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Should Secondary School Students Use Mobile Phone in the Classroom?

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Abstract:

The emergence of mobile devices such as mobile computing and tablets has revolutionised our education sector tremendously. Education is no longer the normal traditional setting but now technology based learning which allows the integration of various learning technologies in the classroom. The tie which now exist between education and technology is getting stronger such that most educational institutions are adopting concepts like BYOD (bring your own device). This is now a common terminology that allows students to bring their own device to school for the purpose of learning in the classroom. This study therefore examined the perception of teachers and students on the use of mobile phone as a technological tool in the classroom. Questionnaires were developed and administered to two hundred and forty students in four secondary schools and forty-five teachers in Abia State. The result of the study shows that both teachers and students are fully aware of the possibility of integrating mobile phone in the classroom as a teaching and learning tool.

Keywords: Teaching, learning, smartphone, applications

1. Introduction

In the world today, digital technology is fast growing and it is quickly being integrated into the society in such a way that it is hard to keep pace, let alone thinking about the effect it will have on people's lives. All over the world, Information and Communication Technology (ICT) have so much filled our classrooms with such a rapid pace. Educators and school administrators at the wake of this change face this growing challenge as they face a wireless generation of students that are quickly evolving daily on digital technology.

Communication is highly mobile with one third of the world's population using mobile phones. In an e-commerce report on March 16th, 2018, it reveals that Nigeria with an estimated population of 193 million people, has 162 million mobile subscriptions, this amount to 84% of the population using a mobile phone. This being the case, it is evident that so many people own a mobile phone and have internet access, this would have direct impact on students learning, Gabor and Esztelecki (2015).

The launch of mobile phones in 2001 liberated Nigerians from the shackles of land phones (National Telecoms-NITEL). Not long after that, in 2008 we had new brand of phones called smart phones which came along with 3G network and since then Nigeria has experienced so much change and the smart phones have captured the market. Smart phones with its multiple functions ranging from multimedia features, email, calculators, calendars, office programs, social communication platforms (Facebook, Instagram, twitter, WhatsApp), GPS functions and games, have put a powerful computing device into the pockets of both adults and students. This digital tool that is so convenient, affordable, and fast in communication is bound to be welcomed by most students. Mobile phone as an educative tool have received so much arguments on its integration into the classroom.

This research work is arranged thus: The purpose of the study, the limitation of the study, the literature review- this will summarize previous studies on the use of mobile phones in the classroom, the research methods, followed by the results of the questionnaire, summary of findings, discussion and then conclusion.

1.1. Purpose of the Study

In order for students learning to improve, educators should integrate everyday technology into the classroom, Thomas and O'Bannon (2013). Hence, the need of this study is to explore Secondary school teachers and student's perspective on the use of mobile phone in the classroom, how often they use these technological tools and if we should consider integrating mobile phone as a learning and teaching tool in our classrooms. Based on this, our research questions are thus:

- To what extent is mobile phone an important tool for effective teaching and learning?
- Are there some factors militating against integrating mobile phone in the classroom?

The significance of this study is to create awareness among teachers and students at secondary school on the importance of mobile phone as a learning and teaching aide in the classroom. The findings will help students know the

importance of integrating mobile phone in the classroom and hopefully help our education management department and administrators to consider integrating mobile phone as learning tool in the classroom.

1.2. Limitation of the Study

This research was carried out in four Secondary schools in Abia state, (two private schools and two public schools) Nigeria. The questionnaire papers were given to students in grade nine (9) to twelve (12) classes. Only two hundred and forty (240) students and forty-five (45) teachers participated in responding to the items in the questionnaire.

2. Literature Review

As technology keep progressing rapidly all over the world, the need for Information and Communication Technology (ICT) in our education sector cannot be overlooked. ICT is improving rapidly. In order to strike a balance, the whole education system should be restructured to integrate ICT into its educational activities, Meenakshi (2013). In education, the importance of ICT is increasing daily as the world quickly transits to digital media and information, Meenakshi (2013). ICT plays a vital role in education as it adds more value to teaching and learning by enhancing the effectiveness of students learning. The inception of ICT in schools has made students find learning in this technology-enhanced society more engaging and stimulating than before.

The advent of smart phone that is connected to the internet has actually added a lot of computing capabilities to the basic functions of telephones. With these new functions, the mobile phone is now a powerful mobile learning device that shares a lot of educational application with the computer, Irina (2011). Mobile phones seem to be more effective when compared to the computer in the new web 2.0 context of sharing, collaborating and sharing knowledge. Mobile phones are currently the most accessible and affordable technological tool for both teachers and students to possess, [Irina, 2011, Jacobs, 2014]. Unfortunately, a lot of teachers and students are not able to have access to the advantage of this technological tool anywhere they need it as a result of the ban placed on mobile phone usage in Nigerian schools. 'This blunt approach in banning the usage of cell phones in the classroom is wrong' Jacobs (2014). Teachers have the belief that mobile phone is a big disruption to classroom learning and activities. However, further research has a little shift in this belief and is in support of mobile phone usage in the classroom as a result of the numerous instructional benefits, [Thomas and O'Bannon, 2013, Jacobs, 2014, Thomas, O'Bannon and Bolton, 2013]. Mobile phones are cheaper than laptops and desktop computers, so introducing mobile phones that are low cost into our classrooms as a teaching and learning tool will be beneficial to both teachers and students. Hence, access to computers and laptops in schools, not to say nothing of homes still remain a digital divide.

Recent research on perception of preservice teachers on integrating mobile devices in the classroom, has its focus on mobile device such as phones, tablets and laptop. This distinction is very important because most teachers do not believe that all mobile devices have the same value and perform the same function in the classroom. Sad and Göktas (2013) in their survey of 1087 preservice teachers on their perception of the instructional value of two mobile devices; Laptops and mobile phones. The findings of this interview reveal that preservice teachers preferred the use of laptops as instructional tool in the classroom than mobile phones. Thus, Sad and Gaktas discovered that preservice teachers do not see mobile phones as an effective instructional tool in the classroom whereas Thomas, O'Bannon and Bolton (2013) on the other hand discovered that many teachers are in support of integrating mobile phones in the classroom. To them, it motivates and engages students, encourages collaboration, improves authentic learning and also encourages differentiated instructions.

Mobile phone has numerous functions that make it beneficial to both students and teachers in the classroom. Some researchers have looked at the use of mobile phones to access the internet, sending texts (SMS), phone camera and recorders, as some the benefits of mobile phone in the classroom.

Internet in the world today has turned to a better place of activity for both adults and students with the aim of information, interpersonal communication, social needs and entertainment. A survey carried out in US by Davidovitch and Yavich (2018) shows that children and teenagers spend two and half hours daily on the internet (with their smart phones), in Europe 60% of children aged 9-16 years old are seen using internet daily for an hour and half an hour on the average. The digital natives who grow up surrounded with smartphones have integrated this as part of their lifestyle. Hence, Davidovitch and Yavich (2018) assert that smartphones are nearly becoming an inseparable part of young people's lives. They went further in their research to discover that children between the ages of 12-17 have an average use of the smartphones 3-4 hours daily. And girls were found to be using smartphones more than boys.

Texting (SMS) is a very common feature of a mobile phone and has its own benefits in the classroom. Lanhart (2012) see texting as the best way teenagers communicate. Texting support students in communication and interaction, and encourages collaboration between teachers and students. Thomas and Orthober (2011) carried out a survey of 46 high school students who recorded teacher generated messages on a topic. The result reveals that students appreciate teacher generated text as beneficial to them as it has improved their interactions, communications and collaboration. Sending and receiving text messages and chatting has so much helped to improve students writing and reading skills. A teacher can as well create an SMS chatroom, this can be achieved using groupme.com, where students can discuss topics, collaborate, support one another and share their learning outcomes.

The digital camera on the mobile phone have its classroom benefits and applications. Thomas and O'Bannon (2013) asserts that Students and teachers use the camera on the mobile phone:

- Enhance visual communication
- Collect data and scientific visualization

- Mathematical analysis and providing context for mathematical problem solving, and
- Used as an inquiry tool.

The teacher can use the camera in class for class video project. Here students can prepare a one-minute video in the class. This will encourage discussion, collaboration and planning for the project using class time. Once they are done, the students will take a video of the project using their mobile device in the class. The video will be submitted via a Bluetooth on a video file, and will be watched by the whole class while the teacher gives his/her feedback. This will build several skills in the students like: creativity, communication and inter personal skills. In this way, mobile devices help the students and teachers acquire skills that are essential for the 21st century generation.

The video and audio recorder which are common feature of the mobile phone is used in the classroom to create podcast, which is needed for differentiated instructions. Student created podcast helps to improve learning, motivates students, create high order thinking, improves and enhances students listening and writing skills, Thomas and O'Bannan (2013).

The mobile phone help to keep students organized. In a research carried out by Russell (2018), it shows that students actually depend on their mobile phones to keep them organized both in school and at home. The calendar, notes, to do list, reminders, and alarm are features often used by many students for remembering things and keeping to time, Rusell (2018). Most students have on their phones - class time table, records of home works to do and when to submit them. Hence, the mobile phone is a suitable learning tool for students in the classroom.

Despite all the benefits associated with the use of mobile phones in the classroom, some educators are still of the view that there are certain features that posit barriers to integrating mobile phones in the classroom. In order to have a clearer understanding of teachers' perception of the usefulness of mobile phones as an instructional aide, some of the barriers need to be addressed.

The major argument against the use of mobile phones in the classroom is disruption and distraction. The ringing of phones in the class when lessons are ongoing is a great disruption to learners. [Jacob, 2014, Miah, Hossain and Rahman, 2017, Ugor and Koc, 2015]. In a study conducted by End, Worthman, and Wetteran (2010), it was observed that 71 students were being interrupted with a phone call (ringing) as they were in class watching an instructional video. The findings of this survey shows that these students performed worse in their test as they omitted some vital information. Most educators also see texting and chatting in class when lessons are ongoing as a big distraction to students. Mobile phone can be turned from a good educational tool into classroom distraction, when students use their mobile phones in class to text their friends, surf the net etc. all these may lead to distraction. Ugor and Koc (2015) carried out a survey of 269 college students and came up with the findings that the use of mobile phones has constituted a big distraction and when students spend time in class texting, they are not paying attention in class. However, [Rosen, Carrier, Lim and Cheever 2011], have a contrasting view to this in their own research. They examined 185 college students on the effect of classroom texting on learning and retention of content, this was achieved using a 30-minute video taped class lecture. The tutor sent students zero, four, eight or sixteen text messages while listening to the presentation and the students were given test immediately after the lecture. Students were also required to respond to the text message sent to them as they were receiving/listening to the videotaped class lecture. The result of this research showed that texting when lessons are ongoing is not a distraction as originally thought and stated by many teachers. The students who received sixteen text messages in class as lessons are ongoing performed slightly worse than those who received zero, four or even eight text messages. Also students who sent and received eight texts in 30 minutes during the lecture did not perform any worse than those who got four to zero texts. This finding shows that the interference that comes from texting during lessons is very minimal. Thus when integrating phone into the classroom, texting would not pose a challenge to teachers and students.

The use of mobile phones to cheat during exams and tests is another issue on the integration of mobile phones in the classroom. A lot of studies have shown that learners cheat in exams using their mobile phones. A survey of 1000 students who are between the ages of 13-19 and have realized that 16% of them use their mobile phones to cheat during exams or tests. With internet on a phone student can quickly check out the answers to a question, send answers to friends and even send out pictures of test question to friends who might be outside the test hall, Tindell and Bohlander (2012).

Prensky (2001) asserts that as digital natives grow up to become teachers, integrating technology into the classroom will no longer be an issue. Teachers (digital immigrants) inability to appreciate the instructional potentials of technology have really contributed to a great extent the number of proficiencies. Teachers should know the use and importance of technology to support students learning and be ready to use it during classroom instructions, Thomas and O'Bannon (2014). Further studies also show a mixed result on digital immigrants/natives and their use of technology in the classroom. Thompson (2013) carried out a survey of 388 college freshman and discovered the positive relationship that existed between the use of digital technology and the characteristics seen in the digital native learning. Their findings revealed that the digital immigrant can be comfortable and competent to an extent in their use of new technology. This research shows that some teachers who are digital immigrants can be competent to an extent using new technologies. Although digital natives speak the digital language, the digital immigrant should as well develop their competencies of technology for them to cope teaching these students with sophisticated knowledge and skills of the information technology.

3. Research Methods

A total of two hundred and forty (240) students were randomly selected from one thousand six hundred and three (1,603) students. Also a total of forty-five (45) teachers were also randomly selected from three hundred and fifty-one

(351) teachers. The collected data were analyzed using mean, two methods applied in administering the instrument for data collections.

3.1. Method 1

The questionnaires were distributed by hand to some of the students and teachers who are leaving around the school; and collected within 10 minutes of filling it.

3.2. Method 2

The questionnaires were also posted online on students' group chat and teachers' WhatsApp group. They were also collected the same way after they have been thoroughly responded to.

The data collected here using the structured questionnaire are arranged based on the order in which the questions on the questionnaire are arranged. Here simple percentage is used to analyze the demographics of the teachers and students.

Gender	Students	Percentage (%)	Teachers	Percentage(%)
Male	108	45%	19	42.2%
Female	132	55%	26	57.8%
Total	240	100%	45	100%

Table 1: Showing analysis on Teachers/Students Gender

From table 1; it is discovered that most of the teachers and students are female. This consists of 57.8% (teachers) and 55% (students) for female as against 42.2% (teachers) and 45% (students) for male.

Age	Students	Percentage (%)	Teachers	Percentage (%)
12 – 15 years	123	51.3%	-	-
16 – 19 years	117	48.8%	-	-
20 – 29 years	-	-	15	33.3%
30 – 39 years	-	-	12	26.7%
40 years & above	-	-	18	40.0%
Total	240	100	45	100%

Table 2: Showing Age Distribution of the Students and Teachers

Table 2 above shows the age distribution of the students and teachers who participated in this study. From the table, the student ages fall below 20 years with 51.3% for 12 – 15 years and 48.8% for 16 – 19 years. The ages of teachers that are 20 -29 years are 33.3%; 26.7% for 30-39 years and 40.0% for 40 years and above.

Devices	Students	Percentage (%)	Teachers	Percentage (%)
Mobile phone	240	70.6%	45	54.9%
Desktop computer	7	2.1%	4	4.9%
Laptop computer	81	23.8%	27	32.9%
Tablet	12	3.5%	4	4.9%
Digital camera	-	-	2	2.4%
Others	-	-	-	-
Total	340	100%	82	100%

Table 3: Showing Devices Owned and Used by Students and Teachers

From table 3 above, all the teachers and all the students that took part in the study have mobile phone, this represent 70.6% and 54.9% for students and teachers respectively. Only two teachers out of the entire participants, have digital camera that represents 2.4%. Those who also have laptops represent 23.8% and 32.9% for students and teachers respectively, while desktop takes 2.1% and 4.9% for students and teachers respectively.

Time	Teachers	Percentage (%)	Students	Percentage (%)
Very often	20	44.4%	150	62.5%
Only when needed	25	55.6%	90	37.5%
Total	45	100%	240	100%

Table 4: Showing How Often the Students and Teachers Access the Internet

From table 4 above, 55.6% of the teachers surf the internet only when the need arises while it is 37.5% for students. 44.4% of teachers do it often while it is 62.5% for the students.

Internet Purpose	Students	Percentage (%)	Teachers	Percentage (%)
Entertainment & games	240	26.0%	32	14.5%
Chatting & texting	240	26.0%	45	20.4%
Learning/research/ Assignments	92	10.0%	31	14.0%
Surfing the social media	240	26.0%	45	20.4%
Sending & receiving email	2	0.2%	19	8.6%
Recording & taking notes	3	0.3%	16	7.2%
Accessing digital & electronic textbooks	92	10.0%	31	14.0%
Solving Some mathematical problems	14	1.5%	2	0.9%
Total	923	100%	221	100%

Table 5: Showing Students and Teachers' Purpose of Using the Internet

From the table 5 above, it is discovered that all the students surf the internet for entertainment and games, chatting and texting, and social media which amounts to 26.0% of all the choices made on internet purposes. In the same vein, all the teachers surf the internet for chatting and texting and for social media. This amounts to 20.4% of all the choices made by teachers on internet purpose while entertainment and games takes 14.5%. The rest on the list with greater number of students and teachers are surfing the internet for learning/research/assignments, and accessing digital and electronic textbooks with 10.0% and 14.0% for students and teachers respectively. Surfing the internet for solving some mathematical problems goes for 14 students which amounts to 1.5% of the entire choices by the students while 0.9% for teachers. 8.6% and 7.2% are for teacher's choice on sending and receiving email, and recording and taking notes respectively. The students recorded 0.2% and 0.3% for the choices on these purposes respectively. For the second part of the questionnaire for students. The questionnaire was structured using the research questions as a guide. The research questions 1 and 2 have six (6) items each.

A four Likert scale of strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) was used for the analysis.

The mean of 2.5 is the level of agreement or acceptance. What this means is that any mean value in the analysis that is less than 2.5, is to be rejected. However, a mean of value of 2.5 and above is therefore accepted. The mean of this score was computed to get a level of acceptance or rejection.

$$\text{Mean} = (\bar{X}) = \frac{4+3+2+1}{4} \\ = 10/4 = 2.5$$

3.2.1. Research Question 1

To what extent is mobile phone an important tool for effective teaching and learning?

S/N	Items	SA	A	D	SD	Total	Mean	Decision
		4	3	2	1	N	\bar{X}	
1	Mobile phone should be used as an educational tool for teaching and learning in the classroom	93	90	33	24	240	3.05	Agree
2	Text messaging improves students' communication, writing and reading skills.	141	90	6	3	243	3.54	Agree
3	The use of phone encourages students' collaboration, interaction and classroom engagement.	66	111	42	21	240	2.93	Agree
4	The mobile phone features such as calendar, alarm, reminder etc. help students to be organized.	162	60	18	-	240	3.60	Agree
5	The use of phone encourages differentiated instruction and blended learning.	81	96	39	24	240	2.98	Agree
6	It adds value to teaching and learning by enhancing the effectiveness of teaching	165	66	6	3	240	3.64	Agree

Table 6: Showing the Extent to Which Mobile Phone Is Important Tool for Effective Teaching and Learning

Based on the data collected and presented on Table 6, it is discovered that all the items (1, 2, 3, 4, 5 and 6) were agreed to by the respondents. This explains that;

- Internet and other educational platform are important in the classroom.
- Text messaging improves students' communication, writing and reading skills.
- The use of phone encourages students' collaboration, interaction and classroom engagement.
- The mobile phone features such as calendar, alarm, reminder etc. help students to be organized. It will also grant teachers and students access to digital library, motivate them to learn, and add value to teaching and learning.
- Mobile phone encourages differentiated instruction and helps students learn at their own pace.

3.2.2. Research Question 2

Are there factors militating against integrating the use of mobile phone in the classroom activities?

S/N	Items	Sa	A	D	Sd	Total	Mean	Decesion
		4	3	2	1	N	\bar{x}	
7	Students might Mistakenly give Out vital Information to Criminals when they are online	57	129	21	33	240	2.88	Agree
8	It consumes considerable amount of time	54	135	15	36	240	2.86	Agree
9	The mobile phone can serve as a distraction if its usage is not properly managed	186	48	3	3	240	3.74	Agree
10	The attention of students might be diverted causing disruption in the classroom.	132	96	6	6	240	3.48	Agree
11	The power supply will pose a problem in the use of phone in the classroom	147	54	24	15	240	3.39	Agree
12	Mobile phone can encourage cheating during exams and tests.	51	69	84	36	240	2.56	Agree

Table 7: Showing the Factors That May Militate Against the Use of Mobile Phone in the Classroom Activities

According to the data collected and presented on table 9, it is discovered that all the items (7, 8, 9, 10, 11 and 12) were agreed upon by the respondents. This explains the fact that there are factors militating against integrating the use of mobile phone in the classroom activities like;

- Students sending out vital information to criminals when they are online
- Time consumption during planning and execution
- Distraction and disruption caused by the use of the mobile phone
- Pattern of power supply in our country
- Students cheating during exams and tests with the use of mobile phone

Responses	Students	Percentages (%)	Teachers	Percentages (%)
YES	183	76.3%	31	68.9%
NO	57	23.8%	14	31.1%
TOTAL	240	100%	45	100%

Table 8: Showing Whether Students' Academic Performance Will Be Enhanced If Mobile Phone Is Integrated Into the Classroom Activities

From the responses on the table 8 above, it is observed that 76.3% of the students and 68.9% of the teachers are of the opinion that integrating mobile into the classroom activities is necessary for the enhancement of Students academic performance. But 23.8% of the students and 31.1% of the teachers said no to such innovation.

4. Summary of Findings

From the analysis above, the following major findings were made:

- Table 3 shows that both students and teachers in these schools all have a mobile phone. Most teachers and students do not have laptops, desktop and other technological tools. This confirms the claims of Jacobs (2014) that asserts that mobile phones are cheaper to purchase than laptops and desktops, so introducing mobile phone into the classroom as a teaching and learning tool considering its low cost is very important.

- Table 4 also shows digital natives (the students) are the once who surf the internet more often while the digital immigrants (The teachers) use the internet only when needed. Hence Prensky (2001) asserts that today's students spend their entire lives using computers, internet, cellphone and other digital tools, the digital immigrants have little appreciation of new technologies.
- Table 5 which shows that digital natives (students) use the phone for entertainment, games, chatting, texting and surfing the social media, while digital immigrants (teachers) use it more often for learning, research, sending and receiving email, accessing digital and electronic textbook.

This study is in support of Prensky (2001) and others who assert that 'People from older generations can become quite comfortable with new technologies and those from digital generation can restrict themselves to using only a narrow range of technologies (Thompson 2013, P.14).

4.1. Discussion

The result of this study has shown that both teachers and students of these institutions are fully aware of the possibility of integrating phone in the classroom as a teaching and learning tool. The mean of 2.93 and 3.05 that are above the acceptable mean score of 2.50 suggests that they understand the benefits of mobile phone as an educational tool to aide learning, for collaboration, interaction and engaging students in the classroom. Although the study shows that both teachers and students are really aware of the need to use a phone in the classroom, still learners are not allowed to use these phones in the classroom. This is because school administrators and ministry of education do not permit the use of this device in the classroom, notwithstanding its numerous benefits to students.

Teachers in these schools have difficulty recognizing the value of allowing this technological device in the classroom. Thus, the next question was raised: 'which other technological device do you find suitable for our classrooms?' Surprisingly, 76% of teachers were of the view that laptops instead of phone should be used in the classroom to aide teaching and learning, seeing that all technological devices do not have the same features and value. This study is in support of Sad and Göktas (2013) survey of preservice teachers. Most teachers in many Nigerian schools (Secondary) are yet to have good knowledge and understanding of the value of mobile technology in revolutionizing Nigerian educational system.

In order to overcome the fear of integration mobile phone in the classroom, there should be a mobile phone policy in the school, which regulates when and how the phone should be used in school. Although many teachers will not like to integrate mobile phone as a teaching and learning aide in the classroom, this could be as a result of the fact that they are unsure on how this can be integrated into the classroom. Training teachers on the appropriate use of phone as a learning aide is very important in order to prepare students for the future.

5. Conclusion

I wish to state succinctly that mobile phone should be used in the class to aide teaching and learning, this should be with a mobile phone policy. This mobile phone policy is very important seeing that students have the tendency of misusing privileges given to them. But that should not make school administrators and teachers cut off this very important and affordable technological device from being use in the classroom considering its numerous values to students in the classroom. In support of this viewpoint, Adjin-Tettey and Akrobotu (2017) opines that once there is school policy on the use of mobile phone in the classroom, it is good to allow its use in the classroom.

With the rapid development of technology and the continuous spread of mobile devices in Nigeria, mobile learning has penetrated all aspects of our student's daily life and has impacted their learning in such a profound way. Integrating this technological device in the classroom should be easy seeing that most students already have it in their pocket. Therefore, the use of mobile phone in the classroom is the next possible step just like we use desktops in our classrooms.

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