Self-Efficacy of Undergraduates on Use of Web 2.0 Tools for Learning in Two Universities in South West Nigeria

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Abstract

The study examines the self efficacy level of undergraduate on the use of Web 2.0 tools for learning in Obafemi Awolowo University and the University of Ibadan. The study Use questionnaire to gather information on the various Web 2.0 tools available to undergraduate, the frequency of Web 2.0 use for learning among undergraduate, to identify the factors that promote the use of Web 2.0 tools for learning and the factors that militate against the use of Web 2.0 tools for learning among undergraduate. The findings of the study indicate that social networking, Google and wikis were the most available Web 2.0 tools for undergraduate. Majority of the undergraduate use these Web 2.0 tools for both personal and academic activities, among the factors agreed upon to promoting the use of Web 2.0 were enhanced internet connectivity, adequate power supply, supportive hardware devices, and class assignment requiring the use of Web 2.0, low cost of internet bundles among others. However, factors like poor internet connectivity speed, inadequate power supply, high cost of hardware devices, high cost of internet bundles etc, were among the challenges to use of Web 2.0 by undergraduate. The study recommends that university management should encourage undergraduate students to use their self-efficacy by using web 2.0 for learning in their institution and that institution should provide factors that enhance the use of web 2.0 among undergraduates.

Introduction

Effective learning does not only come from the classroom, there is need for continuous and round the clock learning which is only facilitated by the use of the web 2.0 hosted on the internet. The goal of every institution is to produce graduates that can compete globally, this can be facilitated through the incorporation of supportive tools like web 2.0 tools that allow students at different locations to learn and contribute to online discussions. There has not been any better way of learning than pulling from the pull of knowledge from experts in a particular subject area. Through the use of web 2.0, the entire world now contributes to discussions and online debates that enable members of such community to learn and develop from such discussions.

Web 2.0 technology applications have recently gained so much popularity in research and academic world in general, more and more of its usage evolving each day. Many software

application developers are working on tools that facilitate real-time information sharing among students around the globe and people with similar research interest. Among these tools are collaborize classrooms, edmodo, geogebra, dropbox, Youtube, google docs, penzu, blogger, online academics forum pages and so on (Dunn, 2011). Hardware manufacturers have also been releasing sophisticated devices that are efficient enough to drive these technologies into the markets and supported with improved internet connectivity. All these are available to students and researchers alike, to aid their studies and research quality.

The use of Web 2.0 tools is not limited to just teaching, learning or virtual class experience only, Hoffman (2008) points out that Web 2.0 tools are useful in rendering library services and activities such as library advocacy, library news, marketing, wider-reaching reference, meeting needs in person as well as at a distance, Consumers service. Libraries have primarily focused on using social media as a marketing tool or a service enhancement (Hoffman, 2008). Web 2.0 when incorporated into library service will foster inquiry-based learning, discovery learning, collaborative information discovery, critical thinking and also social learning (Hoffman, 2008). Educational/school community perceives social media mainly as teaching/learning tools instead of school promotional tools.

Web 2.0 technologies are part of the changes in information and communication technology. Web literacy improves the base of individuals' skills and it can reach a wider range of users with these applications. Blog and wiki applications improve the teacher and learner's social interaction, their creativity, their ability to express themselves and their high-level thinking skills (Avci & Askar, 2012).   The general acceptability of Web 2.0 could be measure using the Unified Theory of Acceptance and Use of Technology (UTAUT) which was created by (Venkatesh, Morris, Davis and Davis; 2003) as cited by (Avci & Askar, 2012). Researchers have found three key variables which are performance expectancy, effort expectancy, and social influence to have effect on technology usage intention by the students.

Students now have the best libraries, museums, and multimedia instruction at their finger tips through the global Internet, and they can use these resources for educating themselves. They can do this independently of time and space. This shift in the locus of initiative requires a major re-orientation in students' conception of education. Students are agents of their own learning, not just recipients of information. Education for self-directedness is now vital for a productive and innovative society (Bandura, 2006). Creation and sharing of quality knowledge that is facilitated by the increased use of Web 2.0 tools cannot be compared with any earlier known method of learning and teaching. Web 2.0 brings about collaborative information sharing and participation among scholars of diverse professional and academic achievements which have never been easier, but for Web 2.0 technologies and its associated tools (Dede, 2009).

Web 2.0 refers to the second generation of web based services that emphasize online collaboration and sharing among users (Abdullah *et al*, 2013). Web 2.0 has changed the traditional chain of knowledge transfer, and students are no longer just consumers of knowledge but they also participate actively in generating and creating knowledge, through the application of Web 2.0 tools. Since the launch of Web 2.0, the internet has undergone lot of revolutionary changes which makes many software applications portable, responsive and flexible to use with many internet enabled devices. It enables users to participate directly in the creation, refinement and distribution of shared content. These new technologies change the way documents are created, used, shared, and distributed, and make sharing content among participants much easier

than in the past (Abdullah *et al,* 2007).

Dunn (2011) published a list of 100 most widely used web 2.0 tools submitted by students around the world, which includes Blogger, Skype, Penzu, Eyejot, Animoto, Collaborize classroom, Facebook, Twitter, Geogebra, EtherPad, JayCut, Ning, Writeboard among others. Loosely defined as "a second generation of Internet-based services that emphasize online collaboration and sharing among users," Web 2.0 is helping students and teachers connect like never before. For countless American classrooms, Web 2.0 technology and tools enhance creativity, information sharing and collaboration for students as well as teachers. In fact, research shows teachers are driving the adoption of Web 2.0 in K-12 education (www. discoveryeducation.com, n.d). Teacher-oriented sites like Chalksite, Engrade, Groupvine, Nuvvo, Flickr and Eyespot have engaged students in ways not dreamt about a decade ago. Students whether through social networking (MySpace; Facebook), podcasting; user-generated content sites (YouTube), news feeds, widgets or mobile applications are ready to enhance learning inside the classroom with the tools they use every day outside of school. The use of web 2.0 by students is largely dependent on their mastery and ability to use these technologies and devices; just like the popular maxim: garbage in garbage out (GIGO); which means the results obtainable from a computer program solely depends on the information that is supplied to it. This explains why people have the same access to same devices and resources but some still complain of their inability to get the desired or anticipated results. It is due to their lack of technology know-how and self efficacy.

Bandura (1986) cited in Shu, Tu, & Wang (2011) defined self-efficacy (also known as *social cognitive theory* or *social learning theory*) as people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances, which is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses. Self efficacy arises from the complex cognitive, social, linguistic and or physical skills through experience. Self-efficacy is a dynamic construct that changes as new information and experiences are acquired (Saade & Kira, 2009). Lunenburg (2011), citing Bandura (1997) identifies four principal sources of self-efficacy: past performance, vicarious experience, verbal persuasion, and emotional cues.

Students' participation in the learning process with CBLEs (Computer Based Learning Environments) is associated with the perception of their capabilities related to specific computer skills and knowledge (Debowski, Wood & Bandura, 2001; Murphy, Coover, & Owen, 1989) as cited in Avezedo & Moos, 2009). This perception, referred to as computer self efficacy. Self-efficacy is derived from the Social Cognitive Theory (SCT). SCT accounts for the role of self-regulatory, self-reflective, cognitive, and vicarious processes in human behavioral adaptation (Avezedo & Moos, 2009). Avezedo & Moos (2009) affirm that central to this underlying assumption is Bandura's conception of reciprocal determinism, which suggests that human functioning is a dynamic interplay between environmental, behavioral, and personal influences. This dynamic interaction, termed triadic reciprocality, helps explain how individuals acquire and maintain certain behavioral patterns. Research has shown that different media forms do indeed help to foster and develop different cognitive skills. For instance, several experimental studies have shown that repeated computer game playing enhances selected attentional, iconic, and spatial representational skills (Subrahmanyam, Michikyan, Clemmons, Carrillo, Uhls & Greenfield, 2013)

Also, in many of the researches (Claggett & Goodhue, 2011; Avezedo & Moos, 2009; Barbeite & Weiss, 2004) carried out in the area; it is clear that students who felt more efficacious for problem solving demonstrated higher performance levels when compared with peers with lower self-efficacy, despite the fact that all of the students had equal ability, and that, there is a strong positive relationship between self efficacy and performance in various academic activities (Saade & Kira, 2009). Claggett & Goodhue (2011) stated that some people jump at computers and new Information System (IS) solutions enthusiastically, where others seem unnaturally resistant and convinced of their failures before beginning. These differences in what (Compeau & Higgins, 1995) described as computer self efficacy, is often independent of whether or not the individuals have the skills and abilities needed to perform particular tasks with computers.

Claggett and Goodhue (2011) identified two measures of self efficacy and tried to explain the difference between them. First, the Bandura's self-efficacy which emphasizes the generative capabilities of self-efficacy as distinct from skill capabilities; and second is Gist's self-efficacy which seems to emphasize self-assessment of skills. Bandura's self-efficacy construct focuses on a motivational factor that generates performance above and beyond any summation of relevant skills, by influencing emotional reactions, thought patterns, and the use of skills. Isolating this motivational factor would add new information to our understanding about system use (Claggett & Goodhue, 2011).

Computer anxiety has been defined as a fear of computers when using one, or fearing the possibility of using a computer and has been identified as one of the factors that affects an individual self-efficacy. Self-efficacy beliefs are developed based on four sources of information: previous experiences, observation of other's experiences, verbal persuasion, and affective arousal. Thus, anxiety, as an effective response has a direct influence on self-efficacy beliefs (Claggett & Goodhue, 2011). Theoretical and empirical evidence (Claggett & Goodhue, 2011), suggest that computer self-efficacy and anxiety may influence performance of computer-based tasks such as those involved in an online experiment.

Students' self-efficacy and use of web 2.0 technologies for learning

Dunn (2011) published a list of 100 most widely used web 2.0 tools submitted by students around the world. It was an update to the 2010 version of the list, which contained only 32 web 2.0 tools. The list keeps growing yearly through the effort of the edudemic internet group, at ensuring that all these tools are made known to the students and potential users all over the world. Tyagi and Kumar (2011) in their research found that the academic communities are quite interested to use social bookmarking, audio/video, and other Web 2.0 tools, with high degree of educational value; the reason why they are not yet popular among the academic communities in their learning process is because they do not have sufficient knowledge and skills to use them.

Dabbagh and Kitsantas (2011) pointed out that Web 2.0 has challenge the present day higher education, and challenging students to take charge of their own learning. This is in line with what (Tyagi & Kumar, 2011) referred to as "revenge of amateurs" as students no longer settle as consumers of knowledge anymore but they are rather the arbiter of their own knowledge. Also, efforts by faculty and students are creating new ways of teaching and learning leading to the emergence of constructs such as e-learning 2.0, pedagogy 2.0, student 2.0, faculty 2.0, and classroom 2.0, with the suffix 2.0 characterizing themes such as openness, personalization, collaboration, social networking, social presence, user-generated content, the people's Web, and

collective wisdom; demarcating areas of higher education where potentially significant transformation of practice is underway (Dabbagh & Kitsantas, 2011).

However in an investigation conducted by Clark *et al,* (2009); Cigognini, Pattenati, and Edirinsingha (2011); and cited by Dabbagh and Kitsantas (2011) on how adolescent students perceived and use Web 2.0 technologies in both formal and informal context. They observed that students use more of Web 2.0 technologies more during their free time than for academic purposes, and that the most common technology used was email to transfer files and seek help from teachers and peers. They concluded by saying students are not taking the full advantage of the benefit Web 2.0 technologies have to offer for formal learning, and suggests that for students to use Web 2.0 technologies as formal learning tools they training, support, guidance, and pedagogical interventions to make the best possible use of social media to support their learning goals.

Latterell and Deneen (2007) stated that, for an online/distance education program to succeed, one must know the technology as well as the content material, so that both may be merged into a symbiotic program instruction, learning, and collaboration. Akin and Hilbun (2008) proposed, proper support has been a key facet to the success stories in all of the previous articles, and continues to prove true in the case of e-mentoring. E-mentoring seems to be the natural progression of face-to-face mentoring, by utilizing cutting edge technology to supplant traditional in-person communication methods.

Many factors however, have been identified as influencing self efficacy among students and their use of web 2.0 for learning. Yuen, Yaoyuneyong and Yuen (2011) citing An and William (2010) found that teachers reported encountering three barriers when introducing Web 2.0 tools into the classroom environment: First, students' uneasiness with openness and public discourse and interaction. Second, technical difficulties related to students' lack of new computers, glitches due to the in-progress nature of many Web 2.0 tools, and lack of adequate technical support. And third, the extra time necessary to initially learn and then manage new Web 2.0 technologies, both for the instructor and for the students.

This supports prior findings by Crook and Harrison (2008) who report that "More than a third (37.4%) of teachers believe that adopting Web 2.0 resources would be time-consuming for them, and teachers frequently (18.7%) and occasionally (47.0%) find that student use of the internet in class can be hard for them to manage", (Yuen, Yaoyuneyong, & Yuen; 2011). Crook and Harrison (2008), as cited by Yuen, Yaoyuneyong, and Yuen (2011) identified other staff perceptions with the potential to act as barriers to the adaptation of Web 2.0 tools; these included: First, being the fear that Web 2.0 tools would act as a time burden impacting their already crowded schedule, second, the fear of becoming overly reliant on technologies that may not remain available (due to budgetary restrictions within the university, policy change in the service provider, financial collapse of the service provider, or due to technical failures that are beyond the instructors' control); third, fear that students with access to the internet would not stay on task; and fourth is, fear that technology in general will have a negative impact on education or society.

Objectives of the study

The general objective of this study is to investigate how undergraduate's self-efficacy affects their use of web 2.0 tools for learning in two universities in south-west Nigeria. The specific objectives of the study are to:

    i.   identify the Web 2.0 tools available to the undergraduates for their learning;

    ii.   investigate the level of self-efficacy of the undergraduates;

    iii.   determine the frequency of use of Web 2.0 tools for learning;

    iv.   identify the factors that promote the use of Web 2.0 tools for learning; and

    v.   identify the factors that militate against the use of Web 2.0 tools for learning.

Methodology

The study focused only on undergraduates in the Faculties that are common to the two universities under study, namely University of Ibadan and Obafemi Awolowo University in south-west Nigeria. The Web 2.0 tools that were considered in the study included Blogs, Wikis, Social Networking, Video Sharing, Collaborize Classroom, Google Doc and Online Journaling tools. The descriptive survey research method was considered most appropriate for this study. Questionnaire was developed for the purpose of collecting relevant and required pieces of information from the respondents drawn from the population of study. The study aimed at collecting relevant data on effect of students' self-efficacy on the use of web 2.0 tools for learning. For the purpose of this study all the Faculties common to both institutions were identified, which resulted to nine faculties with a total of 28309 undergraduate students. A random selection of five of these faculties was done (i.e, Law, Arts, Education, Science, and Social science) resulting in 1910 undergraduate students as at the time the research. Systematic random sampling was used to draw a sample of 275 undergraduate students for the study; analysis of the data collected was done using simple frequency tables, charts and percentages for presenting the findings of the study. The hypothesis was tested using Pearson Product Moment Correlation at a 0.05 significant level.

Findings
The findings of the study as presented are derived from the analysis of data collected from undergraduates, the findings are presented separately in terms of the results from the survey of undergraduates.
Self efficacy of undergraduates

The study revealed that most of the undergraduate students at the University of Ibadan (mean = 2.82) and Obafemi Awolowo University (mean = 3.01) had a high level of self-efficacy, but the students of Obafemi Awolowo University had a higher level of self-efficacy. (see Table 1)

Institution	Very low (%)	Low (%)	High (%)	Very High (%)	Mean
University of Ibadan	2.6	25.9	58.7	12.8	2.82

Obafemi Awolowo Univerisity	9.8	19.9	41.9	29.0	3.01

Web 2.0 tools available to undergraduates of the two universities

The finding revealed that in the University of Ibadan, social networking (mean = 4.85) and wikis (mean = 4.64) were the most available web 2.0 tools, while video sharing (2.25%) and collaborized classroom (2.11%) were least available web 2.0 tools to the students. At the Obafemi Awolowo University, findings showed that social networking (mean = 4.37) and Google Docs (mean = 3.62) were the most available web 2.0 tools, while collaborized classroom (mean = 2.47) and online journaling (mean = 2.69) were the least available web 2.0 tools to the students. (see Table 2)

Institution	Web 2.0 tools	Not available		Occasion ally available		Readily available		Very readily available		Mean
		No	%	No	%	No	%	No	%	
University of Ibadan	Blog	1	0.9	8	7.5	22	20.8	75	70.8	4.53
	Wikis	1	1.0	3	2.9	25	23.8	76	72.4	4.64
	Social networking	0	0	1	0.9	13	12.3	92	86.8	4.85
	Video sharing	7	6.9	72	70.6	13	12.7	10	9.8	2.75
	Collaborized classroom	31	29.5	65	61.9	3	2.9	5	5.7	2.11
	Google Docs	3	2.8	6	5.6	31	29.0	67	62.6	4.46
	Online journaling	3	2.9	39	37.1	54	51.4	9	8.6	3.53
Obafemi Awolowo University	Blog	33	22.4	35	23.8	46	31.3	33	22.4	3.08
	Wikis	31	21.1	26	17.7	46	31.3	44	29.9	3.32
	Social networking	3	2.0	16	10.5	41	26.8	93	60.8	4.37
	Video sharing	36	26.5	43	31.6	34	25.0	23	16.9	2.76
	Collaborized classroom	53	38.4	37	26.8	33	23.9	15	10.9	2.47
	Google Docs	21	13.6	29	18.8	47	30.5	57	37.0	3.62
	Online journaling	39	27.1	50	34.7	35	24.3	20	13.9	2.69

Frequency of use of Web 2.0 tools for learning by undergraduates of the two universities

The results obtained from data analysis showed that social networking (mean = 4.88) and wikis (mean = 4.59) were the web 2.0 tools used most frequently by the undergraduate students in the University of Ibadan, while video sharing (mean = 2.52) and collaborized classroom (mean = 1.90) were rarely used. For the undergraduate students of Obafemi Awolowo University, the findings shown on Table 4.6 revealed that social networking (mean = 4.41) and Google Docs (mean = 3.35) were most frequently used, while collaborized classroom (mean = 2.250 was the least frequently used among the web 2.0 tools by the students. (see Table 3)

Institution	Web 2.0 tools	Daily		Weekly		Monthly		Rarely		Mean
		No	%	No	%	No	%	No	%	
University of Ibadan	Blog	79	76.2	19	18.1	5	4.8	2	1.9	4.60
	Wikis	80	75.5	19	17.9	4	3.8	3	2.8	4.59
	Social networking	94	88.7	11	10.4	1	0.9	-	-	4.88
	Video sharing	3	2.9	11	10.7	79	76.7	10	9.7	2.52
	Collaborized classroom	3	2.9	1	1.0	62	59.1	39	37.1	1.90
	Google Docs	54	50.9	39	36.8	5	4.7	8	7.5	4.23
	Online journaling	4	3.8	40	38.5	55	52.9	5	4.8	3.26
Obafemi Awolowo University	Blog	34	23.6	28	18.1	43	29.9	41	28.5	2.83
	Wikis	38	26.0	28	19.3	40	27.8	39	26.9	2.95
	Social networking	110	70.5	23	14.7	18	11.5	5	3.2	4.41
	Video sharing	15	10.7	16	11.4	63	45.0	46	32.9	2.28
	Collaborized classroom	19	14.2	12	9.0	46	35.1	57	42.5	2.25
	Google Docs	52	33.3	38	24.4	39	25.0	27	17.3	3.35
	Online journaling	17	11.9	15	10.5	60	42.0	51	35.7	2.28

Factors that promote the use of Web 2.0 tools for learning by undergraduates of the two universities

Findings revealed that most of the students at the University of Ibadan agreed that enhanced internet connectivity (100%), adequate power supply (97.2%), supportive hardware devices (98.1%), class assignment requiring web 2.0 (100%), low cost of internet bundle (99.1%), technology awareness programmes (100%), and low cost of hardware (99.1%) were the factors promoting the use of web 2.0 tools in their institution. Finding from Obafemi Awolowo University, revealed that most of the students in the university agreed that all the factors promote the use of web 2.0 among them. (see Table 4)

Institution	Factors	Agree		Disagree	
		No	%	No	%
University of Ibadan	Enhanced internet connectivity	107	100	0	0
	Adequate power supply	104	97.2	3	2.8
	Supportive hardware devices	104	98.1	2	1.9
	Class assignment requiring web 2.0	107	100	0	0
	Low cost of internet bundle	106	99.1	1	0.9
	Technology awareness programmes	107	100	0	0
	Low cost of hardware	106	99.1	1	0.9
Obafemi Awolowo University	Enhanced internet connectivity	154	98.8	2	1.2
	Adequate power supply	139	89.1	17	10.9
	Supportive hardware devices	138	90.8	14	9.2
	Class assignment requiring web 2.0	143	92.9	11	7.1
	Low cost of internet bundle	130	84.4	24	15.6
	Technology awareness programmes	144	93.6	10	6.4

	Low cost of hardware	136	87.1	20	12.9

Factors that militate against the use of Web 2.0 tools for learning by undergraduates of the two universities

As shown on Table 4.8, findings from the study revealed that most of the students at the University of Ibadan agreed that poor internet connectivity (100%), inadequate power supply (96.2%), high cost of hardware devices (99.1%), high cost of internet bundle (97.2%), and the complexity of using modem (96.3%) were challenges to the use of web 2.0 tools. Similarly, most of the undergraduates at Obafemi Awolowo University agreed that all these challenges militate against the use of web 2.0 tools in their university (see Table 5)

Institution	Challenges	Agree		Disagree	
		No	%	No	%
University of Ibadan	Poor internet connection speed	107	100	-	-
	Inadequate power supply	103	96.2	4	3.8
	High cost of hardware devices	106	99.1	1	0.9
	High cost of internet bundle	104	97.2	3	2.8
	Complexity of using modem	103	96.3	4	3.7
Obafemi Awolowo University	Poor internet connection speed	150	96.1	6	3.9
	Inadequate power supply	136	86.7	21	13.3
	High cost of hardware devices	133	84.8	24	15.2
	High cost of internet bundle	127	80.9	30	19.1
	Complexity of using modem	99	63.1	58	36.9

Research hypothesis: There is no significant relationship between the self-efficacy of undergraduates and their use of web 2.0 tools for learning at the two universities.

To test this hypothesis, the Pearson Product Moment Correlation (PPMC) was used in order to establish if a relationship exists between self-efficacy of undergraduates and the use of web 2.0 tools for learning in the two universities. The Result of the statistical analysis revealed that there was a negative relationship ($r = -.34$) between self-efficacy and the use of web 2.0 tools, but the relationship was not significant as $P < 0.05$ level of significance. Therefore, the null hypothesis is accepted as there was no significant relationship between the two variables.

Variable	Mean	Std. Deviation	N	r	p	Df	Remark
Frequency of use	18.5154	4.09332	227				
				-.034	.610	228	Not significant
Self-efficacy	28.6506	4.34224	269				

Conclusion and Recommendations

It is no doubt that undergraduate use web 2.0 for learning, since students have to learn and make use of web 2.0, there is need for them to develop a level of self efficacy to be able to use web 2.0 tools effectively for learning. The following are being recommended by the study.

1. University Managements should encourage undergraduate students to utilize their high self-efficacy by using web 2.0 tools for learning in their institutions.

2. Lecturers in universities should use web 2.0 tools to facilitate teaching and learning in their institutions. Since web 2.0 creates a student-centered approach to teaching, and most of the students already use web 2.0 daily, the technology will be a channel that will greatly enhance teaching and learning effectiveness in the university system.

3. Factors that enhance the use of web 2.0 for learning, such as adequate internet connectivity and power supply should be improved upon by the authorities of the universities for better use of web 2.0 tools for learning.

4. Undergraduate students should endeavor to improve on their self-efficacy by acquiring more technical knowledge in order to guard against challenges such as the complexity of using a modem. This will go a long way to facilitate their learning in the present century.

References

Abulibdeh E.S., and Hassan S.S. 2011. "E-learning interactions, information technology self efficacy and student achievement at the University of Sharjah, UAE" *Australasian Journal of Education Technology,* 27.6.

Abdullah L., Azhan H.N., Saman Y.M., Mahamad N.M., & Mohd W.A. 2013. The use of web 2.0 in e-learning: evidence from a public university in Malaysia. *International conference for e-learning & distance education.*

Akin, L. & Hilbun, J. 2008. E-mentoring in three voices. Online journal of distance learning administration.

Alexander B. 2006 "Web 2.0 learning and teaching: a new wave of innovation for teaching and learning" Educause review.

Anderson P. 2007. What is Web 2.0? Ideas, technologies and implications for education. JISC Technology and Standards Watch. http://21stcenturywalton.pbworks.com/f/What%20is%20Web%202.0.pdf

Arsad N. M. et al, 2013 Use of Web 2.0 applications by teachers. Senior schools science education journal.

Avci, U., & Askar, P. 2012. The comparison of the opinions of the university students on the usage of blog and wiki for their courses. *Educational Technology & Society*, *15*.2, 194–205.

Azevedo R. & Moos C. D. 2009. Learning with Computer-Based Learning Environments: A literature review of computer self-efficacy. *Review of educational research*, 79.2, pp. 576-600.

Banister, S. 2008. Web 2.0 tools in the reading classroom: Teachers exploring literacy in

the 21st century. *International Journal of Technology in Teaching and Learning*, 4.2, 109-116.

Barbeite F. G. & Weiss E. M. 2004. Computer self-efficacy and anxiety scales for an Internet sample: testing measurement equivalence of existing measures and development of new scales. Computers in Human Behavior 20 pp. 1 – 15.

Carstensen T. 2008. Gender trouble in web 2.0. gender perspectives on social network sites, wikis and weblogs.

Carstensen T. 2009. Gender trouble in web 2.0: gender relations in social network sites, wikis and weblogs. *International Journal of Gender, Science and Technology 2009, 1.1*

Claggett J. L. & Goodhue D. L. 2011. Have is researchers lost Bandura's self-efficacy concept? A discussion of the definition and measurement of computer self-efficacy. Proceedings of the 44th Hawaii International Conference on System Sciences.

Clay D. 2009. Web 2.0 definition, usage, and self-efficacy: a study of graduate library school students and academic librarians at colleges and universities with ala accredited degree programs. PhD. Thesis. Department of educational leadership, policy, and technology studies University of Alabama.

Crook C. & Harrison C. 2008. Web 2.0 Technologies for learning at key stages 3 and 4: Becta journal report. http://dera.ioe.ac.uk/1474/1/becta_2008_web2_currentlandscape_litrev.pdf

Dabbagh, N., & Kitsantas, A. 2011. Personal learning environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning, Internet and Higher Education.

Dabbagh, N. & Reo, R. 2011. Impact of Web 2.0 on higher education. In D. W. Surry, T. Stefurak, & R. Gray (Eds.), Technology integration in higher education: Social and organizational aspects.

Dede C. 2009. Technologies that facilitate generating knowledge and possibly wisdom. *Educational Researcher* 38.4.

Dunn J. 2011. The 100 best web 2.0 classroom tools chosen by you. Retrieved Feb. 12, 2014, from http://www.edudemic .com

Hoffman C. 2008. Information Literacy and social media: selected practices and discourses. *Librarians' Forum*.

Latterell, C. M. & Deneen, L. 2007. Evaluating a Program to Increase Faculty Use of Technology in Teaching and Learning. E-JIST 9.2.

Lunenburg F. C. 2011. Self-Efficacy in the Workplace: Implications for Motivation and Performance. *International journal of management, business, and administration* 14. 1

Maloney E. J.2007. What Web 2.0 can teach us about learning. *The Chronicle of Higher Education (Information technology* 53.18.

Saade R. G. & Kira D. 2009. Computer anxiety in e-learning: The effect of computer self-efficacy. *Journal of Information Technology Education, 8.2*

Shu Q., Tu Q. & Wang K. 2011. The impact of computer self-efficacy and technology dependence on computer-related technostress: a social cognitive theory perspective. *International Journal of Human-Computer Interaction*, 27.10, 923-939.

Subrahmanyam K., Michikyan M., Clemmons C., Carrillo R., Uhls Y.T. & Greenfield P.M., 2013. Learning from screens: Impact of screen reading and multitasking conditions on

reading and writing among college students. *International Journal of Cyber Behavior, Psychology and Learning*, 3.4, 1-27.

Tyagi S. & Kumar K. 2011. Web 2.0 for teaching, learning and assessment in higher education: A case study of universities in Western Uttar Pradesh (India)**.** *International Journal of Library and Information Science* 3.11.

www. discoveryeducation.com/web2.0 .

Yoo, S. J., & Huang, W.H. D. 2011. Comparison of web 2.0 technology acceptance level based on cultural differences. *Educational technology & society*, 14 .4, 241–252.

Yuen, S. C. Y., Yaoyuneyong, G., & Yuen, P. K. 2011. Perceptions, interest, and use: Teachers and web 2.0 tools in education. *International journal of technology in teaching and learning,* 7.2, pp.109-123.