Technological Innovations in Education: A Comparative Analysis of ICT and Youtube in Teaching and Learning amongst Education Students in the University of Port Harcourt, Nigeria

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Abstract: **The study examined technological innovations in education: a comparative analysis of ICT and YouTube in teaching and learning amongst education students in the University of Port Harcourt. The study adopted the descriptive survey design. Samples of 400 respondents were drawn from a population of 5200. The population cuts across eight (8) departments in the Faculty of Education University of Port Harcourt. Instrument for data collection was titled "Technological Innovations in Education: A Comparative Analysis of ICT and YouTube Questionnaire" (TIECAICTAYTQ). Two objectives, research questions and two corresponding hypothesis guided the study. Item by item analysis involving mean and standard deviation as well as independent t-test was used in analyzing the data at 0.05 significance level. Findings of the study revealed that there is no significant difference between the mean score of male and female students on the influence of incorporating information communication and technology (ICT) amongst education students in the University of Port Harcourt. And that there is no significant difference between the mean score of male and female students in the various ways which the use of YouTube has influenced male and female students students' academic performance amongst education students in the University of Port Harcourt. Based on these findings, it was recommended that government should allocate adequate fund to run ICT in the school. And that there should be regulation by both teachers and parents on the ways students use them in order not to affect their academic performance negatively.**

*Keywords***: ICT and YouTube**

I. INTRODUCTION

Agbakwuru (2017) opined that the whole range of technologies or devices involved in information processing. In the same vein, Vikoo (2013) as cited in Aderiye & Nwanazhinim (2017:238), sees ICT as a term used to describe technologies or devices which receive, record, process, transmit and retrieve information. It is the handling and processing of information by means of electronic and communication devices such as digital computers, cameras, phones, slide projectors, etc. to collect, process, teach or educate, store, disseminate, control, enlighten and entertain in a classroom or lecture balls and offices where teaching and learning take place. ICTs are believed to be an electronic ways of sharing or exchanging information from one person or group of persons to another. (Achuonye, 2004), ICTs are not one but many different complementary technologies, particularly digital gadgets, these includes;

(1) Fiber-optics
(2) Laser disc,
(3) Packet switching
(4) Direct Broadcast Satellite (DBS) and
(5) Digital Satellite System (DSS) multimedia technologies or devices.

Vikoo (2013), as cited in Aderiye & Nwanazhinim (2017:239), ICT in teaching and information handling is the internet which is a vast network of networks that connect countless computers connected by telephone lines or satellite systems all over the world in a manner of speaking and teaching and learning from one person to another. Agbakwuru (2017), Observed that ICT is basically the use of radio, television, videos, computer, sensor interface boxes emails, satellite connections, internets, and all other softwares and electronic materials employed by the teacher to facilitate the transfer of skills and knowledge.

Importance of ICT in Teaching

Wang & Reeves (2007) and Olele (2014) as cited in Agbakwuru (2017:358), identified a number of benefits of ICT application in the delivery of lessons by teachers. These include;

- It enhances thinking and working productively by teachers and students for the exploration of the world.
- It engages the learners by creating an enabling environment for active participation in teaching and learning process.
- The fantasy environment created by ICT evokes mental images of physical or social situations which are usually absent in normal classroom setting. This enhances the formation of mental imagery of the lesson, mental processing power and understanding.

- ICT application in a teaching-learning situation also offers different types of educational resources for engaging all learning styles.
- It equally provides for new instructional approaches in forms of co-operative and collaborative learning, as well as sharing intelligence from local and global communities.
- In addition, it creates room for solving real-life problems using higher order thinking skills.
- For the teachers, it provides free time for them to work with students and equally allows teachers to produce student-friendly materials for teaching

E-Learning Conceptualization

Furthermore, Nwaneri & Ikwegu (2017), defined E-learning with the following terms:

(i) Learning facilitated and supported through the use of information and communication technology.
(ii) It covers a spectrum of activities from the use of technology to support learning as part of blending approaches, to learning that is delivered entirely online.
(iii) It covers the use of computers and technology as a vehicle for knowledge exchange within teaching and learning situation.
(iv) It could be seen as electronic learning which involve using a computer to deliver part or all of a course whether in school, business training or full distance learning course.

E-learning is education given to people using electronic delivery methods such as video conferencing, email CD Rom, etc It covers a lot of computer based learning which includes delivering of subject matter through the internet, satellite interactive D-ROM and television, Body (2005), as cited in Nwaneri & Ikwegbu (2017:270).

E - Learning Tools

Mgbere (2015), as cited in Nwaneri & Ikwegbu (2017:271), e-learning tools includes the followings:

1) **Laptops/Computers:** This involves electronic machines that are capable of receiving, storing, manipulating and retrieving data. Agbo (2001) assert that computer is an electronic device that has a semiconductor chip called a microprocessor. The chip contains all the arithmetic, logic and control circuitry that enables the computer to carry out its numerous functions ranging from the simple to the most complex. It is the best educational technology medium for individual and institution.
2) **Teleconferencing:** It is a type of electronic system which uses the video and audio communication to hold conference and meeting with participants that may save both students and employees at the same time and thus increase productivity.

Teleconferencing reduces the level of travelling to and fro meeting and center learning (school)

3) **Electronic White board:** This is a device connected to the computer that helps the computer save anything written on it and since things can also be printed if so desired; it uses data projector, electronic pen and erasers. The electronic white board is notably a very good medium of effective classroom interaction and other activities like workshop, seminars and training of staff.
4) **The email**: This is the widely used internet facility. It is fast in information exchange, very cheap to use, reduce physical distance between people and increase in personal capabilities to explore and communicate with peers worldwide.
5) **CD Rom:** This means Compact Disc Read Only Memory. It is a CD that can be read by a computer with an optical drive. The Rom means that the data on the disk cannot be altered or erased. It usually contains a large amount of information that can be played or replayed from time to time.
6) **Virtual Classroom:** This represents an online learning environment which can be accessed through a portal or software base that requires down load. Here the teacher and the students are logged into the virtual learning environment at the same time. It could also be used to coordinate meeting workshops and conferences.

II. DIGITAL TECHNOLOGY

Green (2016), as cited in Aderiye & Nwanahinin (2017:238), posit that a digital device is an electronic device which uses discrete, numerable data and processes for all its operations. The alternative type is analog, which uses continuous data and processes for any operation. Any device which uses a computer of any sort UI its operations is at least partially digital. Swan et al (2007), as cited in Aderiye & Nwanahinin (2017:238), assert that digital devices are known as digital technologies. They are for education just as iron and steel girders; reinforced concrete, plate glass, elevators, central heating and air conditioning were for architecture (McClintock, 1999).

Digital technologies or devices in this context can be used interchangeably with Information and Communication Technology (ICT) gadgets, Mobile Application Technology (Mobile Appl.) gadgets and WhatsApp Application gadgets etc. It is therefore pertinent to briefly examine the concepts.

Mobile Application Devices

Vikoo (2013), as cited in Aderiye & Nwanazhinim (2017) opined that, mobile applications technology are digital devices designed with consideration for the demands and constraints to take advantage of teaching and learning situations. Mobile applications are categorized sometimes according to whether they are web-based or native applications which are created specifically for a given

platform and as hybrid applications that combine elements of both native and web applications (Wigmore & Rouse, 2015 as cited in Aderiye & Nwanazhinim (2017:239).

From the above perspectives, any electronic device that can be used for browsing in teaching and learning. perhaps, sending mails, text messages, save and store files can be regarded mobile application technology.

Social Media in Teaching and Learning

Some students these days are influenced by the use of social Medias such as; YouTube Wassap, Face book, Instagram, Twitter, and others to mention a few.

III. FACEBOOK

Facebook is one of the widely used social media worldwide and also one of the technological innovations in education in this modern times. As a result, during the Covid 19 pandemic outbreak, many educational institutions around the world adopted the use of social media applications in the school administrations.

According to Bartly.com, in contributing to the issue, writing about the advantages of using social media (Facebook) in education, it states that;

"It provides better Educational Services, which help people to learn by exchanging informant with one another, as well as constructive discussion to reach agreement on the point of discussion. In addition, it help learners to revitalize their skills, provides an opportunity to learn, increases the ability and motivate them to think creatively in a range of different styles and methods. This is because communication and interaction takes place between cultured people from different environments. Moreover, the use of social networks in education ensures that learners have strong and immediate access to an educational method. As well as helping to strengthen educational method of learning, the learning process requires a collaborative environment in which the learners is at the centre of learning process. Finally, it depends sharing, communicating and interacting with others and learning effective communication methods, as it makes the learner take a positive role in dialogue, which can be shared with others to reduce any negative effects".

IV. YOUTUBE

YouTube is a social media, part of its features is that it is used to view things and watch videos and other forms of entertainment. In the field of education, a teacher can use it to display instructional materials to the learners when you have internet connections.

YouTube Educational Benefits of Students

Tia (2020), identified the followings as the benefits of YouTube to students;

1. Students who learn visually: Allow students to physically see what is being taught and helps them understand their course work better.
2. Engaging: it's a platform where open conversations and discussions can be had. You can also connect with students from all over the world.
3. Provide a go-to Resource: YouTube can be accessed on a multitude of devices. It's a resource that can be used whenever and wherever. From the above assertions, YouTube is a visual aid to students and teachers in the learning and teaching process. And it is often available in every 24 hours of the day. Students and teachers can always have access to it so long as there is an internet connection on the device of the use.

V. WHATSAPP APPLICATIONS

Bouhnik and Deshen (2014), as cited & in Aderiye Nwanazhinim (2017:239), WhatsApp is a smart phone application for instant messaging. WhatsApp application gadgets have unique digital features and the ability to enhance communication within a group. Classroom communication between teachers and students using WhatsApp application gadgets in teaching and learning is advantageous because it creates pleasant academic environment and influences the manner in which conversation is accessed between teachers and students. Usage of digital WhatsApp gadgets in communication between teachers and students through various channels such as Email, SMS, Facebook, Twitter etc., in and out of school environment enhances teaching and learning, and makes teachers and learners to be active in their studies, Calvo, Aribiol & Iglesias, (2014), as cited in Aderiye Nwanazhinim (2017:239).

Digital Classroom

Nwadike & Godwins (2017:257), posit that "digital tools such as the internet, smart phones, Skype learning, projector, computer, TV, CCTV, etc., can help in changing the world of teaching from the blackboard to the computer age where things are changing from analog to digital". Furthermore, Nwadike & Godwins (2017:257,258), observed that digital classroom is simply a computerized class where both the teacher and the students find it easy to teach and learn. The successful management of any 2l century classroom is dependent on the ability to manage and transmit information rather than taking it in the previous 20th century way. Nwachukwu (2007) in as cited in Nwadike & Godwins (2017:258) is of the view that ICT has brought a significant changes on the way that both teachers and students play, live, and work. The world is quick growing and becoming more technological in nature and learning in a digitalized world is as easy as saying the alphabets. This implies that both the teacher and students work load will be reduced or simplified.

Aim and Objectives

The study examined technological innovations in education: a comparative analysis of ICT and YouTube in teaching and learning amongst education students in the University of Port Harcourt. Specifically, the objectives of this study are:

1) To determine the extent to which incorporating Information Communication Technology ICT) influence male and female students' academic performance among education students in the University of Port Harcourt.
2) To ascertain the extent to which the use of YouTube influence male and female students' academic performance among education students in the University of Port Harcourt..

Research Questions

To guide the study two research questions were formulated:

1. To what extent does incorporating Information Communication and Technology (ICT) influence male and female students' academic performance among education students in the University of Port Harcourt.?
2. To what extent does the use of YouTube influence male and female students' academic performance among education students in the University of Port Harcourt.?

Hypotheses

The following null hypotheses were formulated to guide the study at 0.05 level of significance.

1. Incorporating Information Communication and Technology (ICT) does not significantly influence male and female students' academic performance among education students in the University of Port Harcourt..

2. The use of YouTube does not significantly influence male and female students' academic performance among education students in the University of Port Harcourt..

VI. METHODOLOGY

The design of the study was descriptive survey. The population of the study consisted of 5200 male and female students in the Faculty of Education, University of Port Harcourt. A total of 400 respondents were randomly selected using stratified random sampling technique from the eight (8) departments. These include the department of Educational Management and Planning, Educational Foundations, Educational Psychology, Guidance and Counseling, Human Kinetics and Health Education, Adult and Non-Formal Education, Early Childhood and Primary Education, Library and Information Science. Data was collected through questionnaire, titled: technological innovations in education: a comparative analysis of ICT and YouTube in teaching and learning amongst education students in the University of Port Harcourt. It was structured into two sections: Section A consisting of Socio-Demographic data, while Section B consists of 12 questions drawn from the topic under investigation. The researcher personally administered the instrument and also retrieved them accordingly. The instrument was validated and subjected to reliability test. The secondary data collected were analyzed using Tables, Mean and standard deviation. A criterion mean of 2.50 was generated using the modified likert 4.point rating scale of Very High Extent (VHE), High Extent (HE), Low Extent (LO) and Very Low Extent (VLE).

VII. RESULTS

To what extent does incorporating Information Communication and Technology (ICT) influence male and female students' academic performance among education students in the University of Port Harcourt.?

Table 1: Mean (x) and standard deviation scores of male and females students' on the extent does incorporating Information Communication and Technology (ICT) influence male and female students' academic performance among education students in the University of Port Harcourt.

S/No	Items	VHE	HE	LE	VLE	Mean	Std. Dev.	Decision
1.	It makes research easy	93	166	114	27	2.81	.868	High Extent
2.	It makes communication faster	69	125	163	43	2.55	.900	High Extent
3.	It increases motivation in students	87	151	128	34	2.73	.897	High Extent
4.	It helps to prepare students for work place.	212	138	30	20	3.35	.825	High Extent
5	it encourages collaborative learning among students	192	109	60	39	3.09	0.912	High Extent
6	It helps students to become independent and increases students' comprehension of content.	126	115	71	88	2.69	0.87	High Extent
	Total Grand Mean					**2.87**	**0.87**	

Criterion $\bar{X}$ = 2.5 Scale= VLE (1.0-1.9), LE (2.0-2.49), HE (2.5-3.0), VHE (3.1 & Above)

Table 1, items 1, 2, 3,4,5 and 6 with a mean of 2.81, 2.55, 2.73, 3.35, 3.09 and 2.69 respectively were accepted as their criterion mean were above 2.5in the final analysis. The respondents agreed that ICT makes research easy, it makes

communication faster, it increases motivation for students and it helps to prepare students for work place. Also, the total grand calculated was 2.87. Hence, since the grand mean (2.87>2.50) is greater than 2.50, it is unanimously agreed that the use of ICT among male and female education students in the University of Port Harcourt. Influence academic performance to a high extent.

Research Question 2

To what extent does the use of YouTube influence male and female students' academic performance among education students in the University of Port Harcourt.?

Table 2: Mean (x) and standard deviation scores of male and female students' on the extent does the use of YouTube influence male and female students' academic performance among education students in the University of Port Harcourt.

S/No	ITEMS	VHE	HE	LE	VLE	Mean	Std. Dev.	Decision
7.	It is a source of distraction due to the fact that students indulge in Facebook and WhatsApps during class session.	59	188	132	21	2.71	.779	High Extent
8.	It has caused moral degradation because school children these days date online and visit pornographic sites with the ICT tools.	20	250	103	27	2.66	.679	High Extent
9.	It has increased mass failures among male and female school student because of excessive amount of time that ICT tools consume.	116	158	84	42	2.87	.952	High Extent
10.	Students are no more interested in reading and studying instead you see them discuss about the latest products in the market and get rich quick.	102	104	118	72	2.60	1.059	High Extent
11.	Phone ringing and text message alerts.	149	63	132	56	2.76	0.91	High Extent
12.	Students listens to music during class discussion.	151	132	48	69	2.91	0.83	High Extent
	Total Grand Mean					**2.75**	**0.86**	

Criterion $\bar{X}$ = 2.5 Scale= VLE (1.0-1.9), LE (2.0-2.49), HE (2.5-3.0), VHE (3.1 & Above).

Table 2, items 1, 2, 3, 4, 5,and 6respectively with the mean of 2.71, 2.66, 2.87,2.60,2.76 and 2.91 were accepted, the respondents agreed that It is a source of distraction because male and female students indulge in Facebook and What-Apps during class session, social media has caused moral degradation because school children these days date online and visit pornographic sites with social media, It has increased mass failures among education students in the University of Port Harcourt because of excessive amount of time that YouTube and multimedia consume and Students are no more interested in reading and studying instead they discuss about the latest products in the market and get rich quick among education students in the University of Port Harcourt. Furthermore, calculated grand mean was 2.75. Since the grand mean (2.75> 2.50) is higher than 2.50 criterion mean. The research items were unanimously agreed meaning that the risks associated with the use of YouTube influence students' academic performance among education students in the University of Port Harcourt to a high extent.

VIII. DISCUSSION OF FINDINGS

From the findings of the study, it was revealed that there is no significant difference between the mean scores of male and female student on the reason for incorporating ICT among education students in the University of Port Harcourt. This finding means that both male and female student unanimously agreed on all the reasons for the utilization of ICT among education students in the University of Port Harcourt. The findings of the study is true because both male and female students are aware of the need and the importance

of using information communication technology among male and female education students in the University of Port Harcourt. The finding of the study is not surprising to the researcher because with the current age in which students use ICT equipment is very rampant and common even to this level of education. This finding means that both male and female students' are extremely familiar and proficient in the use of these ICT tools. The findings of the study is in line with that reported by Uche (2015), who noted that both male and female students in secondary schools do use ICT tools in carrying out academic activities.

From research findings two, there is no significant difference between the mean scores of male and female students in the various ways which the use of YouTube has influence the academic performance among education male and female students in the University of Port Harcourt. This finding means that both male and female students do share the same opinion or perception on how YouTube has influenced their academic performance. These findings is also true because both male and female students are aware of both the uses and the influence which YouTube has on their academic performance. It also come because most of them who are digital natives are very proficient in the use of social media like YouTube, Facebook, Twitter, WhatsApp etc. The finding of the study is not surprising to the researcher in any sense because the use of social media as observed by the researcher is not gender relative neither is it sensitive to any gender. This means that both male and female students' have the ability and also the willingness to use YouTube both in their personal

life and in academic pursuit. The finding of the study is also in line with that reported by Thomas (2005), who stated that there is no significant difference in the use of social media application among secondary school student in South-South Region of Nigeria.

IX. CONCLUSION

This study has examined the concept of technological innovations in education: a comparative analysis of ICT and YouTube in teaching and learning amongst education students in the University of Port Harcourt. It was found that technology improves teaching and learning in and outside the classroom. YouTube and ICT usage influences male and female students academic performance positively by saving cost, help students to do independent research and encourage collaborative learning among students.

X. RECOMMENDATIONS

Based on the findings of the study above, the researcher therefore came up with the following recommendations;

1) Since it was unanimously agreed on the positive influence of ICT on male and female students' academic performance, it is recommended that government should allocate adequate fund to run ICT in the school.

2) In addition, since both male and female students have agreed on the influence of YouTube on their academic performance, there should be regulation by both teachers and parents on the ways students use it in order not to affect their academic performance negatively.

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