Benefits and Barriers of Web 2.0 Technologies for Learning among Undergraduates of Selected Private Universities in Southwest Nigeria

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Abstract: *Web 2.0 technologies have become in recent times one of the ways of achieving interactive and impactful learning process. Web 2.0 technologies have increasingly helped in producing quality learning and significant opportunities for students. However, certain barriers constrain their use in learning environments in developing countries. The study therefore, investigated the benefits and extent to which students have benefitted from the use of Web 2.0 technologies and barriers to their use for learning. The study adopted descriptive survey design and 305 undergraduates were randomly selected from two private universities in south-west, Nigeria. An adapted questionnaire with r value of 0.890 was used to obtain data. Descriptive analysis of frequency count distribution, mean scores and percentages were used to answer the three research questions. The findings revealed that Web 2.0 technologies help in acquiring knowledge and innovative ideas, enhancing learning ability, and improving students' academic performances. Also, students have benefitted to a large extent from the use of Whatsapp, Wikipedia, YouTube, Instagram and Facebook. Limited access to internet facilities, poor internet connectivity and lack of technical support were identified as barriers to the use of Web 2.0 technologies for learning in the surveyed universities. The provision of fast and reliable internet connectivity in learning environments was recommended.*
Keywords: *Barriers, Benefits, Social Networking Sites, Web 2.0 Technologies, Learning*

I. Introduction

Web 2.0 technologies are internet applications that speed up interactive information creation, sharing, and collaboration on the World Wide Web (www) (An and Williams, 2010). Web 2.0 is a second generation web-based service which encourage and enable users to share ideas and collaborate on innovative ways unlike the Web 1.0 a first generation web-based services and a read-only and static web. Web 2.0 technologies such as Blogs, Social networking sites, Discussion forum, Wikis, Podcasts, Google documents and Facebook (Kumar, 2009 Anunobi, and Ogbonna, 2012) allow users to read, write, collaborate and share information content on the web (Richardson 2006). Web 2.0 enable users to compose, edit, read, and distribute information whenever and wherever it is characterized by openness, persistence, user participation, searchability, knowledge sharing and collaboration (Downes 2005; Boyd, 2007; Richardson 2009; An and Williams 2010; and Hamid, Waycott, Kurnia and Chang, 2015).

Technological advances in recent years have dramatically impacted on the ways in which learning is achieved in and outside the classrooms (An, Alon and Fuentes, 2014). Web 2.0 technologies as one of these advances are becoming a global concept that is used to support learning activities in learning environments. This is so because these technologies have the potential to create a more interactive and powerful learning environment. Web 2.0 grant students access to quick and global information useful for learning. It can also enable users to compose, edit, read, distribute information, easily publish information content online and network with learners with similar interest (An, Aworuwa, Ballard and Williams, 2010; and Kolawole and Mutula, 2016). These technologies support interactions among students by allowing them to leave comments on a blog or discussion forum, request for detailed explanations on a subject matter, initiate communication or add a friend (McLoughlin and Lee, 2007; and Irwin, Ball, Desbrow, and Leveritt, 2012).

Similarly, Web 2.0 applications can aid active participation in the learning process especially with its ability to help learners become knowledge creators, producers, evaluators and editors (Richardson, 2009). These technologies have also been found beneficial to the community of learners in the developed and some

developing countries (Ferdig 2007). For instance, they have aided learners' critical thinking skills through interaction with peers in Australia and Malaysia (An et al 2010). The use of Web 2.0 technologies in education provide numerous opportunities for social interaction and collaboration among students in different fields of interest and also support personalized learning. This help in strengthening students' learning skills as they interact, team up and share knowledge with peers at different locations.

As aforementioned, efforts have been made in research to understand the benefits of Web 2.0 technologies in education and how it can enhance the learning quality (Caruso and Salaway 2008; and Leh, Kremling and Nakayama 2012). Nevertheless, some educators view some of these Web 2.0 technologies as having the potential to disrupt academic activities (Christensen, 1997; Okello-Obura and Ssekitto, 2015). Thus, a number of researchers also examined the challenges and barriers of Web 2.0 technologies to learning; this include time management issues, lack of ICT skills, lack of training, lack of awareness of Web 2.0 learning tools, and erratic power supply among others (An et al., 2010; Anunobi and Ogbonna 2012; Waycott, Sheard, Thompson, and Clerehan, 2013; Hamid et al., 2015; and Kolawole and Ogunniran 2017). Despite these, Web 2.0 technologies have however abetted a more responsive learning (Christensen, 1997; Okello-Obura and Ssekitto, 2015).

The success of web-based learning in higher education depends to a large extent on the benefits that can be derived from their use. Extant literature has revealed several benefits (including improving students' interaction, developing students' collaborative skills, improved academic performance, increased students' participation, knowledge creation and enhancing learning motivation) and barriers (such as, time management issues, access to internet connectivity, limited technical infrastructure, lack of ICT skills, fear of openness of information for others) to the use of Web 2.0 technologies for learning (Odom, 2010; Chen, Hwang, Wu, Huang, and Hsueh, 2011; Racthman and Firpo, 2011; Anunobi and Ogbonna 2012; Usoro, Echeng and Majewski 2013; Waycott et al., 2013; Hamid et al., 2015 and Sandra 2016). However, there is a dearth of literature on the benefits and barriers of the use of Web 2.0 for learning in developing countries like Nigeria. Likewise, some anecdotal evidences seem to suggest lack of recognition of the benefits of Web 2.0 in learning, inadequate access to internet, cost, time management, erratic power supply, lack of competent Web 2.0 technicians and users attitude as major challenges to its effective use in Nigeria Universities (Anunobi and Ogbonna 2012; Okonedo, Azubuike and Adedoyin, 2013 and Usoro, Echeng and Majewski 2013). Hence, this study examined the benefits and barriers of Use of Web 2.0 technologies for learning among undergraduates in selected private universities in South-west Nigeria.

II.   Objectives

Specifically, this study:
i.   Investigated the benefits derived from the use of WEB.2.0 technologies for learning among selected private universities in south-west Nigeria.
ii. Examined the extent to which students benefitted from the use of WEB 2.0 technologies for learning among selected private universities in south-west Nigeria.
iii. Investigated the barriers that prevent the use of WEB 2.0 technologies for learning among selected private universities in south-west Nigeria.

III.   Methods

Research Design

This study is a survey type of descriptive research design. The research was carried out in 2 randomly selected private universities both in Osun and Oyo States respectively. A total of 350 questionnaires were administered in the two universities which were at variance while 305 questionnaires were retrieved and found usable.

Research Instrumentation

The instrument used for the study was a well-designed self and adapted questionnaire titled "Benefits and Barriers of WEB 2.0 technologies for learning Questionnaire" (BBWTLQ). Credits were given to the original authors. It was divided into four sections:
Section A: Biographical information of the respondents
Section B: Benefits of use of WEB 2.0 technologies for learning
Section C: Extent at which students benefitted from the use of WEB 2.0 technologies for learning
Section D: Barriers preventing the use of WEB 2.0 technologies for learning
The instrument was validated and found to be valid and reliable (r value=0.890 using Cronbach Alpha). The statistical tool used to analyze the data was Statistical Package for Social Sciences (SPSS) version 21 to generate frequencies, percentages, tables, charts and figures.

IV. Results

The analysis of bio data information of the respondents is presented as follows:

Table 1: Gender of Sampled Respondents

Sex	Frequency	Percentage
Male	139	45.6%
Female	166	54.4%
Total	**305**	**100.0%**

The gender of the sampled size for the study is presented in table 1. It showed that 139 respondents represented by 45.6% were male while 166 respondents represented by 54.4% were female. This showed that female respondents were more represented than male respondents.

Table 2: Age of Sampled Respondents

Age Group	Frequency	Percentage
16 – 20 Years	168	55.1%
21 – 25 Years	105	34.4%
26 – 30 Years	22	7.2%
31 Years & Above	10	3.3%
Total	**305**	**100.0%**

The age group of the sampled respondents is presented in table 2. The table showed that 168 (55.1%) were between age 16 and 20; 105 (34.4%) indicated they were between 21 and 25 years of age. Also, 22 respondents (7.2%) indicated they were between 26 and 30 years while 10 respondents represented by 3.3% indicated they were over 31 years. The implication is that majority of the respondents that took part in this study were below 25 years of age.

Answers to Research Questions

Research Question 1: What are the benefits that can be derived from the use of use of Web 2.0 technologies for learning?

Table 4 presented the answer to research question 1

Table 3: Benefits derived from the Use of Web 2.0 Technologies for Learning

Items	SA	A	D	SD	Mean	Std. Dev
Web 2.0 technologies have helped me to acquire new knowledge	207 67.9%	77 25.2%	5 1.6%	16 5.2%	3.56	0.772
Web 2.0 technologies help in acquiring a new innovative idea	168 55.1%	112 36.7%	6 2.0%	19 6.2%	3.41	0.810
My learning ability is enhanced with the use of Web 2.0 technologies	115 37.7%	148 48.5%	24 7.9%	18 5.9%	3.18	0.813
Web 2.0 technologies help me to effectively manage information acquired for learning	109 35.7%	172 56.4%	8 2.6%	16 5.2%	3.23	0.738
Use of Web 2.0 technologies improves my academic performance through access to information needed on time	163 53.4%	112 36.7%	14 4.6%	16 5.2%	3.38	0.803
Web 2.0 helps in developing skills and capabilities for collaboration	100 32.8%	162 53.1%	22 7.2%	21 6.9%	3.12	0.815
Web 2.0 helps in sharing information contents with peers and teachers	145 47.5%	118 38.7%	23 7.5%	19 6.2%	3.28	0.852
Web 2.0 helps me to access learning resources (e.g. slides, videos, photo, audio) online	179 58.7%	98 32.1%	7 2.3%	21 6.9%	3.43	0.840

The results showed that 93.1% of the respondents agreed that Web 2.0 technologies helped them to acquire new knowledge while 6.9% disagreed (mean 3.56); 91.8% agreed that Web 2.0 technologies help in acquiring new innovative idea while 8.2% disagreed (mean 3.41); 86.2% agreed that their learning ability is enhanced with the use of Web 2.0 technologies and 13.8% disagreed with the statement (mean = 3.18), 92.1% agreed that Web 2.0 technologies help them to effectively manage information acquired for learning while 7.9% disagreed (mean = 3.23).

The table further showed that 90.1% of the sampled respondents agreed that the use of Web 2.0 technologies increases their academic performance through access to information needed on time, 9.9 disagreed (mean = 3.38); 85.9% agreed that Web 2.0 helps in developing skills and capabilities for collaboration while 14.1% disagreed with the statement (mean = 3.12). Not only that, 86.2% agreed that Web 2.0 helps in sharing information contents with peers and teachers while 13.8% disagreed (mean 3.28) and lastly on the table, 90.8%

agreed that Web 2.0 helps them to access learning resources (e.g. slides, videos, photo, audio) online while 9.2% of the respondents disagreed with the statement (mean = 3.43). The implication of the findings is that the respondents considered all the listed benefits in the study as the benefits they derived from the use of Web 2.0 technologies for learning.

Research Question 2: To what extent has the students benefitted from the use of Web 2.0 technologies for learning?

Table 4 represents the analysis of research question 2 with twelve (12) applications of the technology being identified to know the extent at which each of them had benefitted the students for learning.

Table 4: Extent at which Students have Benefitted from the use of Web 2.0 Technologies for Learning

Technologies	Never	A Little Extent	To Some Extent	Large Extent	Very Large Extent	Mean	Std. Dev
Facebook	26 8.5%	60 19.7%	87 28.5%	79 25.9%	53 17.4%	3.24	1.200
Twitter	131 44.0%	80 26.2%	39 12.8%	36 11.8%	19 6.2%	2.12	1.257
My Space	222 72.8%	48 15.7%	20 6.6%	10 3.3%	5 1.6%	1.45	0.880
YouTube	25 8.2%	44 14.4%	78 25.6%	83 27.2%	75 24.6%	3.46	1.235
Skype	149 48.9%	80 26.2%	47 15.4%	19 6.2%	10 3.3%	1.89	1.086
MSN Messenger	154 50.5%	61 20.0%	42 13.8%	31 10.2%	17 5.6%	2.00	1.246
Blog	137 44.9%	67 22.0%	47 15.4%	32 10.5%	22 7.2%	2.13	1.289
Wikipedia	47 15.4%	34 11.1%	60 19.7%	65 21.3%	99 32.5%	3.44	1.432
WhatsApp	31 10.2%	19 6.2%	34 11.1%	51 16.7%	170 55.7%	4.02	1.356
E-Portfolio	212 69.5%	43 14.1%	25 8.2%	14 4.6%	11 3.6%	1.59	1.057
Instagram	35 11.5%	54 17.7%	59 19.3%	78 25.6%	79 25.9%	3.37	1.341
Instant Messaging	67 22.0%	69 22.6%	72 23.6%	45 14.8%	52 17.0%	2.82	1.382

Results on Table 4 revealed that many of the respondents submitted that they make use of Facebook (74.1%) for learning to some extent. In addition, the majority of the respondents indicated that they never make use of Twitter (mean=2.12), My Space (mean=1.45) and E-portfolio (mean=1.59) for learning activities. Furthermore, Skype (mean=1.89), Blog (mean=2.13) and MSN messenger (mean=2.00) are being used to a little extent for learning while instant messaging is being used to some extent for learning activities.

The table also revealed that majority of the respondents makes use of some application which had benefitted them to a large extent such as Wikipedia (mean=3.44), Youtube (mean=3.46), Instagram (mean=3.37) while WhatsApp has been discovered to be of benefit to the respondents to a very large extent (mean=4.02) and E-Portfolio (mean=1.59) was never use for learning which means that it has never been of any benefit to the respondents when it comes to learning activities. The implication of the information on Table 4 is that the WEB 2.0 technologies mostly used by respondents are WhatsApp (mean = 4.02), follow by YouTube (mean = 3.46), then Wikipedia (mean = 3.44), Instagram (mean = 3.37) and Facebook (mean =3.24). This implies that a good number of the respondents have benefitted to some extent from the aforementioned WEB 2.0 technologies. Nevertheless, more than half of the respondents have never benefitted from the use of Twitter, Myspace and E-portfolio for learning purposes.

Research Question 3: What are the barriers preventing the use of Web 2.0 technologies for learning?
Table 5 showed the analysis of research question 3.

Table 5: Barriers Preventing the Use of Web 2.0 Technologies for Learning

Items	SA	A	D	SD	Mean	Std. Dev
I do not have the necessary skills and knowledge to use Web 2.0 technologies	20 6.6%	39 12.8%	93 30.5%	153 50.2%	1.76	0.914
I did not receive enough Web 2.0 technologies training to effectively use them	24 7.9%	70 23.0%	90 29.5%	121 39.7%	1.99	0.972
I do not have access to computers	18 5.9%	38 11.1%	94 30.8%	159 52.2%	1.71	0.887
I have access to internet facilities	22 7.2%	29 9.5%	93 30.5%	161 52.8%	1.73	0.912
I am able to connect to the internet to use Web 2.0 technologies	16 5.2%	42 13.8%	100 32.8%	147 48.2%	1.76	0.880
Using Web 2.0 technologies put my privacy at risk	19 6.2%	74 24.3%	109 35.7%	103 33.8%	2.03	0.912
I do not like to share information and content with others	14 4.6%	54 17.7%	125 41.0%	112 36.7%	1.90	0.849
Distraction on the internet prevents my use of Web 2.0 technologies for learning	17 5.6%	56 18.4%	133 43.6%	99 32.5%	1.97	0.856
I do not feel confident using Web 2.0 technologies	12 3.9%	44 14.4%	121 39.7%	128 42.0%	1.80	0.828
Availability of technical support does not affect my use Web 2.0 technologies	20 6.6%	49 16.1%	125 41.0%	111 36.4%	1.93	0.886
Slow network is not an impediment to the use of Web 2.0 technologies	39 12.8%	80 26.2%	110 36.1%	76 24.9%	2.27	0.977
Web 2.0 technologies are mainly for entertainment purposes and thus not good for learning	28 9.2%	43 14.1%	100 32.8%	134 43.9%	1.89	0.968

Results on Table 5 showed that 19.4% of the sampled respondents agreed that they do not have necessary skills and knowledge to use Web 2.0 technologies while 80.6% disagreed (mean = 1.76), which means majority possess the skills and knowledge to use web 2.0 technologies. Only 30.9% agreed they did not receive enough training to use Web 2.0 technologies effectively while 69.1% (mean = 1.99) disagreed. It can be deduced from these results that most of the respondents have necessary training on the use of Web 2.0 technologies. The results also showed that 17% of the respondents admitted that they do not have access to computers while 83.0% disagreed (mean = 1.71). This implies that majority of the respondents have access to computers. It can be inferred that access to the computer does not constitute a barrier to the respondents' use of Web 2.0 technologies for learning. Besides, 16.7% of the respondents also agreed that they have access to internet facilities while 83.3% disagreed with the statement (mean = 1.73), which suggested that majority do not have access to internet facilities. Also, the 81% that indicated they were unable to connect to the internet to use Web 2.0 technologies (mean = 1.76), implies that availability of internet facilities is a challenge to the use of Web 2.0 technologies for learning. Meanwhile, 69.5% indicated that using Web 2.0 technologies does not put their privacy at risk (mean = 2.03). This suggested that the issue of privacy is not a major concern to the respondents when using Web 2.0 technologies.

Furthermore, Table 5 revealed that 77.7% of the respondents disagreed they do not like to share information and content with others (mean= 1.90), 76% disagree that distraction on the internet prevents their use Web 2.0 technologies for learning (mean = 1.97) and 81.7% disagreed that they do not feel confident using Web 2.0 technologies (mean = 1.80). These results implied that majority of the respondents like to share information and content with others and they are not prevented from the use of Web 2.0 based on distractions on the internet, and feel confident using Web 2.0 technologies.

In addition, the table showed that 22.7% of the sampled respondents agreed that availability of technical support does not affect their use Web 2.0 technologies while 77.3% disagreed (mean = 1.93) and 61% disagreed that slow network is not an impediment to the use of Web 2.0 technologies (mean=2.27). These results implied that availability of technical support and slow network are impediments to the use of Web 2.0 technologies for learning. Furthermore, 76.7% of the respondents disagreed that Web 2.0 technologies are mainly for entertainment and thus not good for learning (mean = 1.89). The implication is that Web 2.0 technologies play other important roles than entertainment, thus its entertainment role does not constitute a barrier to its use for learning.

V. Discussion

The study revealed that most of the respondents identified acquiring knowledge and innovative ideas, enhancing learning ability, aiding effective management of acquired information, improved academic performances, timely access to information, development of skills and capabilities for collaboration, sharing of information content and online access to learning resources as some of the benefits they have derived from the use of Web 2.0 technologies for learning. The study findings on benefits of Web 2.0 for learning are in

agreement with previous studies such as McLoughlin and Lee (2007), Duffy (2008), Lee, McLoughlin and Chan (2008), Solomon and Schrum (2007), Binkley et.al 2012 and Omekwu, Eke and Odoh (2014). McLoughlin and Lee (2007) noted that Online technologies such as Web 2.0 offer its users including students the benefit of interacting and making connections and communication. It was added that Web technologies help in publishing and presenting users work to a wide audience. Similarly, Duffy (2008) indicated that Web 2.0 technologies such as Wikipedia facilitate tacit and other forms of knowledge sharing. Previous studies (Solomon and Schrum, 2007, Lee, McLoughlin and Chan, 2008, and Binkley et.al., 2012) highlighted innovative contribution, making novel and innovative ideas, making responsible decisions, producing and sharing of information content and developing 21st- century skills in students as some of the benefits of Web 2.0 technologies. Correspondingly, Omekwu, Eke and Odoh (2014) study on the use of social networking sites among the undergraduate students in a Nigerian University identified promoting skills for reading and writing on the web and supporting collaborative and peer-to-peer learning, research and virtual meeting with co-researchers as benefits of using social networking sites for learning.

Findings of this study also revealed that most of the students who participated in the study have benefitted to a large or very large extent from the use of Whatsapp, Wikipedia, YouTube, Instagram and Facebook for learning. This finding supports that of Haneeta and Sumitha (2011) who found that a large number of undergraduate students use the social networking sites such as Facebook, Twitter and YouTube. These findings are also similar to Eid and Al-Jabri (2016) who indicated that many students use Web 2.0 technologies especially the Social Networking Sites like Facebook, WhatsApp and Instagram noticeably especially in completing homework, term papers or assignments. In the same vein, Popoola (2014) in a survey of some students in Nigeria reported that more students have benefitted largely from the use of Facebook and YouTube than other Web 2.0 technologies. This study, however, revealed that a good number have never benefited from the use of MySpace, E-Portfolio and MSN messenger for learning. This may be adduced to their ignorance on the usefulness and usage skills of these Web 2.0 technologies for learning.

Findings on barriers to the use of Web 2.0 technologies for learning revealed that unavailability of technical support, internet facilities and slow network are impediments to the use of Web 2.0 technologies for learning. This finding supports Sandra (2016) who highlighted students' access to internet connectivity at school as a major barrier to their use of internet technologies. The majority (more than 76%) of the respondents like to share information and content with others; do not get distracted on the internet when using Web 2.0 technologies for learning; and also indicated that Web 2.0 technologies are not mainly for entertainment. Haneeta and Sumitha (2011) also corroborate this finding as a large percentage of students in their study made their profile publicly available along with their personal information. Therefore, it can be inferred that sharing of information content, distractions on the Web or the use of Web 2.0 technologies or social or entertainment purposes does not constitute a barrier to the use of Web 2.0 technologies for learning

VI. Conclusion

The study revealed acquiring knowledge and innovative ideas, enhancing learning ability, aiding effective management of acquired information, improved academic performances, timely access to information, development of skills and capabilities for collaboration, sharing of information content and online access to learning resources as major benefits derived from the use of Web 2.0 technologies for learning. Likewise, most of the students have benefitted from the use of Whatsapp, Wikipedia, YouTube, Instagram and Facebook to a large or very large extent. Nevertheless, more than half of the respondents did not benefit from Myspace, Eportfolio and MSN messenger. It is construed that these Web 2.0 technologies that have not been benefited from are either not used by the students sampled or they lack knowledge and training on their importance and usage respectively. Limited access to internet facilities, poor internet connectivity, lack of technical support and slow network were identified as barriers to the use of Web 2.0 technologies for learning in the surveyed universities.

In view of these findings, it is recommended that the management of the surveyed universities make provision for fast and reliable internet connectivity to further encourage and enhance the use of Web 2.0 technologies for learning. Technical support should also be made available to students and teachers; this will help in training students on the effective use of Web 2.0 technologies for learning in Nigerian Universities.

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