Internet Usage by University Academics: Implications for the 21st Century Teaching and Learning

Maria Tsvere[1], Tendayi Leonora Nyaruwata[2], Srikanta Swamy[3]

[1]Chinhoyi University of Technology, Institute of Life Long Learning,
Off Chirundu Road, Chinhoyi, Zimbabwe

[2]Zimbabwe Open University, Higher Degrees Directorate,
9 George Silundika Avenue, Harare, Zimbabwe

[3]Christ University, Center for Research, Bangalore,
Hosur Road, Banaglore-560029, India

Abstract: ***Information Technology is driving transformative pedagogy in both lower and higher education institutions. This paper discusses internet usage patterns among university academics before advancing to explore how to improve these aspects in the context of education. This descriptive survey collected data from a random sample of 440 university academics in Zimbabwe. Academics use the internet for research more than they did for teaching purposes. Statistical analysis of data revealed gender differences in internet access. Age and experience were found to explain differences in usage among university academics. Educational implications of these findings in relation to advancing development of 21st century skills through Information Technology in tomorrow's leadership and drivers of country's economic growth were highlighted. The study recommends a transformation of university teaching practice through technology based holistic models that encompass creative and innovative Webogogy and facilitative content delivery for better performance in higher educational institutions. The paper advocates for university management to promote Technology based teaching practice in universities, fund and develop formal training programmes to upgrade internet search and webagogy skills of academics.***

Keywords: Internet, internet use, transformative pedagogy, electronic resources, Zimbabwe

1. Introduction

Information and communication technology is the largest single source of information that is easily accessible to learners and education globally (Schmidt and Cohen, 2013 [1]; Maheswarappa and Ebnazar, 2003) [2]. This paper adopts the definition of the internet by Clarke (2000:3) [3] who views the internet as a global computer network of connected server computers, that facilitated connectivity for millions of client computers worldwide, with access via a modem or cable and or wireless application protocol and I-mode (a continuous access to wireless internet via mobile phones).

Downes (2010) [4] explains that the internet and Web 2.0 has brought in new technologies that if well utilized can transform the current teaching practice. The internet is redefining 'literature' and 'literature search techniques' in academic literature review process and the meaning of 'fieldwork' as it is used in qualitative research. The emergence of Millennials in institutions of higher learning is also pushing for transformation pedagogy. These are learners who are shaped by the environment which they are exposed to, which in this case, is a media rich, immediate , fast, engaging, dynamic and instant (Churches, 2009 [5]; Clarke, 2000) [3]. This is a group that is experiencing a shift from use of print media libraries to electronic media and electronic media libraries. Potter (2010) [6] posits that information posted on the internet, which students quote, may be misleading, biased and inaccurate.

Churches (2009:9) [5] posits that 21st century pedagogy and learning focuses on moving students from lower order to higher order thinking skills...from knowledge acquisition through knowledge deepening to knowledge creation. This report is part of PhD study that is investigating competencies of university lectures in relation to internet usage. This paper therefore provides in part, some of the emerging research findings. The study was partly motivated by the growing concern that university academics are not adequately using the internet (Omotayo, 2010 [7]; Adika, 2003) [8]. With as low national usage rate as 14% this study was also motivated by the sparse visibility of Zimbabwean academics on the World Wide Web and very low visibility of academic output in the university websites.

2. Importance of the Study

The teaching learning environment has always involved resource search and collection by all classroom practitioners. The internet is changing the manner in which academics teach, conduct research and disseminate research findings. The 21st century teacher scaffolds the learning of students, building on the basis of knowledge (recall) ... applies skills: to analyse and evaluate process, outcomes and consequences ... to create and innovate (Churches 2009:9) [5]. (Churches 2009) [5] argues that one can only apply knowledge when one understands concepts involved. Educational institutions' librarians are playing the role of information discovery and access facilitators. With the advent of the Internet and Web technology, search engines are fast replacing the role of physical libraries. Google has since superseded any existing

library catalogue and other online citation databases (Schmidt and Cohen, 2013) [1]; Griffiths and Brophy, 2005 [9]; Rieger, 2009) [10].

If the internet is causing these changes then internet usage in academic environment becomes a topical issue which should attract attention of researchers. Iffeoma and Olusola (2013) [11] argue that teachers must change their current teaching practices if they are to develop in learners the necessary 21st century skills. This is why it is necessary to understand user interactions with search engines, search context and tasks that drive users to search information. A sound understanding of how academics use the internet and e-resources informs staff developers on how best academics can help students and themselves get the best out of the internet. That knowledge would also help academics improve the quality of university education by improving delivery, students' assignments and their research papers because their search capacity and practice would have been improved.

3. Research Objectives

The overall objective of this study was to investigate internet usage patterns among university academics. The study had three specific research objectives which were to:

- Analyse how academics access information from to the internet
- Establish why university academics use the internet.
- Investigate how internet usage varied with demographic variables of university academics.

4. Hypotheses

- There is no gender relationship between access to computers and gender
- Internet usage is independent of demographic characteristics of university academics.

5. Literature Review

The World Wide Web is defined as a network of interlinked pages displaying text, hypertext, images, sound, video and data (Clarke, 2000:3) [3]. The Web provides information that includes commercial promotional goods, government official reports and debates, health services, newspapers, advertisements and junk (Schmidt and Cohen, 2013 [1]; Clarke, 2000) [3]. Journals, databases, software, virtual libraries as well as learning and teaching materials, are also provided by the Web (Clarke, 2000) [3]. Portals are sites that integrate information from many servers and companies and act as gateways to pre-selected, though user customizable news, information and online services (Clarke, 2000: 3) [3]. Academics and learners benefit from Search engines, file transfer protocols and portals internet services.

The internet is expanding the bounds of the research field as this technology enables researchers to conduct qualitative research beyond the bounds of real-time, single location physical settings into the realm of cyberspace (Nardi, 1996) [12]. Clarke (2000) [3] explains that Internet-mediated synchronous communication enable researchers and teachers to communicate via e-mail (text or web based) and Use/Net or Newsgroups for online focus group discussions. Synchronous internet mediated communication allows teachers to make students to experience real-time, interactive text based discussions. Learners can discuss assignments using focus groups. Researchers may also use the Internet Relay Chat (IRC) channels to collect data through real- time online observation and focus group text based discussions. Harrison (1997) [13] suggests that Synchronous Multi-User Dungeons (MUDs) have the potential for researchers to set up virtual 'places' to facilitate collaboration. Turkle (1998) [14] found them useful for online participant observation.

Internet use has therefore become an interesting area of study particularly for librarians and academic researchers. Adika (2003) [8] supported by Olubanke and Bankole (2013) [15] established that majority of academics had limited access to the internet. They accessed internet from cyber café which they use mainly for e-mailing (Olubanke and Bankole, 2013) [15]. Parameshwar and Patil (2009) [16] found that faculty members accessed the internet from the faculty more than the library and the computer laboratories. Egberongbe, 2011 [17]; Munusamy and Ismail, 2009) [18]; Mulla, (2011) [19] found that faculty members used the internet daily.

Studies on internet use reveal that faculty members found information through search engines and Web resources (Thanuskodi, 2011 [19]; Thanuskodi and Ravi, 2011 [20]; Egberongbe, 2011 [17]; Bhatti, 2010 [22]; Al Ansari, 2006) [23]. Olubanke and Bankole (2013) [15] reveals that academics used Google, Yahoo and Google Scholar to locate information. Bhatti (2010) [22] also reports that they also used Alta Vista and Google Scholar. Adika, 2003) [8] concluded that faculty members were not able to use Meta search engines. Often scholars use references from the first two pages of a list of authors from any search engines, believing that those are the most relevant information (Potter (2010) [6]. This has a serious implication in terms of educational practice as students use search engines as well to find information for their studies and projects.

Potter (2010) [6] explains that search engines weight sources according to words used by the search words typed. Google Scholar winnows out irrelevant non academic information. Bing is a decision engine that includes source filter tools on video search result pages. Government cites (www. Government.gov) provide official information. Potter (2010) [6] warns that some websites identified with a (~) symbol such as (http://www.name.edu/~name) which are often home built, may contain misleading and or biased facts. Websites from commercial sites (corporate name (.com) sites provide useful information Potter (2010) [6].

Majority of the academics use the World Wide Web as an information resources rather than a platform to publish their material and share their knowledge using blogs or wikis (Tsvere, Swamy and Nyaruwata, 2013) [24]. Tsvere et al., (2013) [24] found that 88% of Zimbabwean university academics did not have personal web pages and only 5.5% were able to confidently create and edit a wiki page or home page. Potter (2010) [6] moved that this day of information

age requires people with new thinking skills to be able to evaluate information they find on the Web. Academics need to nurture learners' minds so that they develop skills to critically interact with internet information. If university scholars lack critical thinking skills, then they may continue to reference sources without evaluating the appropriateness, relevancy and accuracy of the information they quote and use as lecture notes.

University academics and scholars were reported to find it appropriate to use resources through open search engines or subject gateways and Internet Public Library and university information hubs such as SOSIG and ALTIS. Majority of academics were reported to use e-journals more than e-books (Egberongbe, 2011) [17]. Tyagi, 2011) [29] found that academics use the internet to write research papers. Research shows that faculty members used the internet for research more than anything else (Thanuskodi, 2011 [20]; Thanuskodi and Ravi, 2011 [21]; Mulla, 2010 [19]; Ansari and Zeburi, 2010 [25]; Salaam, Ajiboye and Bankole, 2013 [26]; Parameshwar and Patil, 2009 [16]; Bhatti, 2010 [22]; Al Ansari, 2006) [23]. Ojedokun and Owolabi, 2003 [27]; Larose, David, Dirand et al, (1999) [28] had also found out that Botswana and Québec University academics respectively, used the internet for research and not for teaching purposes.

Academics were also found to be using the internet to update their subject knowledge (Tyagi, 2011 [29]; Thanuskodi and Ravi, 2011 [21]; Mulla, 2011 [19]; Al-Ansari, 2006) [23]. Academics also use the internet to share information with colleagues (Al Ansari, 2006) [23]. Bhatti, 2010 [22] found out that use of internet for recreation or social communication was limited. Munusamy and Ismail (2009) [18] report that internet use was gendered with women using the internet for e-mailing, chatting, locating online medical information and men reading on investments or online shopping. Munusamy and Ismail (2009) [18] established that male academics used the internet more frequently than females in private universities.

All these studies made no reference to either study on internet use in Zimbabwe nor did they quote Zimbabwean academic researchers or library research on internet use in Zimbabwean university context which this study addressed.

6. Materials and Methods

The objectives of this study required an accurate impartial description of activities of people in their natural setting. Answers to the research questions were therefore obtained by using a quantitative descriptive survey research design. Data was collected from 440 full time university academics that were selected using simple random sampling technique. Data was collected through a pilot tested structured questionnaire with Likert type of response format. The instrument was validated using expert opinion and pilot tested for item internal consistency. After instrument validation, the questionnaire was administered in person to the sample to improve response rate and ensure that all questions were answered.

Data collected was analysed statistically using SPSS version 16.0. Descriptive methods were used to summarise the results. Non parametric methods of data analysis were used to establish possible relationships between the variable internet use and demographic variables gender, age, grade, experience in higher education and experience in using the internet. Multiple regression analysis using the enter methods and ANOVA tests were performed to identify demographic predictors of internet use. An independent t-test statistic was performed to determine the relationship between gender and internet use.

7. Findings and Discussion

7.1 Access and frequency of internet use by academics

Most academics (50.9% males, 36.1% females) had access to computers in university offices that were connected to the internet. Some academics had access to computers at home (75.7%). Table 1 summarises places where academics had access to computers and the internet.

Table 1: Summary of access points

Access Points	*Access to Computers*		*Access to the Internet*	
	Yes	*No*	*Yes*	*No*
Offices	88.0%	12.0%	87.0%	13.0%
ICT laboratory	68.2%	31.8%	66.8%	33.2%
Library	73.9%	26.1%	70.7%	29.3%
Mobile phone	69.8%	30.2%	68.0%	32.0%
Home	75.7%	24.3%	44.8%	55.2%
Cyber café	39.1%	60.9%	58.0%	42.0%

Only 28.0% males and 16.8% female of those with access to computers at home also had access to the internet. Use of high tech gadgets like tablets was still very low among University academics. At the time data was collected, only males (0.06%) had a tablet that had access to the internet. Access to computers was largely on desk top computers than such technologies as tablets. The majority had access to internet on their mobile phones; almost a third of the academics did not define their mobile phones as computers. Some of the academics' mobile phones were not connected to the internet (19.1 % males, 12.9% females).

7.2 Internet usage patterns

Almost half of the respondents reported working late using the internet. About one fifth (24%) of the academics reported that they often stayed late on the internet and 24.1% were always kept late using the internet. The study reveals that academics spent on average, four hours in any given day with a minimum of one hour and a maximum of five hours per day. Younger academics stayed slightly longer on the internet than older academics (mean 4¼ and 3½ hours respectively).

About 40.5% of the academics reported that they always used the internet to find information for preparing teaching material; 33.4% often use the internet to prepare lectures and 20% sometimes use it for this purpose. Twenty percept of the academics reported that they sometimes use the internet to prepare presentations such as Power Point Presentations;

35.9% often use it for this purpose and 3.1% always use the internet for making PPTs. Most of university academics (58.9%) reported that they had not yet delivered lectures or presentations online; 12.3% sometimes did and 4.3% always delivered lectures online.

Thirty percent sometimes used the internet to give feedback to students; 8.91% always did give feedback online; 29.1% had not yet used this tool to give feedback to students. Again 8.9% of the respondents reported that they always used internet based social media to communicate with students, 43.0% seldom or had not yet used social media to communicate with students. The majority of university academics (50.7%) had not yet used online assessment tools to assess university students. Only 2.7% said they always use online assessment tools such as Moodle. Almost a third of the academics (33.2%) reported that they had not yet also used the internet based social media to chat with fellow academics, a fifth of the respondents sometimes did chat with other academics online; 8.4% always used the internet based social media to chat with other academics. Almost half of the respondents (47.7%) used the internet to chat with friends.

More than half of the respondents (63.4%) were taught to use the internet by friends or colleagues; 39.5% used trial and error method; 20.7% used the internet help facility and, 10.9% online tutorials. Seventy percent of those academics who were taught by friends reported that they used the internet for preparing teaching materials; 13.6% seldom delivered lectures online while the majority (61.2%) had not yet delivered a lecture online. The majority of this group did not use online assessment tools (47.3 or seldom did (26.5%); 24.1% used internet to chat with colleagues online and 20.8% share knowledge online. Of group that learnt to use the internet through formal university training, 47.6% used internet to prepare teaching materials, 27.6% did but 56.5% of that group had not yet delivered a lecture online; 4.7% always delivered lectures online and 17.6% used online assessments.

All respondents used general search engines to find information they needed. The majority (71.4%, 42.8% males), reported that they always use Google. A few (24.5%, 10% females) academics reported that they used Google Scholar. More than seventy percent (76.4%) of those academics who learnt to use the internet through formal university training reported that they used Google search engine to locate information; 50% used Google. Scholar and 85.3% of them had not yet used such Meta search engines as WebCrawler.

Table 2: Summary of e-resources used by academics

E-resources	*Frequency of use*				
	1	*2*	*3*	*4*	*5*
e-Journals	33.4	27.7	15.2	6.1	17.5
e-books	24.8	24.5	17.3	7.0	26.4
e-encyclopaedia	11.6	8.2	20.5	10.0	49.8
e-dictionaries	13.0	9.8	20.0	11.4	45.9

1= Always; 2= often; 3 = sometimes; 4 = seldom; 5 = not yet

Meta-search engines were least popular among university academics. The majority (89.8%) had not yet used Web crawler, 95.0% had not used Ithaki and all respondents had not used IxQuick or Vivismo or any other Meta-search engine. Table 2 is a summary of e-resources accessed and used by university academics. Most academics refer to e-journals more than other e-resources.

Almost 40% (39.5%) always accessed educational information from the internet; 29.5% sometimes used the internet as a resource and 17.7% sometimes did use the internet for this purpose. The majority (40%) of the respondents had not yet shared their knowledge on the Web; 24.5% did and five percent always shared their knowledge on the Web. Almost a third (30.5%) of the respondents reported that they had not yet published journal articles online; 17.5% always published their research articles online and 21.6% sometimes used the online publishing facility. The majority of academics (55.2%) reported that they used the internet for personal development. The majority of academics who were taught to use the internet by their friends or colleagues (50.5%) used internet for personal development and 31.9% used the internet to publish articles.

7.3 Hypotheses testing

A significant but weak positive relationship between access to a computer and gender was established (χ^2=4.63 (*df* 1); V=0.10, p<0.03). Male academics had more access to the computers than female academics. The analysis found no significant gender relationship between gender and access to the internet. An independent samples t-test on relationship between gender and frequency of using the internet also revealed no significant gender difference. An ANOVA test regarding time spent on the internet and variable age revealed a significant weak relationship (F=3.87, p<0.01). Experience in using the internet was also positively related to the average time academics spent on the internet on any given day (F =12.5, χ^2 (*df* 12) = 42.06, Pearson R = 0.28, p<0.00) although the relationship was weak. More experienced academics spent more time on the internet than those with less internet experience (D = 0.24, p<0.00).

The variable internet use was measured with 12 items with internal consistency measure Cronbach's Alpha value of 0.83. The multiple regression initial ANOVA test result indicated a significant model for demographic variables being predictors of internet usage (F=13.89, p<0.00 using α<0.05). The regression analysis showed that the number of years an academic spent in higher education, lecturer grade and gender were not significant predictors of internet usage as both *p* values were greater than 0.05 at 95% level of significance.

Table 3: Output of the Regression analyses of internet usage against three resulting independent variables

Variable	B_0	*Beta*	*Sig.*	R^2	*F*
Constant	2.88		0.00		
Age in complete years	- 0.20	- 0.23	0.00		
Experience in using the internet	0.18	0.27	0.00	0.129	32.40
Predictor: (Constant), Experience in using the internet, age in complete years; Dependent variable: Internet usage					

After the three variables were dropped as predictors, a highly significant regression model at 95% level of confidence was obtained (F = 32.4, p<0.00). Table 3 is a summary of the final regression model output. The model revealed that 12.9% of internet usage was explained by age of respondents and their experience in using the internet (Table 3). The β coefficient was highly significant at 95% level of confidence (t=-5.2 age and 6.1 internet experience) respectively, p<0.00).

Younger academics used the internet to prepare lectures more than older academics did (χ^2 (*df* 12) = 27.48, p<0.01, Somers D=-0.16, p<0.00. Younger academics also used the internet to deliver lectures online more than older academics (χ^2, *df* 12 = 22.92, p<0.03). Again those with more years of internet experience used the internet to prepare lectures more than the less experience academics (X^2 = 51.22, *df* 12, p<0.00). More males used the internet to give students feedback than females. Use of the internet for assessing students online was independent of internet experience but chatting online with other academics was related to experience in higher education. The younger lecturers used the internet to chat with students more than the older academics

7.4 Discussion and Conclusions

This study found that Zimbabwean university academics have access to computers and the internet from their workplaces more than they have from home. Parameshwar and Patil (2009) [16] found that faculty members accessed the internet from the faculty more than the library and the computer laboratories. Mulla (2010) [19] found that only 20% of the respondents had limited access to computers.

The findings were similar to reports by Parameshwar and Patil, 2009 [16]; Thanuskodi and Ravi, 2011 [21]; Mulla, 2011 [19]; Batti, 2010) [22] in that faculty members used the internet for research and teaching more than they use the net for entertainment. Ojedokun and Owolabi, 2003 [27]; Larose et al, 1999 [28] found that faculty members only used the internet for research. Ojedokun and Owolabi (2003) [27] had noted that faculty members were not using the internet to send notes to students while Batti, 2010 [22] revealed that faculty members used the internet more for writing research papers but less for sending the research articles for publishing. The use of internet for various purposes was associated with how the academics learnt how to use the internet for research purposes than it was for teaching purposes. Thanuskodi, 2011 [20]; Batti, 2010 [22], Larose et al, 1999 [28]; Ojedokun and Owolabi, 2003 [27] confirm this finding by noting that faculty members needed more training on how to use the internet.

The trainings seem to have less of using the internet as a teaching tool. This finding is supported by Churches, 2009 [5]; Rieger, 2009 [10]; Iffeoma and Olusola (2013) [11] by noting that teachers need training on how to use the internet for teaching. Iffeoma and Olusola (2013) [11] argue that teachers must change to suit the demands of the teaching in the twenty first century. Using internet as a teaching tool is a skill and an art that requires training. Synchronous or asynchronous internet-mediated communication systems have an advantage of connecting teachers who may be separated from their students by time zones or disadvantaging work schedules to interact.

Health related and social qualitative studies that deal with sensitive issues make use of this service to obtain responses that are well thought out, more honest responses (Clarke, 2000) [3]. Asynchronous communication provides learners or research subjects enough time to reflect and edit their responses before sending them facilitating the production of expressions, ideas and intentions (Clarke, 2000) [3]. Effective communication requires that the teacher or researcher is able to deal with limitations regarding sound and visual cues which may manifest through loaded text and offensive text messages. This then requires that teachers and researchers to have skill in managing text-based conflict management.

That contradicts findings by Munasamy and Ismail (2009) [18] who found that women used the internet more for chatting and e-mailing more than males. This study found that chatting online was related to age and experience in using the internet. This study finding found significant gender difference although a higher percentage of male academics reported using social media for chatting with friends. This study also found significant gender difference in using the internet for giving students feedback; more male academics used the internet for this purpose than female academics. Again more males used the internet to publish journal articles than female academics.

This study found that university academics find information through search engines, Google being the most popular search engine. The finding was similar to reports of Thanuskodi and Ravi, 2011[21], Egberongbe, 2011 [17], Olubanke and Bankole, 2013) [15]; Parameshwar and Patil, 2009) [16]. Olubanke and Bankole, (2013) [15] also found that faculty members used Google, yahoo and Google, Scholar. A higher percentage of female academics used Google. Scholar and lacked the skill to use meta- search engines. Parameshwar and Patil, 2009 [16] found that faculty members preferred to use Google search engine. Zimbabwean university academics' use of meta-search engines was low. Luan, Aziz, Yunus et al., (2005) [30] supports this finding in that their study found significant gender differences related to use of search engines and file uploads.

Luan et al., (2005) [30] suggest that females use the internet to search and to download information more than men. Reasons for low use included inadequate user training, and poor search skills. Ojedokun and Owolabi, (2003) [27], supports the findings when they recommended that academics needed training on using the internet for teaching and research. Similar recommendations were made for other universities (Bhatti, 2010 [22]; Larose et al., 1999) [28]. Tsvere et al., 2013) [24] established that the majority of university academics in Zimbabwe were not able to use meta- search engines and create their own web pages. Sharing their knowledge on the web was found to be low in this study.

Thanuskodi (2011) [20] also found out that 80% use ICT for developing skills and knowledge. This study established that university academics use the internet to share their knowledge on the Web, a finding that was were also found support from reports by Thanuskodi, and Ravi, 2011 [21] ; Al Ansari, 2006) [23]; Parameshwar and Patil, 2009) [16]. Tyagi (2011) [29] also found that faculty members used the e-resources to update their subject knowledge. Al Ansari, (2006) [23] supports the findings by reporting through their study that faculty members used e-resources to improve on their subject knowledge.

This study concludes that Zimbabwean academics have access to computers and the internet mainly from their university offices. Academics were using the internet for at an average of four hours in any given day. This study has shown that university academics are using general search engines more than they use meta-search engines. University academics are using the internet to find information for writing research papers, for preparing lectures and updating their main subject knowledge base. University academics were not fully utilizing the internet for publishing their research articles. Age and experience in using the internet were major predictors of internet use. The study showed that younger academics used the internet more than the older academics. The more experienced internet users also used the internet more than the less experiences internet users while other variables were related to specific uses of the internet. Using internet to publish research articles, to give feed back to students and to for personal development is related to gender. This study revealed that university academics use the internet to download information more than they do to contribute their knowledge on the net.

8. Recommendations

This paper has shown how the Internet has successfully revolutionalized the manner in which information is communicated in education. The study has also shown that university academics use the internet for research more than they do use it as a teaching tool. The literature review has attributed the low use of internet as a teaching tool to limited skill in searching skills as well as Webogogy skills. The call for teachers to move from the traditional teacher-centred to learner-centred collaborative, challenging and interactive learning activities that make use of Information technology such as the internet and Web 2.0 technologies was also emphasised in the literature review.

This study noted the need to develop in both teachers and learners critical thinking and creative thinking skills so that they can meaningfully evaluate resources they obtain from the internet and the World Wide Web. Academics need to develop text –massage conflict management skills so in order to manage both research and collaborative social media discussion group responses from research participants and university learners. These skills can effectively be developed through Web search skills courses if the academics are aware of and understand the Internet resource environment. That requires them to use and experience using the Web as well.

This study recommends that university management should help academics to mainstream information technology into their teaching practice through continuous formal internet or IT based staff development workshops so that they keep pace with the ever changing information teaching technologies. Short training courses offered by library staff may not adequately address the academic needs of academics since their trainings may not adequately prepare academics to use internet for teaching. Training programmes should also include how to effectively use the internet particularly the World Wide Web to locate relevant information for academic purposes. Further research is needed on how university academics use library e-resources and how attitudes and perceptions influence internet use by academics so that barriers are identified and rectified.

References

[1] E. Schmidt and J. Cohen, “The new digital age: reshaping the future of people, nations and business.” John Murray, London, 2013.

[2] B.S. Maheswarappa and C.E. Ebnazar, “Use of internet resources and services in Gulbarga city: An exploratory study,” SRELS Journal of Information management, 40 (4), 409 – 420, 2003.

[3] P. Clarke, “The Internet as a medium for qualitative research,” paper presented at Web 2000 Conference, Rand Africans University, Johannesburg, South Africa, September, 6, 2000. [Online]. Available http://www.und.ac.za/users/clarke/web2000/pc.pdf [Accessed: August, 23, 2013].

[4] S. Downes “The role of educator in a PLE world, Stephen’s Web”, 2010. [Online]. Available http://www.downes.ca/post/54321 [Accessed: Nov. 12, 2012].

[5] A. Churches, “Bloom’s Digital Taxonomy,”2009. [Online]. Available http://edorigami.wikispaces.com [Accessed: Aug. 21, 2013].

[6] M. L. Potter, “From Search to research: Developing critical thinking through Web research skills, 2010.

[7] Bing, [Online]. Available http://www.microsoft.com/teachers [Accessed: Aug, 21, 2013].

[8] B.O. Omotayo, “Access, use and attitude of academics towards electronic journals: A case study of Obafemi Awolowo University, Ile-Ife,” Library Philosophy and practice, 2010. [Online]. Available http://unilib.unl.edu/LPP/omotayo.htm [Accessed: Jun, 12, 2012].

[9] G. Adika, “Internet use among faculty members of universities in Ghana, Library Review, 52 (2), pp 119-131, 2003.

[10] J.R. Griffiths and P. Brophy, “Student’s searching behaviour and the Web: use of academic resources and Google,” Library Trends, 53 (4), pp 539 – 554, 2005.

[11] O. Y. Rieger, “Search engine use behavior of students and faculty: User perceptions and implications for future research,” First Monday, 14 (12-7, December 2009. [Online] Available http://firstmonday.org/ojs/index.php/fm/article/view/2716/2385 [Accessed: Aug. 23, 2013].

[12] E. R. Iffeoma and E. Alusola, “The teachers and the use of ICT for professional development,” Paper presented at the International Conference on ICT for Africa, Harare, Zimbabwe. February, 20-23, 2013.

[13] B. A. Nardi, "Cyberspace, Anthropological Theory, and the training of anthropologists," Social Science Computer Review, 14 (1), pp 34 – 35, 1996.
[14] B. Harrison, "Hardware/Software to support distance learning classes", Proceedings of the 1997 Mid-South Instructional Technology Conference, [Online]. Available http://mtsu.edu/~itconf/proceed97/harrison.html
[15] [Accessed: Aug 23, 2013].
[16] S. Turkle, "An ethnologist in Cyberspace, Scientific American, April, 1998. [Online]. Available http://www.sciam.com/1998/0498issue/0498profile.html . [Accessed: Aug. 23, 2013].
[17] M. Olubanke and O. M. Bankole, "The use of internet services and resources by scientists at Olabisi Onabanjo University, Ago Iwoye, Nigeria," Program: Electronic Library and Information Systems, 47 (1), pp 15 – 33, 2013. DOI: 10.1108/00330331211296295.
[18] S. Parameshwar and D. B. Patil, "Use of the internet by faculty and research scholars at Gulbarga University", Library Philosophy and Practice, 2009. (e-journal).[Online].Available http://unilib.unl.edu/LPP/parameshar-patil.htm [Accessed 6 May, 2013].
[19] H.S. Egberongbe, "The use and impact of electronic resources at the University of Lagos," Library Philosophy and Practice, 2011. [Online]. Available http://unilib.unl.edu/LPP/egberongbe.htm, [Accessed: August 22, 2013]
[20] K. Munasamy and M. Ismail, "Influence of gender role on internet usage pattern at home among academics", The Journal of International Social research, 2 (9), pp 380 – 318, 2009.
[21] K.R. Mulla,"Use of electronic resources by faculty members in HKBK college of Engineering: A case study," Library Philosophy and practice, 2011. [Online] Available http://unilib.unl.edu/LPP/mulla.htm [Accessed : Jan. 6, 2012],
[22] S. Thanuskodi, "Internet use by researchers: A study of Annamalai University, Annamalainagar," Library Philosophy and Practice, 2011. [Online]. Available http://unilib.unl.edu/LPP/Thanuskodi-internet.htm [Accessed: May 12, 2013].
[23] S. Thanuskodi and S. Ravi, "Use of digital resources by faculty and research scholars of Monomaniam Sundaranar University, Tirunelveli DEISDOC Journal of library and Information technology, 31 (1), pp 25 – 30, Jan. 2011.
[24] R. Bhatti, "Internet use among faculty members in the changing higher education environment at the Islamia University of Bahawalpur, Pakistan", Library Philosophy and Practice, 1-9, 2010. [Online] Available http://www.uidaho.edu/mbolin/bhatti3.htm. [Accessed: July 13, 2012].
[25] H. Al-Ansari, "Internet use by faculty members of Kuwait University, Electronic library, 24 (6), pp 791-803, 2006.
[26] M. Tsvere, S.S. Swamy, and L.T. Nyaruwata, "Perceived competence of Zimbabwean academics in the use of Information Technology in university academic business," International Journal of Science and Research, 2 (8), pp 284-289, August, 2013.
[27] M.N. Ansari and B. A. Zeburi, "Use of electronic resources among academics at the University of Karichi, Library Philosophy and Practice, 4 (5), 2010. [Online].Available http://unilib.unl.edu/LPP/ansari-zeburi.htm [Accessed: June 23, 2012].
[28] M. O. Salaam, B. A. Ajiboye, O.M. Bankole, " The use of library electronic information resources by academic staff at federal University of Agriculture, Abeoute, Ogun State, Nigeria," PNLA Quarterly, 77 (2), pp 119 – 130, 2013 Winter.
[29] A.A. Ojedokun and E. O. Owolabi, "Internet access and the use of the internet for teaching and research activities by University of Botswana academic staff", African Journal of Library, Archives, and Information Science, 13 (1), pp 43 – 54, 2003.
[30] F. Larose, R. David, J-M, Dirand, T. Karsenti, V. Grenon, S. Lafrance and J. Cantin, "Information and Communication technologies in university teaching and in teacher education: Journey in a Major Québec University reality," Electronic Journal of Sociology,
[31] 1999. [Online] Available http://www.sociology.org/content/vol004.003/francois/html. [Accessed: July, 20 2012].
[32] S. Tyagi, "Use and awareness of electronic information sources at IIT Rookie, India: A case study. Italian Journal of Library and Information Science, 2 (1), pp, 1 – 20, June, 2011
[33] W. S. Luan, S. A. Aziz, **S.** M. Yunus, Z. Sidek, K. A. Bakar, H. Meseran and H. Atan, "Gender differences in ICT competencies among academics at University Putra, Malaysia." *Malaysian online Journal of Information Technology* (MOIJT), 2(3), pp 62-69, 2005.

Author Profile

Maria Tsvere received her Master of Science degree in Physics Education from the University of Zimbabwe. She is currently pursuing a PhD in Education with Christ University, Bangalore, India. She is a lecturer at Chinhoyi University of Technology in the Institute of Life Long learning. She has interest in development and contemporary curriculum and gender issues.

Leonora Tendayi Nyaruwata has a PhD in Education Management from the University of Pretoria. She has worked as a Director for Open and Distance Learning Research and Scholarship, an academic evaluator and consultant in Zimbabwe and South Africa. Currently she is the chair for the Research and Analysis Committee for Distance Education Association of Southern Africa (DEASA) and is a senior lecturer in the higher degree directorate at Zimbabwe Open University. Tendayi is a published researcher and academic who supervise Doctoral students.

Srikanta Swamy, a Professor with a Doctorate degree in Critical Thinking skills, is the Additional Director, Center for Research at Christ University, Bangalore, India. He specialized in Science education, educational Psychology, Multimedia systems of education. He is the recipient of the 1998 NCERT award and 2005 Drona Pucker and Jnanasarawathi and has vast experience in supervising international and national doctoral students.