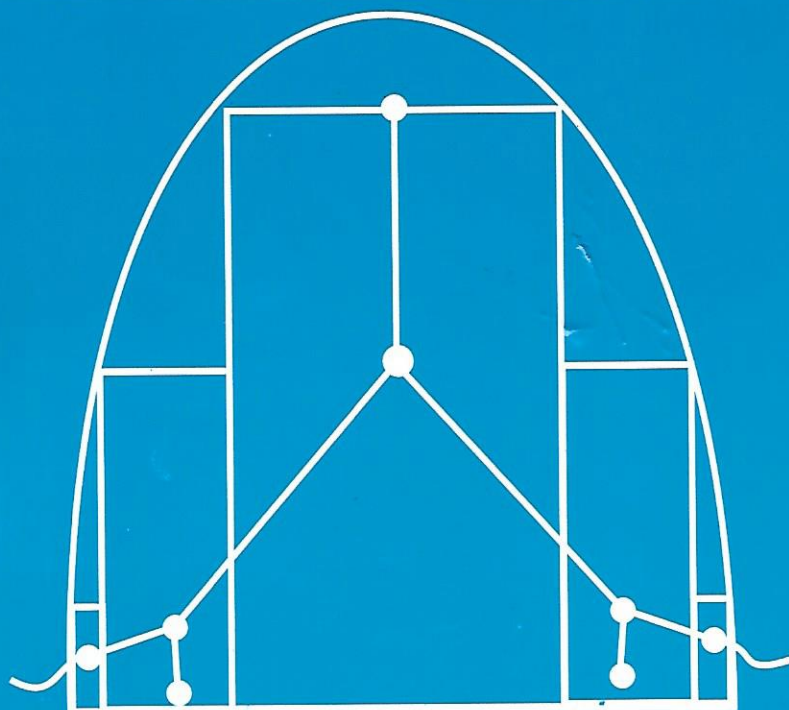


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Impact of Opon-imo on Senior Students' Academic Performance in Osun State, Nigeria

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Abstract

In 2013, Osun State Government launched a tablet programme called "Opon-Imo" (Tablet of Knowledge). This tablet provides Senior School Students with the learning materials required to essentially, prepare them for external examinations. The question then is after two academic sessions of implementation, has students improve academically? This study therefore investigated impact of Opon-Imo on senior School Students Academic Performance in Osun State. Specifically the study investigated the impact of Opon-Imo on Senior school students' academic performance in English Language after the use of Opon-Imo. Also, relationship between gender, senatorial district, subject combination and students' performance were investigated. Ex-post facto design was adopted for the study. Multi-stage sampling techniques that included stratified and purposive were used to sample 440 SS3 Students. Students' second term scores in English Language before and after Opon-imo was given to them were collected and standardized. Descriptive and inferential statistics were used to analyze the collected data. Findings revealed below average academic performance of senior school students in English Language and negative significant impact of mobile tablet on senior School student's academic performance in English Language. Also, the use of mobile tablets did not significantly have impact on students' academic performance in English Language based on gender and senatorial district, but it does based on subject combination. Based on these findings, it was recommended among others that students should be properly monitored to ensure that the tablet is appropriately utilized so as to achieve the intended objectives.

Keywords: Academic performance, senior school students, impact, Opon-imo.

Introduction

In recent times technology has been at the centre stage of every field of life, from commerce, arts and culture to education. In education, computers have been used to do almost everything possible. Innovative ways to use computers for teaching and learning in education are developed day by day. Portable electronic learning and teaching materials first came in form of laptop and net books which require connection to a network for internet access available at fixed location in buildings or at wireless access points. They have been touted as 'revolutionary' devices that hold great potential for transforming learning. In deploying mobile devices, the teacher is no longer at the centre of the learning process and the instructional time can transcend the school day. With the introduction of mobile devices, devices can now be charged and once fully charged, can provide an average of twelve to twenty four hours usage time and network connection available almost 99% of the time in almost every part of developed countries. Technologies play a crucial role in learner,s live and can act as a platform to foster creative learning and innovative teaching.

Furthermore, information communication technology provides opportunities for implementing learning approaches that foster creativity (Thompson, 2013). Mobile device network availability in developing countries is increasing at a dramatic pace. Already there is 68% penetration with an exponential growth of 10% per annum (ITU, 2010). With this innovation, teaching and learning should be able to take place anywhere whenever the students and or the teachers are ready. With this flexibility in the provision for education, there is a possibility in getting everyone educated once the constraint of attending or accessing to material confined time slots and location are removed.

Warschaver (2011) outlined a number of advantages of computer mobile devices for education when compared to other devices. These include, they have light weight and flexible to manipulate which makes them superior for digital reading; they are fast switching among difference computer applications which allows learning activities to be processed with less delay; they have touch screen interface which also allows a high degree of user interactivity; they are much more potable than laptops as students can pocket them without having to close or re-open the screen; and can also be used for mobile data collection or note taking. He stressed further that it is inexpensive and easy to develop apps for mobile platforms. Many of them have long life battery which makes them more suitable to receive lessons/lectures in the classrooms.

The most exciting and beneficial application of mobile technology is its potential in education indeveloping countries whose economies and infrastructures are still developing or underutilized. Particularly in 2005 as

UNESCO, (2011) reported that people in the developing world represented 53% were mobile subscribers and it increased to 73% by 2010. A recent comprehensive description and explanation by Horizon Report released by the New Media Consortium in 2012 summed up that mobile learning have become an integral part of education at all levels. It was reported that there have been rise in popularity of mobile learning devices in schools.

In Nigeria today, greater emphasis is also being placed on Industrial and Technological Development. As a result, the learners are being encouraged to take up science, arts and commercial related subjects. One subject that cut across the entire subject is English Language because it is the medium of communication even in other subjects. In a match towards scientific and technological advancement, nothing short of good performance in English Language at all levels of schooling. Unfortunately, performance of students in English Language at the end of secondary education have not been improving in the last few decade (Umoinyang, 1999). Various factors have been alleged for poor performance of students generally and English Language in particular. The poor performance of students in both internal and external examinations is related to inadequate interest of the students in English Language (Callaham, 1971). This could also be related to motivation and self-confidence, poor facilities, equipment and instructional materials for effective teaching (Aiken, 1976; Oshibodu, 1988) and lack of evidence of the impact of tablet computers on students' academic performance in the classroom (British Educational Suppliers Association (2012).

A lot of modified old methodologies have been proposed to improve performance in the subject (Broussard & Garrison, 2004). Instructional materials have been designed and developed to assist English Language teaching and learning. These are to help and break this cycle of poor performance by motivating students to learn English language. Cachia, Ferrari & Punie (2010) highlighted the potential of Information Communication Technology in enabling innovative and creative school environments. Technologies play a crucial role in learners' live and can act as a platform to foster creative learning and innovative teaching. Students must be equipped to express their creative and innovative potential through digital media and technologies. Furthermore, Information Communication Technology provides opportunities for implementing learning approaches that foster creativity. Based on the foregoing, research on English language on academic achievement should be considered a continuous process until there is evidence of improvement in interest and performances of the learners in the subject particularly at the secondary school level.

In May 2013, Osun State, Nigeria, launched a programme called "Oponimo" (Tablet of Knowledge). A stand-alone e-learning tablet that provides Senior

Secondary School students from SSS1, 2 and 3 with the learning materials required to prepare for school leaving examinations. It provides three major features, textbooks, tutorials and practicing questions. It delivers compelling self-paced courses, conducted in a highly interactive computer based learning environment and synchronized to a library of relevant e-books and a computer based testing environment. The tablet contains over fifty six text books, nine hundred minutes of virtual classroom lessons and thousands of practicing questions from WAEC, NECO and UTME. In addition, to aiding preparations for senior school leaving examinations, the introduction of "Opon-imo" to the school is expected to assist the adoption of Information Communication Technology skills among students in the state (Osun State, 2013). In the effort to improve students' cognitive, affective and psychomotor outcomes in English Language and other school subjects, scholars have continued to search for variables such as personal and environmental factors that could be manipulated in favour of academic gains (Tella, 2003). There is no gain-saying that technology used in the classroom enhances and improves students' learning. The existing studies have revealed that the initial results have shown to be positive in classrooms utilizing these technologies to improve students' success and motivation to learn. It is therefore, important to determine if the "mobile tablet" programmes implemented in Osun state has impact on students' academic performance, and as such; this study specifically investigated:

1. The academic performance of senior school students in Osun State when mobile tablet was introduced.
2. The impact of the mobile tablets on senior school students' academic performance in English Language before and after the introduction.
3. Whether the introduction and use of mobile tablets have impact on senior school students' academic performance in English Language after used based on gender.
4. Whether the introduction and use of mobile tablets have impact on senior school students' academic performance in English Language after used based on senatorial district, (Osun Central, Osun East and Osun West).
5. Whether the introduction and use of mobile tablets have an impact on senior school students' academic performance in English Language after used on the basis of subject combination (Arts, Commercial and Science).

Research Questions

One research question was raised and answered.

1. What is the academic performance of senior school students in Osun state when mobile tablet was introduced?

Research Hypotheses

Four research hypotheses were therefore, formulated and tested in this study.

- H₀₁:** There is no significant impact of mobile tablet on Osun senior school students' academic performance in English Language before and after the introduction.
- H₀₂:** The use of mobile tablets does not significantly have impact on Osun senior school students' academic performance in English Language after used on the basis of gender.
- H₀₃:** The use of mobile tablets does not significantly have impact on Osun senior school students' academic performance in English Language on the basis of senatorial districts (Central, East and West).
- H₀₄:** The use of mobile tablets does not significantly have impact on senior school students' academic performance in English Language based on subject combinations.

Methodology

Ex-post facto design was adopted for this study. The population for this study comprised all secondary school students in Osun State. The target population were SS3 English Language students. Multi stage sampling technique was adopted for the study. The schools were stratified along the three senatorial districts in Osun State (Central, East and West). Two schools in each senatorial district were purposively selected, thus, a total of six schools were selected. Purposive sampling technique was also used to obtain English Language scores of 440 SS3 students that were given Opon-imo when they were in SS2 via profoma in the selected school. The scores collected were first standardized into t-score before being used for analyses. This is because the set of data generated from different teachers were assumed to have disparities and to remove these ambiguities all the scores were standardized. Mean was used to answer research question 1, while t-test and One-Way Analysis of Variance (ANOVA) were used to test hypotheses postulated at 0.05 alpha level.

Results

Research Question 1: What is the academic performance of senior school students in Osun State when mobile tablet was introduced?

In order to answer this research question, students' scores in English Language after the introduction and use of mobile tablet were collected, standardized and subjected to mean analysis as report in table 1.

Table 1:

Academic performance of High School Students in Osun State when Mobile Tablets was introduced

Academic Performance	N	Minimum	Maximum	Mean	Std.
Scores After	440	13.00	55.00	38.35	19.44278

Table 1 revealed the minimum academic performance of students as 13.00 and maximum academic performance as 55.00, the mean is 38.3455 and standard deviation as 19.44278. It implies that the academic performance of senior school students in Osun State when the mobile tablets were introduced is below average.

Hypotheses Testing

Ho₁: There is no significant impact of mobile tablet on Osun senior School student's academic performance in English Language before and after the introduction.

In order to test hypothesis one, senior school students' scores in English Language before and after the introduction and use of "Opon-Imo" were collected, standardized and subjected to paired sampled t-test analysis and the output is shown in Table 2.

Table 2:

Paired Sampled t-test summary of impact of Mobile Tablets on senior school students' academic performance in English Language

Scores	N	Mean	Std.	df	Cal. t	Sig.	Decision
Scores Before	440	43.8727	14.2858	439	-39.186	0.000	S
Scores After	440	38.3255	19.4427				

$P < 0.05$

Table 2 showed the t-test calculated value is significant, $t(439) = 39.186$, $p = 0.000$. Thus, the null hypothesis one is rejected, since p-value 0.000 is less than 0.05 alpha level. This implies that there is a negative significant impact of mobile tablet on Osun State senior school student's academic performance in English Language. The scores of students after the introduction of Opon-imo have a lower mean of 38.32.

Ho₁: The use of mobile tablets does not significantly have impact on Osun State high school students' academic performance in English Language after used on the basis of gender.

In order to test this hypothesis, senior school students' scores in English Language of male and female after the introduction and use of "Opon-Imo" were collected, standardized and subjected to independent sampled t-test analysis and output is shown on Table 3.

Table 3:

The t-test summary of the impact of the use of mobile tablets on senior school students' academic performance in English Language after used based on gender

Gender	N	Mean	Std.	Df	Cal. t	Sig.	Decision
Male	236	44.2542	14.4935	438	0.602	0.547	NS
Female	204	43.4314	14.0642				

$P > 0.05$

Table 3 showed the calculated t-value not significant, $t(438) = 0.602$, $p = 0.547$ at alpha level of 0.05. The null hypothesis is retained because the calculated P-value (0.547) is greater than alpha level (0.05). It implies that the use of mobile tablets by Osun state does not significantly have impact on the academic performance of Senior Secondary School students' in English Language based on of gender.

H₀₃: The use of mobile tablets has no significant impact on Osun senior school students' academic performance in English Language after used based on senatorial districts.

In order to test hypothesis three, senior school students' scores in English Language across the three senatorial districts after the introduction and use of "Opon-Imo" were collected, standardized and subjected to One-Way Analysis of Variance and output is shown on Table 4.

Table 4:

One-Way ANOVA summary of impact of the use of Mobile Tablets on the academic performance of Osun High School students in English Language after used based on the basis of senatorial districts

Source	SS	df	MS	Cal. F	Sig.	Decision
Between Groups	647.869	2	323.935	1.592	0.205	NS
Within Groups	88945.003	437	203.535			
Total	89592.873	439				

$P > 0.05$

Table 4 shows the calculated F-value is not significant, $F(2,437) = 1.592$, $p = 0.205$ at alpha level of 0.05, the null hypothesis is accepted because the calculated P-value is greater than 0.05 alpha level. It implies that the use of mobile tablets has no significant impact on the academic performance of Osun State senior school students' academic performance in English Language after used based on senatorial districts.

Ho₄: The use of mobile tablets has no significant impact on Osun senior school students' academic performance in English Language after used based on subject combination.

In order to test hypothesis four, high school students' scores in English Language based on subject combinations after the introduction and use of "Opon-Imo" were collected, standardized and subjected to One-Way Analysis of Variance and output is shown on Table 5.

Table 5:

One-Way ANOVA summary of the impact of the use of Mobile Tablets on the academic performance of senior school students after used based on subject combination

Source	SS	df	MS	Cal. F	Sig.	Decision
Between Groups	4869.042	2	2434.521			
Within Groups	84723.831	437	193.876	12.557	.000	S
Total	89592.873	439				

$P < 0.05$

Table 5 shows the F-value which is significant, $F(2, 437) = 12.537$, $p = 0.000$ at alpha level of 0.05 The null hypothesis is rejected because the calculated P-value is less than 0.05 alpha level. It implies that the use of mobile tablets has significant impact on Osun State high school students' academic performance in English Language based on subject combination. Scheffe's Post Hoc was carried out to find the sources of the difference in Table 6.

Table 6:

Scheffe's post hoc table of the impact of the use of mobile tablets on students' academic performance in English Language on the basis of subject combination

Subject Combinations	N	Subset for alpha = 0.05	
		1	2
Arts Class	179	41.2737	
Science Class	141	42.6170	
Commercial Class	120		49.2250

Table 6 shows the scheffe's post hoc on the impact of the use of mobile tablets on the academic performance of Osun senior school students' in English Language after used based on subject combinations and a significant difference was revealed. Students in commercial class have the highest mean score of 49.2250 in subset 2 which implies that the students in commercial class has the best significant performance, while students in art and science classes with the least mean score of 41.2737 and 42.6170 in subset 1 respectively have similar performance.

Discussion of Findings

It was revealed that academic performance in English Language by senior secondary school students in Osun State is below average. It was discovered that there was negative significant impact of mobile tablet on the academic performance of senior secondary school students in Osun State. This finding could be attributed to wrong usage of the Opon-imo. The finding is consistent with the assertion of Media Consortium (NMC) (2012) and British Educational Suppliers Association (BESA) (2012) that in spite of the fact that tablets is one of the hot trends for technology adoption in schools in 2013, alongside mobile devices and apps with evidence of increased adoption of tablets PCs, iPad and other "post PC" tablets in schools around the world, the academic performance of students in English Language at the end of secondary education has not improved in the past decade (Umoinyang, 1999). Also, it corroborates with the finding of Karsenti and Fievez (2013) that having a personal device constantly available made the temptation to chat to friends or play games too much to resist for some students, which teachers felt was affecting the academic performance of these students. Closely supported by Wagner and Sternberg (1987), though students reading electronic texts were capable of improving the understanding the main theme of the text, not being capable of remembering the details of the text and that computer use is tiresome compared to reading a book, with its displays resulting to eye fatigue negates its gains.

The study also revealed that academic performance of male and female senior school students in English Language in Osun state is not significantly different after the introduction and use of mobile tablets. Gender issues have become a global concern with efforts geared towards educational equality between boys and girls. This finding corroborate the finding of Thompson, (2013) that there is no evidence that the impact of mobile tablets vary between boys and girls, as observed in a study carried out in the University of West Scotland research in Cedars School of Excellence in Scotland, involving two classrooms of 8-11 years old pupils. But, the finding negates the submission of Hamilton (1999) that boys consistently scored higher than girls on question

requiring knowledge learned outside the schools. Considering students' location going by the senatorial districts (Osun Central, East and West), the study revealed that academic performance of senior school students' in English Language in Osun state is not significantly impacted using mobile tablets.

Also, it was revealed that mobile tablets has significant improve the performance of students in Osun State senior school students' academic performance in English Language based on subject combinations. The impact was most felt by students' in the commercial class. Studies by (REF) showed that students in commercial classes may find it easier learning with the tablet than students in science classes which in turn make it easier for the students to embrace the mobile tablets technology which as submitted by Cachica, Ferrari and Punie (2010); play a crucial role in learners live and can act as a platform to foster creative learning.

Conclusion and Recommendations

It is quite laudable that in this generation where knowledge of the use of computer is very vital to a child's education, the government of Osun State has distributed free computer tablet otherwise known as "Opon-imo" (Tablet of Knowledge) to students in the state with each of the computer tablets has the soft copies of all the subjects being offered in secondary schools with different textbooks and lesson notes, tutorial and practice question as well as past questions of West African Examinations. However, its impact on students' academic performance in English language is still below average and negative. This outcome could be as a result of students and teachers not using the mobile tablets for its intended purpose. "Opon-imo" can support seamless learning, allowing learners to easily switch learning context from formal to informal or personal to in social and to take control of their own learning. This supplements what they are learning in class in real time through additional web based inquiry, or by making digital notes.

Worthy of note is the fact that "Opon-Imo" is not supposed to replace the teachers' duty of originally impacting students with knowledge in the subject; rather, it is a complimentary means of learning and it is supposed to only help the students to revise after the school hours and prepare them for examination. If the technology is appropriately utilized by the students', their improvement could be progressive and as such; there should be adequate monitoring and evaluation of the school and learners by the stakeholders concern to ascertain that teachers are performing their roles and students are using the mobile tablets for its intended purpose.

Students in the commercial class were found to be more impacted by the use of the mobile tablets than their counterparts in the arts and science classes. This

the school and learners by the stakeholders concern to ascertain that teachers are performing their roles and students are using the mobile tablets for its intended purpose.

Students in the commercial class were found to be more impacted by the use of the mobile tablets than their counterparts in the arts and science classes. This outcome shows that teachers handling the less impacted students' are saddled with more responsibilities of bridging this differences. Science students are known for being book centered; utilizing the mobile tablets effectively and efficiently could play down the tension of learning while real learning is still taking place and this will go a long way in raising the general academic performances of all the students across the various subject combinations and resultantly the state at large.

In conclusion, the resources invested in the mobile tablets are enormous and as such all hands should be on deck to ensure that its gains are indeed a great reward.

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