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## Explore the Usage of Web 2.0 Technologies, Teaching Strategies for Sustainable Knowledge Economy in Public Tertiary Institution in Rivers State, Nigeria.

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### **Abstract**

*This study examines the usage of Web 2.0 technologies as teaching strategies for sustainable knowledge economy in public tertiary institutions in Rivers State, Nigeria. Two research questions and two corresponding hypotheses guided the study. The study adopted descriptive research design the population of the study consist of 1224 lectures of three tertiary institutions in Rivers State. The stratified random sampling and simple random sampling technique were adopted in selecting the sample size of 371. A self-designed questionnaire titled Explore Web 2.0 technologies, teaching strategies in public tertiary institutions questionnaire (EWTSPITIQ) was used as instrument for data collection. The validated instrument yielded reliability indices of 0.74 and 0.72 respectively using cronbach Alpha method. Mean and standard deviation were used to answer the research question while z-test was used to test for the hypotheses at 0.05 level of significant. The finding revealed that, to a high extent YouTube and WhatsApp can be used as teaching strategies, for sustainable knowledge economy in public tertiary institutions in Rivers State. The researcher recommended that, the ministry of education and Rivers State government should regularly organize seminars, workshop, Conferences, and orientation programmers to update lecturers on the use of Web 2.0 technologies*

*teaching strategies, and government should provide internet facilities for instructional purpose to educational institutions and include the use of Web2.0 technologies as a teaching strategies in schools.*

**Keywords:** Teaching, University, Web 2.0 technology

## **Introduction**

Sustainable Knowledge Economy; Sustain means anything that can retain their value over time. The sustained use and creation of knowledge at the center of the economic development process in an economy essentially becomes a knowledge economy. According to Lidia, (2023), Knowledge economy is a term coined by Peter Drucker in 1957. Who defined knowledge as the theoretical or practical understanding of a subject. Drucker went further to ascertain that a knowledge-based economy is an economy in which the means of productions are largely or entirely knowledge, information, and intellectual driven. The knowledge is often used to represent economic activities involving university research; through the help of a teacher.

A teacher is a person who helps students in a formal institution to acquire knowledge, competence, or virtue, via the practice of teaching Wikipedia. Teaching is a change-driven activity through the use of appropriate method (Ayeni, 2010). When teachers try to achieve some objectives by any method it becomes strategies; in a null shell strategies imply thoughtful planning to do something.

Teaching strategies are methods and techniques that teachers use to deliver course materials in ways that keep students engaged and practicing different skill sets (Ayua, 2017). In the same vein Bay (2013), opined that Teaching strategies refer to the methods, techniques, procedures and processes that a teacher uses to inculcate attributes, skills and knowledge on the student.

The World Bank Institute defined knowledge economy as one that creates, disseminates and uses knowledge to enhance its growth and development. A knowledge economy uses data as its raw material and transforms it using technology, analysis tools, and human intelligence into useful applications for business that lead to economic productivity growth which requires investment in formal education training and general education needed by everyone.

Education is pivotal to the development of any society, hence individuals and governments have prioritized education as essential good that is not only beneficial to individuals but for the sustainable development of society. To achieve the growth of individuals and society resources are mobilize not only to have inclusive education but to ensure that the recipients of education have the global competence that can enhance global visibility and competitiveness.

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Interesting to note that education has passed through different epochs or revolutions starting from apprenticeship, schooling and lifelong learning (Collins & Halverson, 2009). The apprenticeship according to the authors is the period where teaching is domiciled with parents and their relatives and it is done outside the school environment. Schooling is when teaching and learning are confined to a designated time and place with a defined curriculum, specific objectives and learning outcomes.

The upturn of digital technology has revolutionized and changed the educational landscape and resulted in a paradigm shift in the process of teaching and learning. Digital technology has challenged the schooling system and has challenged the advanced economy to jettison schooling and integrate lifelong learning into their educational system. The increase of students in dire demand for education and the interconnectedness of the economy and the increased flow of information and ideas have led many nations to embrace digital technology which engenders lifelong learning. The concept of lifelong learning is the use of digital technology to enhance the attainment of educational goals as stipulated in the national policy on education.

The National Policy on Education (2014), stipulates that tertiary education should provide lifelong learning programmes that will instill students with skills and knowledge for self-reliance and the world of work. It is pertinent to note that the skills and knowledge that enhance lifelong learning is the integration of information technology in pedagogical training. To ensure lifelong learning the students and teachers should not only be digitally aware but also competent. Digital technology should not only be available but accessible to students, teachers and the vulnerable in society. Worthy of note is that the mother of digital technology is the Internet or the World Wide Web, www. For clarity, www is an information-enabling system that stored documents, information and other web resources and is accessed through the Internet (Online Wikipedia). The first earliest www is known as Web 1.0 with few people writing content for a large number of people and people are expected to access facts, information and content from the sources (O'Neill, 2022). Web 1.0 is primarily for the assessment of information, facts and content without necessarily allowing the users to interact and creation of their content. Following the massive growth of internet users there was a need for improvement which gave rise to Web 2.0. Yasar (n.d) posits that the major difference between Web 1.0 and 2.0 is that Web 2.0 is easy to use, has dynamic content, increases social networking and improvement in quality of education among others. Web 2.0 is an improvement and at the same times a departure from Web 1.0. According to Mamman (2019), web 2.0 was originally coined by O'Reilly in 2005; therefore it is no longer a new term. Web 2.0 technology is where internet users can access information, write content and share information among users. Web 2.0 is used to describe ways users interact with the internet. It is interactive web-based technology

which allows users to read, write and interact with other users (Mamman, 2019). It means that Web 2.0 encourage active participation, creates content, and social networking and allows for active interactive, global, multicultural, and social networks with each other through virtual social connections (Wheeler, 2010; Rogers, 2014).

Web 2.0 tools are ubiquitous among students in tertiary education and have significantly changed the educational landscapes in every facet of teaching and learning. It is enlightening to note that Web 2.0 technologies are growing in number due to the popularity of various applications that encourage participation more importantly web technology has vastly advanced and new services emerging every year and they are essentially in the public domain. ( Borau et al., 2008; Valerio, & Valenzuela, 2013; AL-Shamare, 2019). It becomes difficult to enumerate all the Web 2.0 technologies that can enhance teaching in any educational institution. Suffice it to mention some of the commonly used Web 2.0 tools among students and teachers that enhance interactive and collaborative learning when rightly applied.

**Facebook:** it is one of the popular social media that is making waves in interconnectivity and linking people across the world, breaking distances between berries in real time. It is a social network that brings users from different countries together, to share information, ideas, and pictures, making new developments. (Kirkpatrick, 2011). Facebook is well integrated into pedagogical content and can enhance teaching through an exchange of information and data since it allows users to comment on any information posted online and in real-time.

**YouTube:** it is another web 2.0 that the users can offload pictures and videos in real time. It is mostly used for entertainment. According to Ubari (2015), it can be a very efficient and useful tool for teaching, research and educational presentations that can provide finite digital content. YouTube can be used to learn different subjects, by exchanging video clips of lectures, conferences and programmes among students and scholars. YouTube tools can be used to transmit and acquire knowledge (Al-Mukhauni, Al-Qayoudhi& Al-Badi, 2014; Al-Shamara, 2019).

**WhatsApp:** is another popular mobile application that is common among students and teachers (Guler, 2017). It is used for instant messages, and multi-platform applications for users of smartphones and has the potential for connecting people from different geographical areas with common interests and concerns (Alsanie, 2015). Therefore, it is a veritable tool for disseminating information, group discussions, presentations and lectures.

**Twitter:** it is the quickest social media platform where users may post queries and receive prompt responses from other users and it is used by several academics, scientists, and well-known individuals in sharing information and lecture notes (Al-Shamere, 2019).

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**Zoom:** is another social media that became popular among educational institutions as a result of COVID-19. It is used in teleconferencing, distance education and social networking.

**Forum:** is used for the exchange of ideas and information and provide an opportunity for members to discuss topic put forward (Collins dictionary). Other web-based technologies that if incorporated into pedagogical content can enhance teaching and learning are Wikispaces, audacity, Edmodo, Moodle and Google Drive etc.

The use of web-based technologies is thriving and is widely embraced by various institutions of learning like weblogs and wikis among others (Ohie & Brinks, 2019). With the integration of Web 2.0 into teaching, learners can confidently have easy access to educational resources and personnel (Abousoliman, 2017). With the help of web-based technologies learners can have unrestricted access to the e-book, and e-library and at the same time have unhindered information from experts and professionals in various spheres of learning. Web 2.0 tools encourage interactivity between students and teachers and that raises students' potential to produce meaningful output (Chartland, 2012).

The importance of web 2.0 tools cannot be undermined and this was succinctly enumerated by Valerio & Valenzuela (2013) as multiple educational resources which can be in the form of video, images or doc video, images or documents: community creation that enables peers to share information, ideas: community creation that enables peers to share information, ideas and knowledge and thereby enriching learning landscape: it does not only help in connecting peers and colleagues but create a sense of community and platform for social activities among others. In the words of Balbay and Erkan (2018, p.47), "Web 2.0 tools scaffold students in the learning process".

The new wealth of nations depends on information, communication technology and in-depth knowledge on a global basis (Cordell, & Ide, 1994). In the same vein, Prensky (2001), refers to 21st-century youth as digital natives who are using Web 2.0 tools in everyday activities. Therefore, it is important to note that the adoption of these tools by lecturers will not only enhance collaborative learning but will motivate the students towards lifelong learning. The researcher is of the view that the study will contribute to existing research literature and provide useful information on the use of Web 2.0 to all stakeholders in the educational industry. .

It is in cognizance of this that the paper explores the usage of Web 2.0 in tertiary education for teaching in public tertiary in Rivers State. The prevalence of Web 2.0 among students has drawn concern among researchers that any study in this direction will enhance teaching and learning. Interestingly, not much research has been conducted tertiary institutions in Rivers State concerning the use of the World Wide Web. The researcher is of the view that the study will fill

the gap between the use and availability of the World Wide Web in enhancing teaching and learning in the universities in Rivers State, Nigeria.

### **Statement of the Problem**

The upturn of information technology has also prompted the development of social networking in every sphere of human enterprises. This has increased the importance of the Internet and computers in everyday activities. This brings to the fore the World Wide Web, www as a catalyst for social networking. The first phase of www is web 1.0 which was basically for reading and sourcing information without necessarily interacting with the users. This deficiency was redeemed with the advent of Web 2.0 which is not only interactive but involves the creation of content, sharing of videos, messages and real-time responses. It is imperative to note that the advent of Web 2.0 technologies led to the massive acquisition of various Web 2.0 tools by Nigerian youths with assorted smartphones, and computers with internet facilities. Consequently, the Nigerian youth are immersed in the usage of Web 2.0 in various social activities.

In spite of the proliferation of Web 2.0 technologies among university students, it appears that the facilitator of knowledge is yet to diffuse Web 2.0 technology in the process of imparting knowledge to students. It is expedient that digital technology especially Web 2.0 that is used in everyday activities should also be used for teaching and learning. It appears that lecturers have acted weakly in integrating Web 2.0 tools into the teaching process, by disinvesting the students' benefits of digital technology, and digital competencies and denying students to be global citizens with global visibility. Educational institutions without the use of Web-based digital technology are not only archaic but do not enhance lifelong learning. The traditional roles of teaching, learning and innovation will diminish and pose a threat to the attainment of educational goals. The integration of these digital tools that are commonly used by Nigerian students will not only enhance collaborative learning, the flow of information, knowledge and ideas unrestricted but enhance learning outcomes.

### **Purpose of the Study**

The aim of this study is to explore the usage of Web 2.0 technologies teaching strategies for sustainable knowledge economy in public tertiary institution in Rivers State. The study sought to:

- a) Examine the usage of YouTube as a teaching strategy for sustainable knowledge economy in public tertiary institutions in Rivers State.
- b) Examine the usage of WhatsApp as a teaching strategy for sustainable knowledge economy in public tertiary institutions in Rivers State.

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### **Research Questions**

The following research questions were raised to guide the study.

- 1) To What extent is the usage of YouTube as a teaching strategy for sustainable knowledge economy in public tertiary institutions in Rivers State?
- 2) To What extent is the usage of WhatsApp as a teaching strategy for sustainable knowledge economy in public tertiary institutions in Rivers State?

### **Hypotheses**

The following hypotheses were tested at 0.05 level of significance.

H<sub>01</sub>. There is no significant difference between the mean responses of male and female lecturers on the usage of YouTube as a teaching strategy for sustainable knowledge economy in public tertiary institutions in Rivers State, Nigeria.

H<sub>02</sub>. There is no significant difference between the mean responses of male and female lecturers in on the usage of WhatsApp as a teaching strategy for sustainable knowledge economy in public tertiary institutions in Rivers State, Nigeria.

### **Methodology**

This study adopted a descriptive survey design, aimed at exploring the use of 2.0 Web technologies teaching strategies for sustainable knowledge economy in public tertiary institution in Rivers State, Nigeria. Nworgu (2015), opined that descriptive survey research design is aimed at studying the group of people or items considered to be a representative of the entire population. The study was conducted in three public tertiary institutions in Rivers state, Nigeria namely; Ken Saro-Wiwa polytechnic, Captain Elechi Amadi polytechnic and Ignatius Ajuru university. The population of the study consists of 1224 teaching staff, comprising of 421 (216 male and 215 female) from Ignatius Ajuru University, 562 (303 male and 259 female) from Captain Elechi Amadi Polytechnic, and 241 (127 male and 114 female) from Ken-Saro Wiwa Polytechnic. That is 646 male and 578 female teaching staff (Registry Department of the tertiary institutions).

The sample size for the study is 371 (198 male and 173 female) teaching staff. Stratified random sampling technique was used in grouping the teaching staff into male and female strata and simple random sampling technique was used to selecting 198 male from the male stratum and 173 from the female stratum. The instrument for data collection was a self-designed questionnaire titled: Explore the usage of Web 2.0 technologies, teaching strategies for sustainable knowledge economy in public tertiary institution in Rivers State questionnaire (EUWTTSSKEQ). The questionnaire was divided into two parts, Section A and B, section A was used to gather demographic data and schools while Section B seeks to elicit information on research questions and to test the hypotheses. It was patterned after 4 point rating scale, Very High

Extent(VHE=4), High Extent(HE=3), Low Extent (LE=3), Very Low Extent(VLE=1).The questionnaire contained 12 items distributed according to the two research questions. It seek information on Explore the usage of Wed 2.0 Technologies, teaching strategies for sustainable Knowledge Economy in public tertiary institutions in Rivers state, Nigeria.

To ensure that the instrument was valid, the questionnaire was validated by three experts in the department of measurement and evaluation, Face and content validity were carried out on the instrument by cross matching the items in the questionnaire with the research questions. The reliability of the instrument was established using Cronbach Alpha method to determine the consistence of the instrument. Twenty questionnaires were administered to lecturers of tertiary institution outside the area of the study. Correlation Coefficient of the scores were calculated using Cronbach Alpha reliability coefficient. Explore the usage of Web2.0 technologies, teaching strategies for sustainable knowledge economy questionnaire were 0.76 and 0.74 respectively. The result established the consistence of the instrument is high enough and guaranteed the use of the instrument for the study. The research questions were answered using the mean and standard deviation while t-test was used to test the null hypotheses at 0.05 level of significance. Decision rule for the t-test is that if z-calculated value is greater than or equal to the t-critical it will be rejected.

**Result of Findings**

**Research Question 1:** To What extent is the usage of You Tube as a teaching strategy for sustainable knowledge economy in public tertiary institutions in Rivers State?

**Table 1: Mean Responses of Male and Female Lecturers on the Extent of the Usage of YouTube as a Teaching Strategy for Sustainable Knowledge Economy in Public Tertiary institution in Rivers State, Nigeria.**

S/ N	Item	Male			Female		
		$\bar{X}$	SD	Decisi on	$\bar{X}$	SD	Decisi on
1	You Tube is used for connectivity between students and teachers.	2.52	1.07	HE	2.55	1.18	HE
2	You tube is used as a platform for presentation.	2.41	1.02	HE	2.55	1.18	HE
3	You Tube is used for communication among students and resources throughout the world.	2.69	1.14	HE	2.56	1.25	HE
4	You Tube is used to teach students about new way of	2.55	1.20	HE	2.62	1.22	HE

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collaboration.

5	You Tube can be used to increase student motivation and attractiveness of lesson by uploading pictures.	2.71	1.01	HE	2.67	1.31	HE
6	You Tube can be used to demonstrate and inculcate knowledge, skills and attributes on learners through video clips.	2.55	1.20	HE	2.67	0.31	HE
<b>Grand Mean/SD</b>		<b>2.65</b>	<b>1.08</b>	<b>HE</b>	<b>2.59</b>	<b>1.22</b>	<b>HE</b>

**Source:** Field Survey, 2023.

Data in Table 1 revealed that all the items were rated as High Extent by the respondent. The standard deviation showed the homogeneity of the responses while mean response of 2.65 and 2.59 for both female and male lecturers indicates that both respondents agreed that, YouTube, can be used as a teaching strategies for sustainable knowledge economy in public tertiary institutions.

**Research Question 2:** To What extent is the usage of WhatsApp as a teaching strategy for sustainable knowledge economy in public tertiary institutions in Rivers State?

**Table 2: Mean Responses of Male and Female Lecturers on the Extent of the Usage of WhatsApp as a Teaching Strategy for Sustainable Knowledge Economy in Public Tertiary Institution in Rivers State, Nigeria.**

S/ N		Male			Female		
		$\bar{X}$	SD	Decisi on	$\bar{X}$	SD	Decisi on
1	Lecturers can assign various tasks and assignment to student.	2.55	1.20	HE	2.79	1.12	HE
2	Student can upload their assignment via WhatsApp.	2.75	1.14	HE	2.68	1.07	HE
3	Lecturers can access and view submitted assignment via WhatAssp	2.59	1.13	HE	2.67	1.23	HE
4	Lecturers can deliver instruction via WhatsApp	2.90	0.96	HE	2.56	1.18	HE

5	Lecturers can share Ideas with, students, thereby developing a sense of collaboration between students and teachers.	2.6 1	1.1 7	HE	2.6 7	1.3 1	HE
6	Lecturers can put student knowledge in to critical thinking, by personalizing learning.	2.6 4	1.2 1	HE	2.6 0	1.2 3	HE
<b>Grand Mean/SD</b>		<b>2.6 7</b>	<b>1.1 2</b>	<b>HE</b>	<b>2.6 6</b>	<b>1.1 9</b>	<b>HE</b>

**Source:** Field Survey, 2023.

Data in Table 2 revealed that all the items were rated as High Extent by the respondent. The standard deviation showed the homogeneity of the responses while mean response of 2.67 and 2.66 for both female and male lecturers indicates that both respondents agreed that the items are the requirement for the usage of WhatsApp, as a teaching strategies for sustainable knowledge economy in public tertiary institutions.

### Test of Hypotheses

**Hypothesis 1:** There is no significant difference between the mean responses of male and female lecturers in the usage of YouTube as a teaching strategy for sustainable knowledge economy in public tertiary institutions in Rivers State, Nigeria.

**Table 3: T-test Analysis of the Mean Responses of Male and Female Lecturers on the Usage of YouTube as a Teaching Strategy for Sustainable Knowledge Economy in Public Tertiary Institution in Rivers State, Nigeria.**

Respondents	N	$\bar{X}$	SD	Df	t <sub>cal</sub>	t <sub>crit</sub>	LS	Decision
Male	198	2.65	1.08					
Female	173	2.59	1.22	369	0.97	1.96	0.05	Accepted

Table 3 revealed t-cal (0.97) is less than t-crit (1.96), this indicate that the null hypothesis is accepted. Therefore, there is no significant difference in the mean response of male and female lecturers on the usage of YouTube as a teaching strategy for sustainable knowledge economy in public tertiary schools in Rivers State, Nigeria.

**Table 4: T-test Analysis of the Mean Responses of Male and Female Lecturers on the Usage of WhatsApp as a Teaching Strategy for Sustainable Knowledge Economy in Public Tertiary Institution in Rivers State, Nigeria.**

Respondents	N	$\bar{X}$	SD	Df	$t_{cal}$	$t_{crit}$	LS	Decision
Male	198	2.67	1.12					
Female	173	2.66	1.19	369	0.97	1.96	0.05	Accepted

Table 4 revealed that  $t_{cal}$  (0.97) is less than  $t_{crit}$  (1.96), this indicates that the null hypothesis is accepted. Therefore, there is no significant difference between the mean responses of male and female lecturers on the usage of WhatsApp as a teaching strategy for knowledge economy in public tertiary schools in Rivers State, Nigeria.

### Discussion of Findings

Data presented in Table 1, shows that YouTube is used for connectivity between students and teachers. It is a platform for presentation, communication among students and resources throughout the world. It is used to teach students about new way of collaboration. It can be used to increase student motivation and attractiveness of lesson by uploading pictures. YouTube can be used to demonstrate and inculcate knowledge, skills and attributes on learners through video clips. Supporting this finding is Brown and Aldler (2018), which revealed that, YouTube encourages and enables teaches to share ideas and collaboration in innovative ways; transforming educational practice to support more meaningful and active learning that involve learning to be and learning about. The findings of research question 2 revealed that lecturers can assign various tasks and assignment to student. Student can upload their assignment via WhatsApp. Lecturers can access and view submitted assignment via WhatsApp. Lecturers can deliver instruction via WhatsApp. Lecturers can share Ideas with, students, thereby developing a sense of collaboration between students and teachers. Lecturers can put student knowledge in to critical thinking, by personalizing learning. This findings agreed with the findings of Hartshome and Ajjan (2019), which revealed that using WhatsApp in teaching help build a sense of community, increase interaction and communication among the teacher students and other people. Promote collaboration and sharing of ideas.

### Conclusion

Based on the findings of this study it could be reasonably concluded that Web 2.0 technologies such as WhatsApp and YouTube can be used to inculcate knowledge, ideas, skills, attributes, connectivity among students teachers and around the world, lecturers can put students' knowledge in to critical thinking by personalizing learning.

## **Recommendations**

1. The ministry of education and Rivers State government should regularly organize seminars, workshop, Conferences, and orientation programmers to update lecturers on the use of Web2.0 technologies teaching strategies.
2. The government should provide internet facilities for instructional purpose to the institutions of learning and include the use of Web2.0 technologies for teaching.

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