57% of students had credits in 2011; while, 54% and 34% passed at credit levels in the years 2012 and 2013 respectively.

In Table 3, also, academic performance in Science subjects among the public secondary school students in Osun State was not improved through the introduction of laptop computers. In Biology, the percentage of students at credit level was 4% in the year 2011 when laptop computers were not used by the students in those schools. In Chemistry, the students' percentage at credit level was 43% in 2011 when the laptop was not introduced, as compared with 26% credit pass in 2012 when an improvement was expected. In Physics, students' academic performance was at 54% pass in 2012, in comparison to57% credit pass in 2011 when laptop usage by students was yet to be introduced.

5   DISCUSSION

Going by the observed results displayed in Tables 1, 2 and 3, students' performance in the English language as a general subject was 41% in the year 2011 when Opon Imo (laptop) was not introduced in the schools. The performance dropped from 41% to 28% in the year 2012 when students were using the laptop and 20% in 2013 when its usage was canceled. This indicates that the introduction of laptop usage in schools had a negative effect on students' academic performance in the English language in Osun State secondary schools. The results negate the findings of Fakokunde (2016), whose work indicated a positive impact of the use of laptop computers on students' academic performance in Osun State Secondary Schools. However, the findings are in consonance with Fashiku, Olofiniyi, Fashiku, and Adewumi (2014), whose study revealed no significant relationship between students' academic performance and laptop usage in Ondo and Osun State meaning they did not find that laptop usage had a negative influence on students' academic performance in English language in secondary schools of the two states.

A bit of improvement can be observed in students' academic performance in Mathematics, as students' performance percentages in the years 2012 and 2013 were 28% each, in comparison with 26% of the year 2011. However, the improvement was still below average; since, more than 50% (that is 72%) of the students still did not pass mathematics at credit levels in Osun State secondary schools.

As indicated in Table 1, one can observe that students' academic performances were not improved with the introduction of Opon Imo to students in Osun State secondary schools in the year 2012. Going by the percentage analysis of students, West Africa Examination results of students in the three major Art subjects of Government, Christian Religion Studies and English Literature in the years 2011 and 2012, the introduction of laptop usage did not help in improving their academic performance. In specific, the percentage in Government reduced from 46% to 27% when the laptop was introduced. In CRS, it reduced from 43% in the year 2011 to 40% in the year 2012. Drastically, in English Literature, it dropped from 20% pass in 2011 to 17% passed in the year 2012.

Looking through Table 2, one can observe that, the result of students in Commerce as a commercial subject only improved from 29% in the year 2011 when the computer usage was not introduced to 47% when laptop usage was introduced in the schools. Students' academic performance in Accounting and Economics as subjects still had no improvement in 2012 when the computer laptop was introduced in Osun State secondary schools.

It can be presumed that there are quite some extraneous factors that can be attributed to the failure in the government's efforts to improve education in the secondary school levels in Osun State through the introduction of Open Imo. Among such factors is the fact that students in the State have been negatively making use of their handsets before the introduction of the laptop computer into schools. This position is supported by Olofinniyi, Fashiku, Fashiku, and Owombo (2012), whose work indicated that students' access to GSM has a negative influence on their academic performance in Osun State secondary schools. Another major factor in the ineffectiveness of the use of the laptop among the secondary school students in Osun State is that the school teachers were not originally involved in the government's efforts to improve education at the secondary schools through the use of Opon Imo. The majority of the teachers who were teaching the students in the classes were not computer literate. This assertion is supported by Fashiku, , Olofiniyi, Fashiku, and Adewumi (2015), whose work found no significant relationship between ICT skills and teachers' job performance in Osun State secondary schools. In the study, secondary school teachers in Osun State were found not to have adequate skills and knowledge in the use of ICT equipment in their teaching jobs.

5. CONCLUSION AND RECOMMENDATIONS

The use of ICT equipment, such as the computer laptop, to enhance teaching-learning processes in secondary schools is so indispensable and a welcomed phenomenon in the modern-day classroom. Its proper usage is so significant that it could go a long way in enabling students and teachers to be abreast of global trends in classroom teaching-learning for effective outcomes. It is therefore pertinent that Osun State government put all hands on deck to salvage the negative state of students' use of laptops in the classroom, in order to ensure that its intended aims be achieved in Osun State secondary schools.

Given the findings in the study, the following recommendations are made: Government in Osun State should endeavor to always involve the teachers in formulating policies that will affect their job performance in the school. Teachers in Osun State secondary schools must be trained to be computer literate and should be given a laptop each, as they were given to students. Seminars and workshops should be organized from time to time for the teachers to improve their skills and update their knowledge in relation to the manipulation of ICT equipment in schools. Students' use of laptops should be appropriately monitored by each school authority and parents. Finally, students should be encouraged to utilize the State's ICT centers from time to time and the government should try as much as possible to avoid politicizing education matters in the State.

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