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Awareness and Utilization of Web 2.0 Technologies by Students of Agriculture in Tertiary Institutions in Akwa Ibom State, Niger Delta, Nigeria

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Abstract:
The study examined the level of awareness and extent of utilization of web 2.0 technologies by students of agriculture in tertiary institutions in Akwa Ibom State, Niger Delta, Nigeria. Specifically the study identified the personal characteristics of respondents, examined respondents' level of awareness of web 2.0 technologies, ascertained respondents' level of competence with web 2.0 technologies, and identified the purpose of utilization and extent of utilization of web 2.0 technologies by respondents. Data were collected with the aid of structured questionnaire from 175 respondents who were selected with the aid of a multi-stage sampling procedure. Analysis of data was done using descriptive statistics (frequency counts, percentages and means). Findings revealed that 59.9% of the students were male and 66.5% were in the age range of 21 – 25 years. It was also revealed further that majority of the respondents were aware of Face book, Twitter, Whats App, Wikipedia, Google Apps, YouTube, Blog, Flickr, RSS Feeds, Podcasts and Drop box and were competent in the utilization of Face book, Wikipedia, Whats App, Google Apps, YouTube, Twitter, LinkedIn, Drop box, blog and Skype. The findings showed further that the respondents frequently utilized Wikipedia, Google App. Whats app, and YouTube for educational purposes. Based on the findings of the study, it was recommended that there should be concerted effort by tertiary institutions to organize awareness campaigns and training programmes on new ICTs so as to keep students abreast of, raise awareness about, and improve skills and knowledge in the utilization of these technologies for educational purposes.

Keywords: *Awareness of web 2.0 technologies, utilization of web 2.0 technologies, students of agricultural sciences, competence with web 2.0 technologies*

1. Introduction

In the 21st century, students in tertiary institutions no longer access the internet only for specific actions, such as browsing, reading, extracting information, accessing the content and sending emails; instead they create, share, distribute, search educational content, access and create collective knowledge through social interactions (Maloney, 2007). More recently, a new wave of Internet technologies, Web 2.0 technologies, have appeared with the potential to further enhance learning and sharing of information among lecturers and students (Hartshorne & Ajjan, 2009). The development of Web 2.0 technologies has enhanced information communication and technology (ICT) capability by creating new domains where students can associate with each other with unique properties (Dhar and Sundararajan, 2007). It is also observed that utilization of Web 2.0 technologies enables students in tertiary institutions to connect different pieces of information and create new information that could be shared with others to provide students with learning resources to obtain information (Mohammad, 2011).

Although the definition of Web 2.0 technologies continues to evolve, most researchers agree on the major categories, such as online collaboration, information distribution, online service automation, social networking services, tagging, and Internet rich applications (Guo, 2009). Barsky (2006) defined Web 2.0 technologies as a social phenomenon of users' experiences of the Web that is characterized by "open communication, decentralization of authority, and freedom to share and reuse content". Richardson (2006) defined Web 2.0 technologies as the read/write Web, where users can add to the content

besides accessing it. Additionally, Tyagi, (2012) states that the term Web 2.0 essentially covers a set of technologies comprising of interactive media that allow people to create, modify, and share information. Web 2.0 technologies is known by various names which fundamentally emerged as a result of its characteristics and some of them include "participatory media" (Bull *et al*., 2008), "social digital technologies" (Palfrey and Gasser, 2008) and "second wave of the World Wide Web" (Azab, Abdelsalam and Gamal, 2013). Examples of some popular and widely utilized Web 2.0 technologies in tertiary institutions include Blogs, Micro-blogs, Wikis, Real Simple Syndication (RSS) Feeds, YouTube, Flicker, Facebook, Twitter, Skype, Podcasts, Google Apps and WhatsApp, (Armstrong and Franklin, 2008; Al-Qirim, 2010; Harinarayana and Raju, 2010; Luo, 2010; Makori, 2011; Hough and Neuland, 2012).

Redecker *et al.,* (2011) confirm that many tertiary institutions are now integrating Web 2.0 technology to support students' learning and to support students' engagement in learning activities. With the introduction of Web 2.0 technologies into tertiary institutions, there has been a paradigm shift from teacher and teaching to students and learning (Brown, 2012 and Franklin and Harmelen, 2007), which has led to moving from 'teacher-centred' to 'student-centred' (Greenhow, 2011; Gibas and Grant 2013 and Afaf, 2015). The utilization of Web 2.0 technologies in tertiary institutions is obviously altering the way students and lecturers live, communicate, more specifically learn and teach in a variety of ways (Balcikanli, 2012).

Redecker (2009) and McLoughlin and Lee (2007) reported that the utilization of Web 2.0 technologies in tertiary institutions enhances participatory learning, collaboration, knowledge and information sharing. Also research findings from Xie and Shama (2010) show that students' thinking levels were increased as the students updated their blogs weekly. It also offers effective strategies for implementing what has been learnt by exploring other media. In order to achieve a better learner-centred approach, there is need for tertiary institutions to adopt the twenty-first century technologies that improve learner engagement among other benefits (Abel, Razep and Grzegorz 2014).

A number of empirical studies on the educational benefits of Web 2.0 technologies in tertiary institutions are increasing by the day in developed and developing countries (Alexander, 2006; Franklin and Van Harmelan, 2007; Redecker, 2009; Vlahovic, 2010; Echeng, 2011) with more in developed economies. A few studies are beginning to emerge in developing countries like Nigeria (Anunobi and Ogbonna 2012; Echeng, Usoro and Majewski, 2013; Gbola, 2013 and Abel, Echeng and Grzegorz 2014).

Studies on the benefits of Web 2.0 technologies for educational purposes have been done by a few researchers (Abel, Echeng and Grzegorz 2014). Parker and Chao (2007) researched Twitter, McKinney *et al.,* (2009) studied podcasts, Xie and Shama (2010) studied blogs and Ajjan and Hartshorne (2008) researched acceptance of web 2.0 technologies. Web 2.0 technologies can transform learning in tertiary institutions, by supporting the preparation of learning materials and presentations, evaluation of the progress made by students, time management, planning the timetable and the calendar of activities, developing projects in collaboration, digital storytelling, and students eportfolios (Athanassios *et al.,* 2013; Echeng and Usoro 2014; Nazatul, 2014; Shuaibu and Ishaq, 2014; Constant and Francis, 2015). It enables the sharing of learning experiences, exchange of information about the subjects being taught and assessment requirements, and provision of moral support. Web 2.0 technologies provide opportunities for students to construct and share knowledge with each other (Abel, Echeng and Grzegorz 2014).

In a study about the utilization of web 2.0 technologies in tertiary institutions, Gibbs (1999) reported that better teaching and better learning were the greatest benefits of the utilization of web 2.0 technologies. Web 2.0 technologies change the ways users collect and handle data and information, and these technologies also allow users to create their own content. Web 2.0 technologies offer learners a self-regulated mode of learning that no longer depends on formal settings, such as a classroom with a teacher lecturing (Abbas *et al.,* 2015). By collaborating and interacting with others through Web 2.0 technologies, students form a community of learners with common goals. Effective Web 2.0 technologies connect with constructivist ideals allowing learners control over learning experiences and construction of their own knowledge (Parker & Chao, 2007).

Despite these purported benefits of Web 2.0 technologies in teaching and learning, studies have shown that efforts made in understanding the utilization of these technologies for educational purposes in tertiary institutions have mainly concentrated on developed countries especially Europe and North America (Athanassios, *et al.,* 2013; Azab, Abdelsalam and Gamal, 2013; Echeng and Usoro, 2014; Nazatul, 2014; Shuaibu, *etal.,*. 2014 and Constant and Francis, 2015). Little has been done in developing countries like Nigeria (Echeng, 2011). Due to this gap in knowledge, very little is known about the level to which students of agriculture are aware of web 2.0 technologies in tertiary institutions in Akwa Ibom state, situated in the oil-rich Niger Delta Region of Nigeria and the extent to which they utilize it for educational purposes. This research therefore sought to bridge the above knowledge gap. Specifically the study identified the personal characteristics of students of agriculture in the study area, examined their level of awareness of web 2.0 technologies, ascertained their level of competence with these trending technologies, identified the purpose of utilization of web 2.0 technologies by respondents and finally, determined the extent of utilization of web 2.0 technologies by students of agriculture in the study area.

2. Methodology

The study was conducted in Akwa Ibom State, which was created on September 23rd, 1987 and has Uyo as its capital. The State is one of the Niger Delta States, located in the South-South geopolitical and South East ecological zones of Nigeria. The State is situated between latitude $4^0$31' and $5^0$31' North and longitudes $7^0$35' and $8^0$25' East with an estimated total area

of 7,245,935km², and has a shoreline of 129km on the Atlantic Ocean to the South. The 2006 census put the State's population at 3,920,208, out of which 2.044,510 are male while 1,875,698 are females. Notable tertiary educational institutions in the state are as follows: University of Uyo, maritime Academy of Nigeria, Akwa Ibom State University, Obong University, Akwa Ibom State Polytechnic, Uyo City Polytechnic, Apex Polytechnic, heritage Polytechnic, School of Nursing (Uyo, Eket, Oron, Ikot Ekpene, Etinan), Akwa Ibom State College of Education, College of Arts and Science, Nung Ukim.

The study population included all students of agriculture in tertiary institutions located in Akwa Ibom State. A multi-stage sampling procedure was used to select the sample for the study. In the first stage, four out of the twelve tertiary institutions in Akwa Ibom State were purposively selected to ensure that only tertiary institutions that offered agricultural courses and have students of agriculture were selected for the study. The selected tertiary institutions were University of Uyo (UNIUYO), Akwa Ibom State University (AKSU), Akwa Ibom State College of Arts and Science (AKSCAS) and Akwa Ibom State College of Education (AKSCOE). In the second stage, out of a population of 1694 students, 10% of students were randomly selected resulting in a total sample size of 170 students that participated in the study. Data were collected with the aid of structured questionnaire and analyzed using descriptive statistics such as Frequency, Mean and Percentage.

3. Results and Discussion

3.1. Personal Characteristics of Students of Agriculture in the Study Area

Table 1 show that about 59.9% (102) of the students were male, while 40.1% (68) were female. Indications are that more female students are now registering for agriculture-related courses compare to what it used to be in time past.

It further shows that the highest proportion of respondents, 19.1% (33) of the students was of the Department of Agricultural Economics and Extension, while 17.9% (30) of the Department of Animal Science, making up the highest proportion of students surveyed for the study. Indications are that more students register for these courses than other agriculture-related courses.

The table shows that the highest proportion of respondents, 29.4% (50) of the respondents were in there first year of study, while the lowest proportion, (12.9% (22)) were in their fifth year of study. Indications are that there is decline in the number of students from lower to higher levels of study. It implies that as students progress to higher levels, some of them drop out because they find the courses too difficult, others transfer to other faculties within the institution, while other students fail to pay tuition fees and are therefore not registered in some academic years.

Variables	Frequency	Percent
Institution of Affiliation		
UniUyo	105	61.8
AKSU	45	26.5
AKCOE	17	10
AKCAS	3	1.8
Sex		
Male	102	59.9
Female	68	40.1
Age (years		
15 – 20	38	22.4
21 – 25	113	66.5
26 – 30	14	8.2
36 - above	5	2.9
Department of affiliation		
Agricultural economics and extension	33	19.1
Agricultural education	20	12
Agricultural technology	7	3.8
Animal science	30	17.9
Crop science	7	4.4
Fishery and aquaculture	18	10.8
Forestry and wildlife	15	8.5
Food science and technology	16	9.7
Soil science	24	13.8
Year of study		
Year 1	50	29.4
Year 2	40	23.4
Year 3	32	18.8
Year 4	26	15.5
Year 5	22	12.9

Table 1: Personal Characteristics of Students of Agriculture in the Study Area (N = 170)
Source: Field Data Survey, 2017

3.2. Awareness of Web 2.0 Technologies among Students of Agriculture

Table 2 shows that students were aware of the existence of Facebook (98%), WhatsApp (95%) and Twitter (90%), whereas only 32 (19%) or fewer were aware of Viber (19%), Delicious (17%) and Picasa (14%). This result is in agreement with Sandars and Shorter (2007). There are several reasons why students know more about some Web 2.0 technologies than others. Facebook, WhatsApp, Twitter, YouTube and Skype are embedded or can be downloaded and installed in most basic and smart phones. Owned by a majority of Nigerian including students in Akwa Ibom State based tertiary institutions. These findings correspond well with those reported in India by Majhi and Maharana (2011) who also found that most of the Indian university community had the necessary knowledge of certain Web 2.0 technologies particularly Facebook, Wikis and Twitter which had their levels of awareness pegged at 98%, 95% and 91% respectively.

Purposes of Web 2.0 Technologies	Frequency	Percent
Facebook	167	98
Whatsapp	162	95
Twitter	153	90
Wikiedia	122	72
Google app	116	68
Youtube	114	67
Skye	102	60
Blog	61	36
Linkedln	51	30
Rss feeds	46	27
Podcast	39	23
Dropbox	37	22
Flickr	34	20
Viber	32	19
Delicious	29	17
Picasa	24	14

Table 2: Distribution of Students of Agriculture Based on Awareness of Web 2.0 Technologies (N = 170)
Source: Field Data Survey, 2017

3.3. Competence with Web 2.0 Technologies among Students of Agriculture

The three most prominent technologies to which students of agriculture responded as possessing competence in its operations as shown in Table 3 were; Facebook ($\overline{X}$ =3.72); Wikipedia ($\overline{X}$ =3.19) and WhatsApp ($\overline{X}$ =2.96). Correspondingly, these are the very same Web 2.0 technologies of which most students indicated awareness.

However, the three least prominent technologies with low level of competence were; Viber ($\overline{X}$ = 1.38); Delicious ($\overline{X}$ = 1.35) and Picasa ($\overline{X}$ = 1.34).

This finding is in line with Mugwanya, Marsden and Boateng's (2011) report, to the effect that "some students viewed Skype, Blogs, RSS Feeds, Podcasts, Dropbox, Flickr, Viber, Delicious and Picasa as extra lessons which they did not need to learn". A further analysis of the findings revealed that almost all the students who utilized LinkedIn were in level five hundred (5th year of study) probably because they were in final year and were utilizing this Web 2.0 technologies to develop research projects and connect with potential employers

Web 2.0 Technology	Incompetent		Fairly Competent		Competent		Very Competent		Total	Mean $\overline{X}$	Decision
	F	%	F	%	F	%	F	%			
Facebook	2	1.4	4	2.4	34	20	130	76.5	632	3.72	Competent
Wikipedia	43	25.3	2	1.2	5	2.9	120	70.6	542	3.19	Competent
Twitter	48	28.2	5	2.9	33	19.4	84	49.4	493	2.90	Competent
Google Apps	51	30	10	5.9	30	17.6	79	46.5	477	2.81	Competent
You Tube	64	37.6	4	2.4	30	17.6	72	42.4	450	2.65	Competent
Whatsapp	10	5.9	48	28.2	51	30	61	35.9	503	2.96	Competent
Skype	74	43.5	2	1.2	38	22.4	56	32.9	416	2.45	Fairly Competent
Blog	109	64.1	5	2.9	9	5.3	47	27.6	334	1.96	Fairly Competent
Linkedln	122	71.8	19	11.2	6	3.5	23	13.5	270	1.59	Fairly Competent

Web 2.0 Technology	Incompetent		Fairly Competent		Competent		Very Competent		Total	Mean $\overline{X}$	Decision
	F	%	F	%	F	%	F	%			
Dropbox	139	80	6	3.5	6	3.5	22	12.9	257	1.49	Fairly Competent
Flickr	136	80	12	7.1	4	2.4	18	10	244	1.44	Fairly Competent
Podcast	132	77.6	16	9.4	8	4.7	14	8.2	244	1.44	Fairly Competent
Delicious	141	82.9	6	3.5	15	8.8	8	4.7	230	1.35	Fairly Competent
Picasa	146	85.9	-	-	14	8.2	10	5.9	228	1.34	Fairly Competent
Viber	137	80.6	11	6.5	12	7.7	10	5.9	235	1.38	Fairly Competent
RSS Feeds	124	72.9	26	15.3	10	5.9	10	5.9	246	1.45	Fairly Competent

Table 3: Distribution of Students Based on Competence with Web 2.0 Technologies (N=170)
Mid Point = 2.5, F= Frequency, P = Percentage
Decision: Any Mean Score < 2.5 = Fairly Competent with Web 2.0 Technologies
Any Mean Score > 2.5 = Competent with Web 2.0 Technologies

3.4. Purpose of Utilization of Web 2.0 Technologies by Students in the Study Area

Figure 4 shows that students utilize these Web 2.0 technologies for social activities (95%), to search for information (90%) and to communicate with friends on academic work (78%), whereas only 18% (31) respondents utilize these technologies to hunt for jobs.

Ping and Issa (2011) noted that most students at Curtin Business Information Systems in Australia utilize Web 2.0 technologies to submit assignments, organize group meetings, to chat with other classmates and to communicate with their lecturers. More so, these findings deepen observations made by Eyyama, Menevis and Dogruer (2011) that Web 2.0 technologies are primarily utilized to facilitate communication among students themselves and with their lecturers. The "social activities" category was meant to be an 'umbrella' term encompassing various activities such as connecting with new friends, chatting with friends and entertainment but some students seemed not to realize this because almost all the 51% (87) students who indicated "other" mentioned entertainment. From the researcher's own experience, Web 2.0 technologies such as Facebook, Twitter and WhatsApp are commonly utilized by students in Akwa Ibom state tertiary institutions to instantly connect with peers currently at the school or at home, to search and locate old friends, to post photographs and to watch movies and documentaries on YouTube. This could be the reason the category of social activities registered a high percentage. A deeper analysis of the responses revealed that majority of the students who utilize Web 2.0 technologies for job hunting were in five hundred level (fifth (5^{th}) year of study). This corresponds well with the results reported in table 3 where it was found that students at the same level were mostly able to utilize LinkedIn which is usually utilize to develop research project and connect with potential employers.

Statement	Frequency	Percent
Social activities	162	95
To search for information	153	90
To communicate with friends	133	78
To communicate with lecturers	119	70
To submit assignments	116	68
To read feedback from lecturers	102	60
To develop research project	97	57
To search content with fellow students	94	55
To work in collaboration with fellow students	90	53
Others	87	51
Job hunting	31	18

Table 4: Distribution of Students of Agriculture Based on Purpose of Utilization of Web 2 Technologies (N = 170)
Source; Field Data Survey, 2017

3.5. Extent of Utilization of Web 2.0 Technologies for Academic Activities by Students of Agriculture

As shown in Table 5, students frequently utilize Wikipedia ($\overline{X}$ =2.46), Google Apps ($\overline{X}$ =2.40) and WhatsApp ($\overline{X}$ =2.39) for academic activities. Conversely, a good number of the students indicated that they seldom utilized Picasa ($\overline{X}$ =1.13), Dropbox ($\overline{X}$ =1.09) and Delicious ($\overline{X}$ =1.06) for academic activities. The respondents recorded a pooled mean rating of 1.55 in their response to the questions ascertaining their level of utilization of web 2.0 technologies for educational purposes. This pooled mean score was below the midpoint score of 2.0. This implies that the level of utilization of web 2.0 technologies for educational purposes by students of agriculture in the study area was low. It could possibly be that Web 2.0

technologies are still in its infancy stage in the study area in terms of its utilization for educational purposes due to a range of factors, which are principally technical, personal, economical and time related factors (Echeng and Usoro (2014).

Surprisingly, the students who indicated that they were competent with Facebook as can be seen in Table 5 shows that only 35.3% (60) students frequently utilize it for academic related work. The result supports the work of Selwyn (2007) who revealed that only four per cent of the Facebook wall postings over the five-month period of analysis were related to students' studies or academic aspects. Madge *et al*., (2009) also noted that most student in UK universities utilize Facebook for social reasons, not for formal learning purposes, although it is sometimes utilized informally for learning purposes. In Nigeria, Facebook and other social networks are primarily regarded as too informal and are generally perceived as virtual platforms for socializing, not for learning.

Web 2.0 Technology	**Never Utilized**		**Seldom Utilized**		**Frequently Utilized**		**Total**	**Mean $\overline{X}$**	**Decision**
	F	%	F	%	F	%			
Wikipedia	40	23.5	11	6.5	119	70	419	2.46	Frequently Utilized
Google Apps	46	27.1	10	5.9	114	67.1	408	2.40	Frequently Utilized
Whatsapp	47	27.6	10	5.9	113	66.5	406	2.39	Frequently Utilized
You Tube	70	41.2	13	7.6	87	51.2	357	2.10	Frequently Utilized
Facebook	89	52.4	21	12.4	60	35.3	311	1.83	Seldom Utilized
Podcast	128	75.3	14	8.2	28	16.5	240	1.41	Seldom Utilized
RSS Feeds	131	77.1	16	9.4	23	13.5	232	1.36	Seldom Utilized
Twitter	129	75.9	25	14.7	16	9.4	227	1.34	Seldom Utilized
Skype	144	84.7	10	5.9	16	9.4	212	1.25	Seldom Utilized
Blog	132	77.6	26	15.3	12	7.1	217	1.29	Seldom Utilized
Linkedln	133	78.2	26	15.3	11	6.5	218	1.28	Seldom Utilized
Viber	147	86.5	13	7.6	10	5.9	203	1.19	Seldom Utilized
Flickr	146	85.9	16	9.4	8	4.7	202	1.19	Seldom Utilized
Picasa	154	90.6	10	5.9	6	3.5	192	1.13	Seldom Utilized
Dropbox	158	92.9	8	4.7	4	2.4	186	1.09	Seldom Utilized
Delicious	162	95.3	5	2.9	3	1.8	181	1.06	Seldom Utilized

Table 5: Distribution of Students Based on Extent of Utilization of Web 2.0 Technologies for Academic Activities (N=170)
Mid Point = 2.0, Pooled Mean = 1.55, F= Frequency, P = Percentage
Decision: Any Mean Score < 2.0 = Seldom Utilized Any Mean Score > 2.0 = Frequently Utilized

4. Conclusion and Recommendations

The study examined the awareness and utilization of web 2.0 technologies by students of agriculture in tertiary institutions in Akwa Ibom State, Nigeria. Majority of the students of agriculture in the study area know about the plethora of Web 2.0 technologies which could be utilized in teaching and learning due to the proliferation of mobile phones which support most of these technologies. Students are not only aware of Web 2.0 technologies but also possess technical skills for utilizing some of these technologies. Regardless of the extent of awareness and utilization of web 2.0 technologies, only few students utilize the tools for educational purposes. The bottom line is that all students of agriculture utilize some of these technologies for various social, but rarely for educational purposes. Based on the findings of the study the following recommendations are worthy of consideration:

- Although students have adopted some Web 2.0 technologies, it has been revealed that a good number of technologies that could be equally utilized for educational purposes are yet to be adopted. This is mainly because some Web 2.0 technologies are not popular in Nigeria in general and in Akwa Ibom State in particular, in addition to the fact that new Web 2.0 technologies continue to emerge on regular basis. Therefore there should be a concerted effort by tertiary institutions to organize awareness campaigns and training programmes on new ICTs so as to keep students abreast of, raise awareness about, and improve skills and knowledge in the utilization of web 2.0 technologies for educational purposes.
- The school management and relevant agencies should intensify efforts in the provision of ICT facilities and improvement of power supply in tertiary institutions of higher learning in Akwa Ibom State.

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