Student Awareness of Web 2.0 Technologies for Learning among Undergraduates of Selected Federal Universities In Southwest Nigeria

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ABSTRACT

Advances in learning technologies have in recent years dramatically impacted on the ways in which students learn in and outside the classroom. Subsequently, students can only make use of technologies they are aware of in enhancing their learning. This study therefore, investigated students' awareness of Web 2.0 technologies for learning among undergraduates. The study adopted descriptive research survey design with the population of the study comprising of 331 undergraduate students drawn from two purposively selected Federal universities in Southwest Nigeria. Frequency count and percentages represented with charts and tables were used to analyze the research questions. The reliability of the questionnaire yielded 0.93 using Cronbach Alpha which implies that the instrument was reliable. Response rate of 93.8% was achieved. The findings revealed that students are highly aware of different kinds of Web 2.0 technologies such as Facebook, WhatsApp, Twitter, and 2go, YouTube, Wikipedia, Wikis and Instant Messaging. However, the use of these Web 2.0 technologies for learning was still low. It was also discovered that Web 2.0 technologies were not adequately used by students for learning due to lack of awareness. It was concluded that Web 2.0 technologies are very creative tools that can enhance student learning. It was recommended based on the findings that University Libraries should put in place a user education program for students to enlighten, encourage and train students on Web 2.0 technologies that are not familiar to them for learning purposes and provide free or subsidized access to the internet, especially within the university environment.

Keywords: Student Awareness, Web 2.0 Technologies, Learning, Undergraduates, Nigeria

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1. BACKGROUND TO THE STUDY

"Web 2.0 technologies" is a collective term for the social web which represents the online tools that facilitate collaboration, communication, and interactivity (Groff 2013). Web 2.0 technologies enable users to read, and in addition write, edit and distribute information to whomever and wherever. These technologies have made learning environments more interactive, productive, and contextual than ever before (Lee, Williams and Kim 2012). With Web 2.0 technologies users can communicate with each other by originating, editing and sharing information. Examples of Web 2.0 are social networking tools, blogs, wikis, RSS feeds, multimedia sharing, online forums, social bookmarking, and podcasts (Moran, Seaman and Tinti-Kane, 2011; Emmanuel, Ebiere and Vera 2013). The increase in the use of Web 2.0 technologies around the world particularly in learning environments has improved the means of communication, interaction, and collaboration among students (Narayan and Baglow,2010; Kolawole and Mutula 2016). Web 2.0 technologies are used as key ingredients in achieving richer learning experience (Kolawole 2016) such as communication, research, collaboration while universities in Europe use Web 2.0 technologies to communicate information such as course outlines, paper, audio or visual instructional materials which are substantially more to students (Kumar 2008). Hramiak and Boulton (2013) argued that the use of Web 2.0 technologies, particularly blogs, had increased students' engagement in the classroom in the United Kingdom (UK).

Web 2.0 technologies have also helped to promote responsive learning and foster a dynamic group of learners in the United States (Ferdig 2007 and Okello-Obura and Ssekitto 2015). Students use Web 2.0 applications to actively participate in the learning process and to obtain information on developments in their different fields of study. A Report of the United States Department of Education (USDE2001 cited in Adedeji 2011) showed that colleges that integrate Information and Communication Technology (ICT) into their curriculum produce positive results. Developing countries are equally endeavoring to adopt emerging technologies that can enhance learning. Lwoga (2012), Gupta, Singh and Marwaha (2013), Okello-Oburaand Ssekitto (2015) identified a high usage of e-learning technologies in some developing countries such as South Africa, India and Uganda respectively. However, the use of learning technologies such as Web 2.0 is quite low in Africa countries such as Ghana, Tanzania, and Nigeria (Ndume, Tilya and Twaakyondo 2008; Munguatosha *et al.* 2011; Echeng and Usoro 2014). This can be attributed to the probable un-awareness of the students in using WEB 2.0 technologies for enhancement of learning. According to Cambridge English Dictionary (2017), awareness is the knowledge that something exists, or understanding of a situation or subject at the present time based on information or experience. However, student awareness by Wikipedia (2017) is the ability of the students to directly know and perceive, feel or to be cognizant of events. More broadly, it is the state of being conscious of something. Learning is one of the most fundamental concepts in psychology.

It is at the heart of perception, thinking, imaginations, reasoning, judgements, attitudes, personality traits, value system, just to mention but a few (National Teachers Institute, 2003) Learning is an individual process; students learn only from personal experiences and functionally it is as a result of changes in behaviour that result in changes in the organism (Houwer, Holmes and Moors, 2013). Houwer et al (2013) went further to state that learning is an ontogenic adaptation- that is changes in the behaviour of an organism result from regularities in the environment of the organism. Similarly, Mukherjee (2002) gave the meaning of learning as an inference from some performance of the organism resulting in an enduring change of behaviour. It is associated with both overt and covert behaviours. With Web 2.0 technologies, communication and interactions can be brought into the classroom (McCarthy 2010). This would help meet the expectations of today's students also called the "Net-generation" (Oblinger and Oblinger 2005) who use these technologies in their daily learning activities. Web 2.0 therefore are dynamic web technologies that allow for users' involvement in adding, sharing, editing and retrieving information, such as that needed by students to enhance their learning activities.

1.1 Statement of the Problem

With the increasing use of ICTs as learning tools, emerging technologies such as Web 2.0 applications have in recent times become ubiquitous in the academic setting. In spite of the increasing use of Web 2.0 technologies to support learning, the actual usage of these technologies is quite low in Africa especially in countries such as Ghana, Tanzania, and Nigeria (Ndume, Tilya and Twaakyondo,2008). The low usage or acceptance of Web 2.0 technologies in learning in Nigerian universities as reported by Anunobi and Ogbonna (2012) and Echeng, Usoro and Majeawski (2013) suggested that the technology is still at an early stage of adoption in Nigerian universities. South Africa has a high use of e-learning technologies for teaching and learning (Lwoga,2012) and this country has advanced in use of ICTs in higher education sectors because of high bandwidth and high-level of internet penetration(Adams,2003).Many universities in Nigeria are yet to effectively espouse Web 2.0 technologies, particularly for learning purposes(Usoro, Echeng and Majewski, 2013)). This is evidenced by the paucity of universities that have active online presence (Famutimi 2013). Could it be as a result of low awareness, the dearth of technical support, erratic power supply, and attitude of students towards the use of ICT for learning? This research, therefore investigated Student Awareness of Web 2.0 technologies for learning among undergraduates of selected federal universities in southwest, Nigeria.

1.2 Purpose of the Study

Specifically, the study attempted to:

i. Ascertain the awareness of the students of various kinds of Web 2.0 technologies in the selected federal universities of southwest, Nigeria;
ii. To determine the types of Web 2.0 technologies use by students for learning purposes in the selected universities;

1.3 Research Questions

i. What are the various kinds of Web 2.0 technologies students are aware of in the selected universities?
ii. What are the types of Web 2.0 technologies use by the students for learning purposes?

2. THEORETICAL FRAMEWORK

The study is based on the Cognitive theory of Multimedia Learning (MAYER) by Richard Mayer (2002) who was the originator of the theory. Learning theories are conceptual framework that describes the way knowledge is absorbed, processed and retained during learning. A cognitive theory of multimedia is based on three assumptions:

- There are two separate channels (auditory and visual) for processing information;
- There is limited channel capacity;
- And that learning is an active process of filtering, selecting, organizing and integrating information.

The principle known as "multimedia principle" states that people learn more deeply from words and pictures than from words alone. However, simply adding words to pictures is not an effective way to achieve multimedia learning. The goal is to design instructional media in the light of how human minds work. This is the basis for Mayer's cognitive theory of multimedia learning. The cognitive theory of multimedia is found suitable as an underlying theory to understand students' awareness of Web 2.0 technologies for learning. This is because Web 2.0 technologies are used to communicate information in audio, visual and or print form which is a significant dimension of instructional materials. Mayer also discusses the role of three memory stores: Sensory (which receives stimuli and stores it for a very short time), Working (where we actively process information to create mental constructs(or Schema), and long term(the repository of all things learned).Mayer's theory of learning presents the idea that the brain does not interpret a multimedia presentation of words, pictures and auditory information in a mutually exclusive fashion; rather, these elements are selected and organized dynamically to produce logical mental constructs for effective learning.

3. METHODOLOGY

3.1 Research Design

This study adopted a descriptive survey research design. The population of the study consists of undergraduate students in the faculties of Science, Technology and Veterinary Medicine at University of Ibadan (U.I) and Federal University of Agriculture Abeokuta (FUNAAB). These faculties are common to the two universities. Undergraduate students in the third and fourth years of study were chosen as a study sample. The decision to limit the study to third and fourth-year undergraduate students was based on the fact that these students would have spent enough time in the university and as such would be able to provide usable information on the usage of Web 2.0 technologies for learning.

The population of third and fourth-year undergraduate students was 1188 in UI and 1639 in FUNNAB (University of Ibadan Annual Report, 2013; FUNNAB 2012/2013 Annual Report, 2013) as at the time of conducting this research. Hence, the total population of the study was 2827 undergraduate students in both universities. The sample size for this research was based on Israel (1992) recommendation (Table) for a population of 2827 which is 353 students.

The sample size was determined as follows:

$$\frac{N \times S}{TP}$$

Where N is the population of each faculty, S is the total sample size and TP is the total population. Based on this formula, the distribution of samples across the two selected universities were:

University of Ibadan (Undergraduate Students): $\frac{1188}{2827} \times 353 = 148.3$

Federal University of Agriculture Abeokuta (Undergraduate Students): $\frac{1639}{2827} \times 353 = 205$

Thus, the sample size for the survey was 148 students from UI and 205 students from FUNAAB. The two universities for the study were selected using the purposive sampling technique to ensure that one university is selected from each of the two strata (that is, first generation/broad-based and third generation/specialized universities. The number of questionnaires administered was 353 while only 331 (140 and 191 from U.I and FUNAAB respectively) were found usable.

3.2 Research Instrument

The Instrument used for the study was a well- structured questionnaire titled" Student Awareness of WEB 2.0 Technologies for Learning Questionnaire" (SAWTFLQ). Some of the questionnaire items were adapted from related studies such as that of Edlund (2012), Ryoo and Koo (2010), Dwivedi et al. (2013) and Lwoga (2013) which employed constructs of the D&M model. It was divided into four sections:

Section A consists of the demographic characteristics of the respondents. Section B was designed to gather data to identify the kinds of Web 2.0 technologies students are aware of. Section C sought to obtain information on the types of Web 2.0 technologies used by the students for learning purposes. Responses were rated on a 4-point Scale which include strongly agree=4, Agree= 3, strongly disagree = 2, Disagree =1). The instrument was found to be reliable (r value of 0.93) using Cronbach Alpha. The statistical tool used to analyse the data was SPSS version 21 to generate frequencies, percentages, tables, charts and figures.

4. DISCUSSION OF FINDINGS

Bio Data Information of the Respondents

Table 1: Distribution of Respondents by Gender (N= 331)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	248	74.9	74.9	74.9
	Female	83	25.1	25.1	100.0
	Total	331	100.0	100.0	

Table 1 showed that 75% of student respondents were male while 25% were female. The results indicated the dominance of male students over females in the surveyed universities.

Table 2: Distribution of Respondents by University

		Frequency	Percent	Valid Percent	Cumulative Percent
	U.I	140	42.3	42.3	42.3
	FUNAAB	191	57.7	57.7	100.0
	Total	331	100.0	100.0	

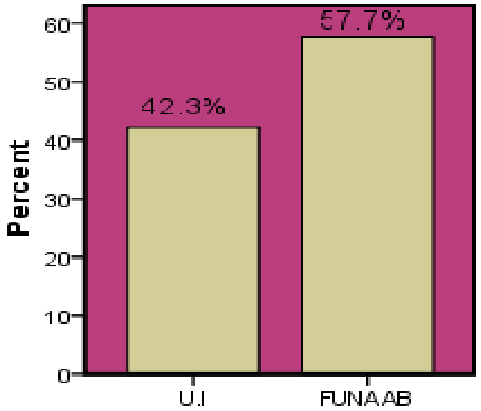

Figure 1: Distribution of Respondents by University

The distribution of respondents on the basis of their universities in Figure 2 showed that 42.3% and 57.7% of students were from University of Ibadan (U.I) and Federal University of Agriculture Abeokuta (FUNAAB) respectively.

Table 3: Distribution of Students by Faculty/College

	U.I (N= 140)		FUNAAB (N= 191)		Total (*N=331)	
Faculty/College	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Science/Natural Science	78	55.7	162	84.8	240	72.5
Technology /Engineering	51	36.4	22	11.5	73	22.1
Veterinary Medicine	11	7.9	7	3.7	18	5.4
Total	140	100.0	191	100.0	331	100.0

Note: *N=331 is the total number of usable completed questionnaires out of 353 copies of questionnaires administered to students in the two universities.

Table 3 revealed that 240 (72.5%) were from the Faculty of Science/Natural Science, 73 (21.1%) Technology/Engineering and 18 (5.4%) were from Veterinary Medicine. Likewise, results of data collected from respondents in U.I showed that 55.7% were from Sciences/ Natural and Bio-sciences, 36.4% from Technology/Engineering and 7.9% from Veterinary Medicine. Similarly, results from FUNAAB revealed that 84.8% were from Sciences/Natural and Bio-sciences, 11.5% from Technology/Engineering and 3.7% from Veterinary Medicine. The results indicated that students from the Faculty of Science/College of Natural and Bio-Sciences mainly dominated the study.

Table 4: Distribution of Students by Age group
Note: *N=331 is the total number of usable completed questionnaires out of 353copies of questionnaires administered to academics in the two universities.

Age group (years)	U.I (N= 140)		FUNAAB (N=191)		Total (*N=331)	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Below 16	1	0.7	8	4.2	9	2.7
16-19	29	20.7	23	12.0	52	15.7
20-22	58	41.4	96	50.3	154	46.5
23-25	32	22.9	43	22.5	75	22.7
26 and above	20	14.3	21	11.0	41	12.4
Total	140	100.0	191	100.0	331	100.0

The distribution of students by age presented in Table 4 showed that about 47% were within the age bracket 20-22 years, 23% were 23-25years, 16% were 16-19 years, 12% were 26 years and above, and about 3% were below 16years. The majority of the respondents (about 47%) were in the age range of 20-22 years and very few (about 3%) were in the category of below 16 years and this received the least responses. This implied that most of the students in the study were above 16 years of age. Results further revealed that there were younger students (19 years and below) in U.I (21%) than in FUNAAB (16%).

Distribution of Respondents by Educational Qualification and Year of Study

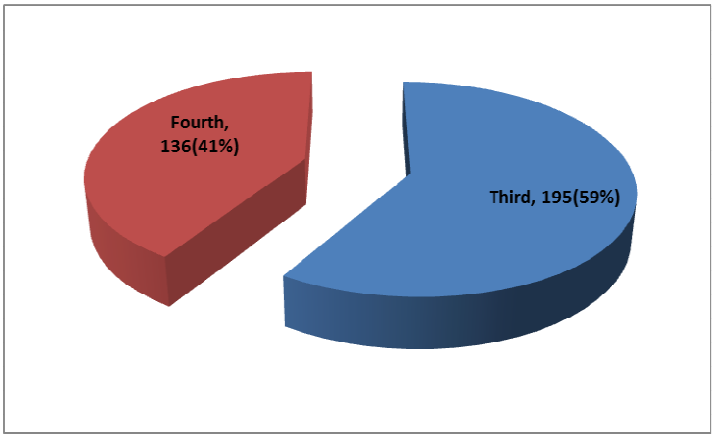

Figure 2: Respondents (Students) Current Year of Study (N= 331)

Results in Figure 2 showed that out of the 331 respondents surveyed, the majority 195 (59%) were in their third year of study while 136 (41%) were in their fourth year of study. The results indicated the dominance of students in their third year of study over those in the fourth year of study in the universities that were surveyed.

Research Question 1: What are the various kinds of Web 2.0 technologies student are aware of in the selected federal universities?

Table 5: Kinds of WEB 2.0 Technologies Students are aware of.

Web 2.0 Technologies	U.I (N=140)		FUNAAB (N=191)		Total (*N=331)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Blogs	106	75.7	113	59.2	219	66.2
Instant messaging	123	87.9	141	73.8	264	79.8
Newsgroups/Online forums	81	57.9	93	48.7	174	52.6
Podcasts/Webcasts/Podcasts	46	32.9	43	22.5	89	26.9
RSS feeds	53	37.9	60	31.4	113	34.1
Skype	94	67.1	101	52.9	195	58.9
Social Networking Sites	139	99.3	191	97.9	330	99.7
Facebook	135	96.4	178	93.2	313	94.6
MySpace	58	41.4	66	34.6	124	37.5
Twitter	112	80.0	149	78.0	261	78.9
WhatsApp	135	96.4	176	92.1	311	94.0
2go	113	80.7	157	82.2	270	81.6
Flickr	39	27.9	37	19.4	76	23.0
Badoo	59	42.1	70	36.6	129	39.0
Bebo	15	10.7	15	7.9	30	9.1
LinkedIn	63	45.0	64	33.5	127	38.4
Social bookmarking	22	15.7	27	14.1	49	14.8
E-Portfolios	16	11.4	26	13.6	42	12.7
YouTube	120	85.7	149	78.0	269	81.3
Teacher Tube	16	11.4	17	8.9	33	10.0
Wikis	133	95.0	149	78.0	282	85.2
Wikipedia	130	92.9	146	76.4	276	83.4
Wiki-how	53	37.9	32	16.8	85	25.7

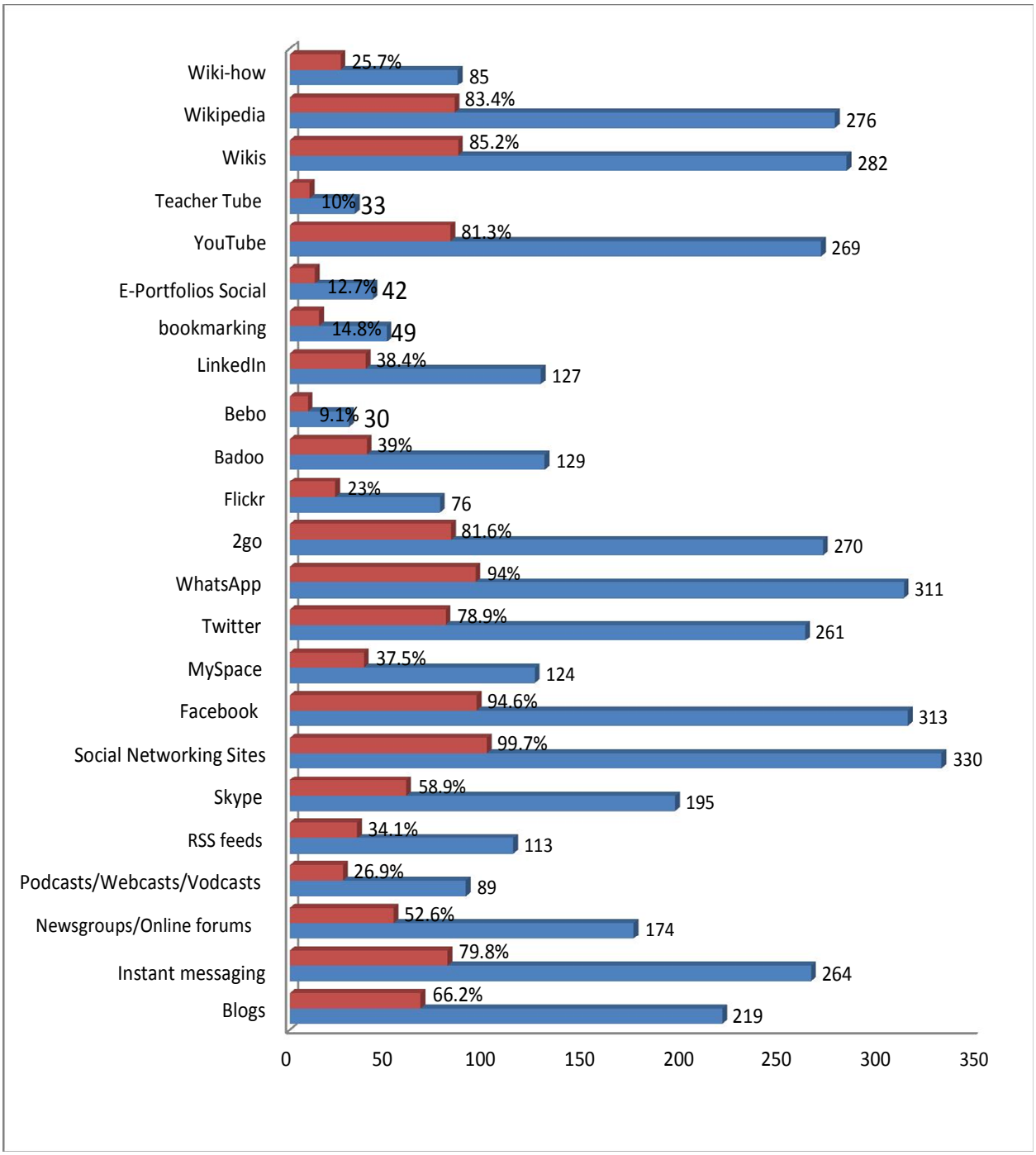

Figure 3: Kinds of WEB 2.0 Technologies Students are aware of.

The results presented in Figure 3 on various kinds of Web 2.0 technologies that students are aware of for learning revealed that majority (where N=331) were acquainted with SNSs (99.7%), wikis (85.2%), YouTube (81%), Instant messaging (80%), blogs (66%), Skype (59%), newsgroups/online forums (53%) and RSS feed (34%). Among the SNSs, students were mostly familiar with Facebook (95%), WhatsApp (94%), 2go (82%), Twitter (79%), Badoo (39%) and LinkedIn (38.4%). Bebo (9%) received the least responses. Wikipedia (83.4%) was the most commonly used among the wikis. Those Web 2.0 applications that received very low responses included podcasts/webcasts/vodcasts (27%), Social Bookmarking (15%), E-Portfolios (13%) and Teacher Tube (10%). The result suggested that most of the students were well aware of SNSs (most especially Facebook, WhatsApp, 2go and Twitter), YouTube and Instant messaging while Social Bookmarking, E-Portfolios and Teacher Tube were not well known and used by the respondents.

Further analysis of the results by universities as shown in Table 5 revealed that students' awareness of various kinds of Web 2.0 technologies varied between students in the two universities under the study. For example, 95% of the respondents from U.I. agreed that they were familiar with wikis compared with 78% of respondents from FUNAAB; 82.2% of respondents from FUNAAB agreed that they were familiar with 2go compared to 80.7% from U.I; 85.7% of U.I. respondents were acquainted with YouTube compared to 78.0% from FUNAAB and 45% with LinkedIn from U.I. compared to 33.5% from FUNAAB. The results suggested that students from both universities surveyed were well acquainted with the use of social networking tools, wikis and YouTube among other Web 2.0 technologies for learning.

Research Question 2: What are the types of Web 2.0 technologies use by the students for learning purpose?

Table 6: Types of Web 2.0 Technology used by Students for learning purposes

Web 2.0 Technologies	U.I (N=138)		FUNAAB (N=195)		Total (*N=331)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Blogs	62	44.3	82	42.9	144	43.5
Instant messaging	58	41.4	86	45.0	144	43.5
Newsgroups/Online forums	55	39.3	75	39.3	130	39.3
Podcasts/Webcasts/Vodcasts	20	14.3	29	15.2	49	14.8
RSS feeds	20	14.3	36	18.8	56	16.9
Skype	25	17.9	49	25.7	74	22.4
Social Networking Sites	111	79.3	179	93.7	290	87.6
Facebook	85	60.7	136	71.2	221	66.8
MySpace	14	10.0	35	18.3	49	14.8
Twitter	51	36.4	79	41.4	130	39.3
WhatsApp	88	62.9	135	70.7	223	67.4
2go	29	20.7	72	37.7	101	30.5
Flickr	9	6.4	16	8.4	25	7.6
Badoo	15	10.7	20	10.5	35	10.6
Bebo	4	2.9	7	3.7	11	3.3
LinkedIn	20	14.3	42	22.0	62	18.7
Social bookmarking	9	6.4	17	8.9	26	7.9
E-Portfolios	7	5.0	17	8.9	24	7.3
YouTube	96	68.6	127	66.5	223	67.4
Teacher Tube	16	11.4	10	5.2	26	7.9
Wikis	131	93.6	146	76.4	277	83.7
Wikipedia	131	93.6	144	75.4	275	83.1
Wiki-how	48	34.3	24	12.6	72	21.8
Others (Please Specify)	6	4.3	10	5.2	16	4.8

Note: *N=331 is the total number of usable completed questionnaires out of 351copies of questionnaires administered to students in the two universities.

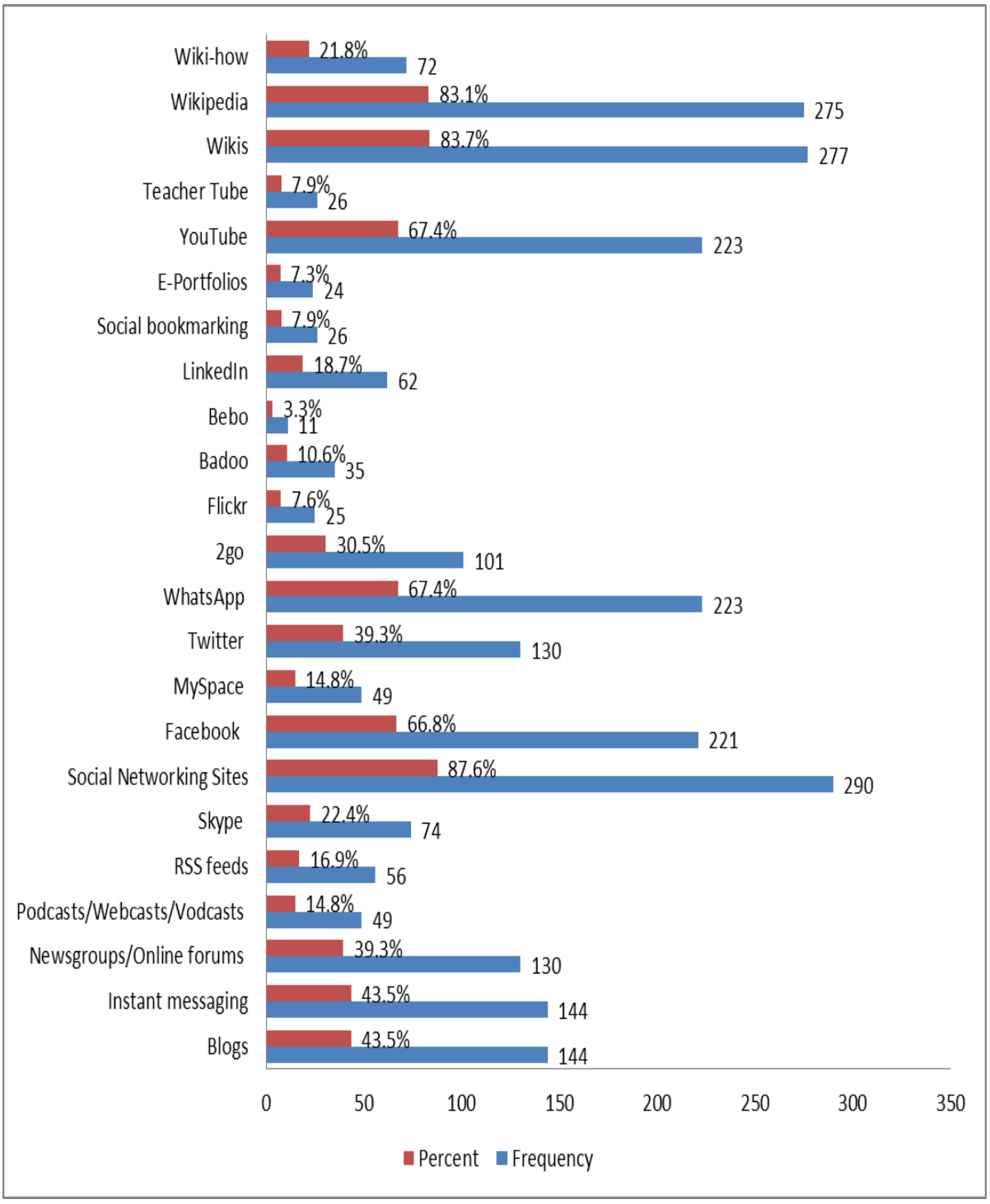

Figure 4. Types of Web 2.0 Technologies used by Students for learning purposes

Results in Figure 4 showed that SNSs were the most used for learning purposes (88%), followed closely by Wikipedia (83%); then YouTube (67%); blogs and Instant messaging (44% each); newsgroups/online forums (40%); Skype (22%); Wiki-how (22%); LinkedIn (19%); RSS Feeds (17%); Podcasts/Webcasts/Vodcasts and My Space (15% each); Badoo and Moodle (11% each); Social Bookmarking, Teacher Tube and Flickr (8% each); and Bebo (3%). Other Web 2.0 technologies not specified in the study were used by the 5% of the student respondents. Among the SNSs, WhatsApp (67%) Facebook (67%) and Twitter (39%) received higher responses for use in learning. The results in Table 6 further showed variation in the use of some of these tools by students for learning purposes at the surveyed universities. For instance, 93.7% from FUNAAB indicated they used SNSs for learning purposes compared to 79.3% from U.I. while 93.6% from U.I. used wikis compared to 76.4% from FUNAAB.

5. CONCLUSION

The results of the study showed that students are highly aware of Web 2.0 technologies such as Facebook, WhatsApp, Twitter, 2go, Youtube, Wikipedia, Wikis and Instant Messaging. However, the use of these Web 2.0 technologies for learning was still low compared with universities in some developing or developed countries. The study further established these technologies were not adequately used by students for learning due to lack of awareness. The findings revealed Web 2.0 technologies as very creative tools, especially for students learning.

6. RECOMMENDATIONS

Based on the findings, it is recommended that University Libraries should put in place a user education program for students to enlighten, encourage and train them on Web 2.0 technologies that are not familiar to them for learning purposes. The universities should also encourage the use of Web 2.0 technologies for learning by providing free or subsidized access to the internet, especially within the university environment.

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