



Internet use by the faculty members of Kuwait University

Internet use

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791

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Abstract

Purpose – This study is designed to investigate the patterns of internet use by the faculty including purposes for use, its impact on teaching and research, internet resources that they use, and the problems faced while using the internet.

Design/methodology/approach – A questionnaire, expert-reviewed and pilot-tested, was used to collect data from the faculty coming from four colleges of Kuwait University, i.e. Arts, Social Sciences, Sciences, and Engineering. Half of the 491 potential participants were selected as the sample, with a response rate of 62.6 percent.

Findings – A large majority have been using the computer and internet for more than five years. They use the internet mostly for, and give importance to, e-mail, search engines, and WWW resources mainly for communication, research, and publication. It has helped them to save time, find up to date information, and cooperate with their colleagues. Slow speed, lack of time, and lack of access from home are the major problems. Most of them are interested in improving the internet use skills through formal training.

Practical implications – Kuwait University needs to improve its IT infrastructure, including providing distance access, and to provide formal training in the use of internet resources.

Originality/value – This is the first comprehensive study of the use of the internet by the Kuwait University faculty. Its findings should help Kuwait University in its plans and programmes related to e-learning and strengthen pertinent resources and services of its libraries.

Keywords Internet, Academic staff, Kuwait, Teaching

Paper type Research paper

Introduction

The progressive increase in the use of Information and Communication Technologies (ICT) in education has drastically changed the teaching/learning process. A great deal of research has proven its benefits in educational quality. Among the ICTs, the internet has been a single major force of change in higher education. Since 1991, and especially with the use of the www browser in 1993, the internet has gradually become the main vehicle of scholarly communication. However, the intensity of internet use varies from individual to individual, institution to institution, and from country to country. Bin Talib (2003), using several studies, identifies five categories of internet use by faculty members as:

- (1) informational internet use;
- (2) supplemental internet use;
- (3) essential internet use;
- (4) communal internet use; and
- (5) immersive internet use.



He states that “categories 1-2 primarily represent basic uses of the internet with no interactive setting. In other words, the internet might be viewed initially as an information or communication source. Only when faculty members have higher levels of internet use such as a comprehensive interactive website that offers, for instance, online discussion, do they enter the third category. The latter two categories 4-5 represent a high level of internet integration in which virtual class meetings take place” (p. 5). However, the real nature of internet use by the faculty can be seen in light of the published research.

Kuwait, a small country of about 2.3 million people two-thirds of which are expatriates, started offering internet services in 1992 and was the first Arab country to provide public internet access in 1994 (Jradi, 2003). However, its use in the academic environment was to grow slowly due to several reasons. Kuwait University has five campuses and it took quite some time to develop the ICT infrastructure and the inter-campus network. Most of the academic programs are taught in Arabic. Therefore, the focus of the faculty and students has been on the use of Arabic resources that were scarce on the internet. However, beginning with the new century ICT facilities have been upgraded fast. In 2001, Kuwait University Distance Learning and Videoconferencing Center, with three labs in the faculties of Science, Administrative Sciences, and Arts, was created linking it with various universities both regionally and internationally. At the present time, all faculty members have computers in their offices and remote access from home. There are adequate computer laboratories for students in every college. The university libraries subscribe to a large number of databases and full-text electronic resources and provide online access to both students and faculty. All these facilities are interlinked.

Previous studies

During the past 15 years, a good number of studies on the use of the internet have been conducted mainly in developed countries. In recent years, their scope has expanded in relation to the enlarged role taken on by the internet in education. Lazinger *et al.* (1997) have reviewed the research on internet use published up to 1996. Later studies include those conducted in the USA, mostly unpublished doctoral dissertations, focusing on measuring internet use and perceptions of the internet among the faculty (Fusayil, 2000; Husain, 2001; Jones and Johnson-Yale, 2005); adoption of the internet in teaching, research and communication (Alzamil, 2002), and the impact of the internet on scholarly activities (Chu, 2002). In Australia, internet use by the faculty of Curtin University was investigated by Macciusi *et al.* (2000) and a nation-wide survey of internet use was conducted by Applebee *et al.* (2000).

The internet was rather slow to penetrate the education sector of the developing countries. Studies of its use in the academic context and by the faculty of developing countries seem to have begun, as far the literature shows, in 2001. However, the research done on the academic use of the internet is now on the increase. These studies, being closer to the Kuwaiti environment, will be reviewed in a little more detail.

Dong (2003) investigated internet use by the Chinese faculty, researchers, and students. More men than women used the internet. Respondents with higher degrees and lower age spent more time on the internet. They mostly used e-mail (84.8 percent) and browsed WWW (58.2 percent). They learned to use the internet mainly through self-instruction (46.1 percent) and colleagues or friends (35.7 percent). Nasir Uddin

(2003) investigated internet use by 218 faculty members of the University of Rajshahi, Bangladesh. About twelve percent of his respondents had never used the internet. It was mainly used for e-mailing (88.07 percent), accessing WWW resources (70.64 percent), and downloading files (55.96 percent). The least used tools were audio-video (5.5 percent), mailing lists (8.26 percent), and telephone (9.63 percent). They mainly used the internet for making contact with overseas education and research organizations (74.31 percent), information about publications (68.81 percent), and finding information about higher education opportunities (53.67 percent). The least used activities were job-seeking (18.35 percent), searching library resources (29.36 percent), and seeking conference information (44.5 percent). Very limited access to the internet and slow speed were the major problems. Internet use by the academics of the University of the South Pacific was studied by Mamtora (2003). A large majority of the respondents used e-mail to communicate and www to search information. The users needed specific training in the use of the internet.

Internet use by the academics in African countries, in general, is low because of the lack of facilities. For example, Ani *et al.* (2005) found that only four universities libraries out of the 29 covered in their study provided internet services. Ojedokun and Owolabi (2003) investigated the impact of competence in the use of the internet by the faculty in Botswana. It was found that the respondents were more skilled in the use of the internet for research purposes and less competent in its use for teaching. It was recommended that the faculty should be provided with formal training. Poda's (2003) study of internet use by the faculty and students at the University of Ouagaddougou, Burkina Faso, concluded that internet use was primarily influenced by seven factors: personal satisfaction, information accessibility, enhanced learning, cost effectiveness, technology infrastructure and equipment, financial challenges, and skill challenges. Adika (2003), in a Ghanaian study, found that a majority of the respondents could not access the internet from their departments. One-third of the respondents either never or rarely used the internet. It was mainly used for communication (80 percent), research (44.9 percent), updating their knowledge (38.5 percent), and teaching (34.6 percent). Internet use was found to be very low among the faculty in Ghana. Nyamboga *et al.* (2004) studied Internet use by faculty, students and library staff at Egerton University in Kenya. E-mail and search engines were the most used tools. Males used the internet more than females. The respondents had not received any formal instruction in the use of the internet.

Allehaibi (2001) studied internet diffusion in Saudi universities, the pattern of internet use among the faculty, and their concerns about the internet technology. It was found that the diffusion of internet technology was at the early proliferation stages, the majority of the respondents (74.6 percent) were using internet technology, and that 25.4 percent of the faculty were reluctant to use it. A study of internet use by the faculty of the University of Sharjah (UAE) was conducted by BuMa'rafi (2001). The results of the study show that most of the respondents (68.57 percent) used the internet daily and learned its use mostly on their own or with the help of colleagues (88.57 percent). They use the internet mainly for e-mail, contact with colleagues, and accessing library catalogues. Major problems identified are the lack of time and training. Momani (2003) evaluated the nature, extent, and satisfaction with the use of the internet by the applied science and technology faculty in Jordan. He concluded that the internet was widely used with emphasis on research and communication and was perceived as a very

useful tool. The respondents were mostly satisfied with the current status of the internet. The barriers identified included: lack of time, lack of access, lack of speed, lack of training, and lack of university support. Abdel Motey and Al-Anzy (2003) surveyed internet use by the faculty members of the College of Basic Education, Kuwait and found that 39 (64.0 percent) participants used the internet mainly for e-mail (21.0 percent) and accessing information (20.0 percent) and mentioned the lack of time and training as major problems. A large majority (71.0 percent) showed interest in getting training in the use of the internet. Rehman and Ramzy (2004) investigated the use of the internet by 131 health sciences faculty at Kuwait University. A large majority of the respondents (92.1 percent) accessed the internet from their offices and most of them (80.3 percent) used it daily. A majority (65.4 percent) considered the internet as an extremely valuable tool and used it for searching information for research and treatment, and for communication purposes. Most of the respondents (86.6 percent) expressed a need for improving their skills through formal training. Slow access speed, lack of time and lack of training were considered as major problems.

A couple of studies of internet use by Kuwait University students have been conducted (Al-Mazeedi and Ibrahim, 1998; Wheeler, 2003). However, no study of internet use by the faculty, other than health sciences, of Kuwait University has been conducted so far. The University has recently begun developing and offering e-learning facilities. It is imperative that internet use by the faculty is investigated so that the findings of such a study may be taken into consideration in the university plans for e-learning and simultaneous improvement of electronic information resources of its libraries.

Objectives and methodology of the study

The overall objective of this study was to investigate the patterns of internet use among faculty members at various colleges of Kuwait University. This was done by a survey which attempted to elicit answers to the following research questions:

- What are the patterns of internet use among faculty members?
- What are the main purposes for using internet resources?
- How does the internet affect research and teaching?
- Which search engines and information resources on the internet are used by these respondents?
- What difficulties do these respondents encounter when they use the internet?

A perusal of earlier studies on internet use indicates that the questionnaire-based survey has been the most popular method used. Some of these studies have included open-ended questions (Husain, 2001) and selective interviews (Fusayil, 2000) to obtain additional data. Most of the questionnaires used have been paper-based with a few that were web-based (Chu, 2002; Rehman and Ramzy, 2004). It was decided to use a paper-based questionnaire with the feeling that many respondents of this study will not have the capability to handle a web-based instrument.

Several relevant studies and a few available questionnaires were used to develop a questionnaire with closed-ended questions. It was divided into two parts: Part I contained questions concerning the demographic characteristics of the respondents and Part II consisted of questions pertaining to frequency and purposes of internet

usage, internet facilities, search engines, effect of the internet, problems faced, and training needed. The questionnaire, prepared by the researcher, was reviewed by four faculty members and three professional librarians to ensure clarity, proper language structure, and elimination of language ambiguities. It was pilot-tested on 12 faculty members resulting in minor modifications.

The study was limited to four colleges of Kuwait University, i.e. Sciences, Engineering, Social Sciences, and Arts. All full-time faculty members of these colleges, except those who were either in managerial positions or on sabbatical leave, totaling 491 formed the population of the study. Due to their large number, it was decided to take half of the faculty members from each college. Lists of faculty members for each college which were arranged by academic rank were used to select every other name from each rank. Thus, the sample came to 246. A package, consisting of a cover letter and a questionnaire, was distributed through the office of the chairman of each department. A total of 161 (65.4 percent) questionnaires were returned. Seven questionnaires (2.8 percent), upon examination, were rejected as unusable leaving 154 with a response rate of 62.6 percent which was very good.

Findings and discussion

Non-users of the internet

One interesting finding is that, in this age of IT prevalence in education and when the University is planning to go into e-learning, 11 (7.1 percent) of these 154 respondents neither used a computer nor the internet. Six of these were professors and five were assistant professors. Ten were male, nine were 46 years or older, and seven were expatriates. All of them came from the disciplines of humanities and social sciences. If each of these 11 individuals taught three unique courses a year, 33 courses taught by them at the University were devoid of any IT use. They did not give any reasons for not using computers or the internet. It seems that they themselves were educated either at a time or in an environment where IT was non-existent and then started teaching mainly in Arabic where there was, for a long time, no need to use IT. Nine of these 11 individuals showed an interest in learning the use of internet either through formal courses or self-instruction. The following sections present the data for 143 (92.9 percent) of the 154 usable questionnaires.

Demographic characteristics of the respondents

Out of the 143 respondents, 31 (21.7 percent) were females and 112 (78.3 percent) were males. By nationality, 96 (67.1 percent) were Kuwaitis and 47 (32.9 percent) were expatriates. Most of the professors (71.9 percent) were non-Kuwaitis whereas most of the assistant professors (88.5 percent) were Kuwaitis. By age, 21 (14.7 percent) were 35 years or younger, 68 (47.6 percent) were between 36 and 45 years, 37 (25.9 percent) fell within the range of 46 to 55 years, and 17 (11.9 percent) were 56 years or older. Most of the respondents above 55 years of age (64.7 percent) were professors whereas most of the respondents under 36 years were assistant professors. Considering the total population, the distribution of these 143 respondents by rank and college is quite reasonable and is given in Table I.

EL 24,6	College/rank	Professor	Associate Professor	Assistant Professor	Total (%)
	<i>College of Arts</i>	7	7	12	26
	% within rank/faculty	21.9	21.2	15.4	18.2
	% within college	26.9	26.9	46.2	100
796	<i>College of Social Sciences</i>	5	8	19	32
	% within rank	15.6	24.2	24.4	22.4
	% within college	15.6	25.0	59.4	100
	<i>College of Engineering</i>	12	13	25	50
	% within rank	37.5	39.4	32.1	35.0
	% within college	24.0	26.0	50.0	100
	<i>College of Sciences</i>	8	5	22	35
	% within rank	25.0	15.2	28.2	24.5
	% within college	22.9	14.3	62.9	100
	<i>Total</i>	32	33	78	143
	% within rank	100	100	100	100
	% within respondents	22.4	23.1	54.5	100

Table I.
Distribution of
respondents by rank and
college ($n = 143$)

Note: Some total percentages are actually higher than 100 due to rounding of figures

Use of computers and the internet

Fifty-nine (41.3 percent) of the 143 respondents have been using computers for 16 years or more, 34 (23.8 percent) for 11 to 15 years, 35 (24.5 percent) for 6 to 10 years, and 15 (10.5 percent) for up to 5 years. Twenty-four (16.8 percent) of the respondents have been using the internet for 11 or more years, 67 (46.9 percent) for 6 to 10 years, and 52 (36.4 percent) for up to 5 years. In terms of rank, about two-thirds of all ranks have been using computers for 11 years or more. The data show that assistant professors have been using the internet for longer years than other ranks and that the respondents with higher ranks seem to have started using the internet later. Thirty-seven (25.9 percent) respondents spend 10 or more hours per week using the internet, 32 (22.4 percent) spend 7 to 9 hours, 26 (18.2 percent) spend 4 to 6 hours, and 48 (33.6 percent) spend up to 3 hours. The figures show that more than half (51.7 percent) of the respondents spend less than one hour per day using the internet.

How did these individuals learn to use the internet? Their responses regarding internet training are given in Table II.

No.	Source of training	Frequency	Percentage
1	Self-instruction, trial and error	93	65.0
2	Assistance from colleagues or friends	73	51.0
3	Online instruction (guides and materials on the internet)	32	22.4
4	Course taught at the University	31	21.7
5	By reading books, articles on the internet	23	16.1
6	Formal training programs like short courses, workshops, etc. outside the university	18	12.6
7	Other (own children, exhibition, etc.)	6	4.2

Table II.
Sources of internet
training ($n = 143$,
multiple responses)

The most popular method of learning the use of the internet was through self-instruction. A little more than half of the respondents ($n = 73$, 51 percent) indicated that they learned the use of the internet with the assistance of colleagues and friends. Similar findings were reported by BuMa'rafi (2001), Dong (2003), Nyamboga *et al.* (2004), Rehman and Ramzy (2004). Online instruction was used by 32 (22.4 percent) individuals. Thirty-one faculty members (21.7 percent) had attended formal courses at a university and 18 (12.6 percent) used such courses outside a university. A reasonable number ($n = 23$, 16.1 percent) used literature and a small number even learned from their children.

It is evident that self- or other person-assisted training is the mainstay for learning the use of internet for these respondents whereas formal training plays a minor role. Kuwait University and its library management do provide short training courses to use the internet open to both faculty and students. However, the training packages offered by either the university or the library may not suit the needs of the faculty members. It is also possible that these programs are not properly marketed or their schedule may not be convenient for faculty members.

What are the internet tools and resources that these respondents use frequently? The data for the use of the internet tools and resources are presented in Table III.

Of the 143 respondents, 93.7 percent use e-mail, 83.9 percent use search engines, and 65.7 percent use www resources. The least used tools/resources are FTP (30.1 percent) and Gopher (15.4 percent). The pattern of use of these and other services is evident from the mean of each which varies from 2.07 to 0.36. E-mail and WWW resources were also reported as the most frequently used by the respondents of Adika (2003), Nasir Uddin (2003), and Nyamboga *et al.* (2004).

Purposes for using internet resources

These respondents use the internet for a variety of purposes. The data related to the main purposes for which these respondents use internet resources are given in Table IV.

Not surprisingly, a large majority uses the internet to communicate with others (93.7 percent) and to find information for research (89.5 percent). These findings are consistent with those of BuMa'rafi (2001) and Abdel Motey and Al-Anzy (2003).

No	Tool/resource	<i>n</i>	Not used	Once a month	About once a week	Almost everyday	Mean
1	E-mail	134	0	4	23	107	2.07
2	Internet search engines	134	14	5	57	57	2.16
2	www resources	125	31	26	38	30	1.54
3	Mailing list (listserv)	116	51	14	28	23	1.20
4	Online databases	122	41	39	24	18	1.16
5	Downloading software	125	41	46	26	12	1.07
6	Electronic journals	124	40	30	40	14	1.07
7	News groups	121	65	14	27	15	0.93
8	FTP	115	72	24	12	7	0.60
9	Gopher	115	93	9	7	6	0.36

Note: Scale: "0" for not used to "3" for almost everyday

Table III.
Frequency of use of internet tools and resources (multiple responses)

Science and Engineering faculty use the internet as a communication and research information medium much more than their colleagues from Social Sciences and Arts. Engineering faculty (54.0 percent) are the top users of the internet for searching software as compared to the social scientists (12.5 percent). Engineering faculty, by the very nature of their discipline, need to make use of software more than others, possess advanced technical skills and have better command of English. Reading daily news using the internet is also popular (63.6 percent). This trend is quite natural because most of the faculty members are expatriates who need to keep themselves informed of latest developments back home and have access to the newspapers only through internet. A small number of the respondents (29.4 percent) read personal or corporate web pages.

The respondents use the information retrieved through the internet for a variety of purposes. Their responses are given in Table V.

The primary use of internet information is for research and publication (85.3 percent) and for personal interest (84.6 percent) and less so for teaching (69.9 percent) and class assignments (62.2 percent). Does this reflect on the limited use of internet resources for class teaching in the university? This question needs to be explored in the future.

Relative importance of internet facilities

What importance do these faculty members give to the internet facilities? The data related to the importance of internet facilities are given in Table VI.

The earlier emphasis on communication and research and publication (Tables IV and V) is reflected in the importance given by the respondents to internet facilities. Here also communication (e-mail ranked 1) and information for research and publication (catalogs and databases ranked 2, e-journals ranked 3, and www resources ranked 4) are given priority over other facilities. This further confirms the earlier finding that classroom teaching lags behind personal interests of these respondents

Table IV.
Main purposes for using internet resources ($n = 143$, multiple responses)

No.	Purpose	Yes	%	No	%
1	To send and receive e-mail	134	93.7	9	6.3
2	To look for information for my research	128	89.5	15	10.5
3	To read news	91	63.6	52	36.4
4	To look for software	49	34.3	94	65.7
5	For recreation	44	30.8	99	69.2
6	To read personal and corporate web pages	42	29.4	101	70.6
7	Other	15	10.5	128	89.0

Table V.
Use of information obtained through the internet ($n = 143$)

No.	Use of information	Yes	%	No	%
1	For research and publication	122	85.3	21	14.7
2	For personal interest	121	84.6	22	15.4
3	For teaching	100	69.9	43	30.1
4	For teaching assignments	89	62.2	54	37.8
5	Other	6	4.2	137	95.8

Internet facility	<i>n</i>	Not important	Slightly important	Important	Very important	Mean	SD	Rank
E-mail	141	5	4	12	120	2.75	0.678	1
External library catalogs, bibliographic databases	126	21	12	31	62	2.06	1.122	2
Electronic journals	134	16	23	42	53	1.99	1.026	3
www resources (text, images)	124	18	26	35	45	1.86	1.069	4
Downloading software	125	30	36	26	33	1.50	1.126	5
Discussion lists, newsgroups	125	30	38	33	24	1.41	1.056	6
Telnet connections	117	41	29	19	28	1.29	1.182	7

Note: Scale: “0” for not important to “3” for very important

Table VI.
Importance given to internet facilities (multiple responses)

who, according to the classification of Bin Talib (2003), fall in the “essential internet use” category because “communal” and immersive’ internet use, which represent extensive and intensive use, is not needed for teaching at this time. Low use of “discussion and news groups” could be due to lack of awareness.

Use of search engines

Frequencies with which these participants used various internet search engines are presented in Table VII.

The most popular search engines used are Yahoo, Alta Vista, InfoSeek, and Google in that order. It is interesting that Google, as far as these respondents are concerned, has not yet caught up with Yahoo.

Impact of the internet use

The impact that the internet use has on the work-related activities of these participants is presented in Table VIII.

The use of the internet appears to have had a very positive impact on the work of these academicians. More than half of the respondents, in varying numbers, point this

Search engine	<i>n</i>	Never used	Sometimes	Often	Mean
Yahoo	136	11	34	91	1.59
Alta Vista	127	50	52	25	0.80
InfoSeek	120	55	45	20	0.71
Google	80	50	6	24	0.68
Lycos	121	61	44	16	0.63
Excite	118	58	45	15	0.62
Web crawler	116	87	21	8	0.32
Magellan	115	94	20	1	0.19

Note: Scale: “0” never used to “2” often

Table VII.
Frequency of use of internet search engines

out in relation to seven out of eight options listed in the questionnaire. The two most impacted areas are saving time (74.8 percent) and obtaining fast and up to date information (73.4 percent). Even the eighth item, i.e. "I talk less on the phone with fellow researchers" (37.8 percent), is in a way positive impact brought about by the availability of other methods of fast communication.

Problems encountered

The respondents were asked to identify any problems that they might have faced while using the internet. Their responses are presented in Table IX.

The most critical problem identified by a large majority of these respondents (83.9 percent) is "slow access speed". Other important problems are "lack of time" (37.1 percent) and "lack of access to the internet from home" (33.6 percent). Similar problems, in varying degrees, have been pointed out by other researchers (BuMa'rafi, 2001, Abdel Motey and Al-Anzy, 2003, Momani, 2003; Rehman and Ramzy, 2004).

Training in internet use

Would these respondents, who are already using the internet, like to improve their knowledge of this facility and if so, in which areas? Nineteen (13.3 percent) respondents did not feel the need to improve their knowledge whereas 120 (83.9 percent) would like to do so. Four individuals (2.8 percent) did not respond. The data for the "need to improve internet skills' by 120 respondents are presented in Table X.

A large majority of the respondents (69.2 percent) expressed the need to receive training in "advanced search techniques". About half of the respondents wished to get training in "advanced interfaces" and the "use of electronic journals". It appears that a large majority of the participants (77.5 percent) do not require any training in the use of e-mail.

Table VIII.
Impact on work-related activities (*n* = 143, multiple responses)

Work-related activity	Yes	%	No	%
I save a lot of time now	107	74.8	36	25.2
I obtain fast and up to date information	105	73.4	38	26.6
I receive better cooperation from colleagues now	86	60.1	57	39.9
I get fast access to databases now	84	58.7	59	41.3
I carry out tasks that were done before by a secretary	83	58.0	60	42.0
I browse less printed materials now	81	56.6	62	43.4
I conduct more research with distant colleagues now	77	53.8	66	46.2
I talk less on the phone with fellow researchers	54	37.8	89	62.2
Other	13	9.1	130	90.9

Table IX.
Problems faced while using the internet (*n* = 143) problem faced

	Yes	%	No	%
Slow access speed	120	83.9	23	16.1
Lack of time	53	37.1	90	62.9
Lack of access to the internet from home	48	33.6	95	66.4
Lack of proper training	31	21.7	112	78.3
Poor quality of resources on the internet	20	14.0	123	86.0
Others	10	7.0	133	93.0

Conclusions and recommendations

The analysis presented above shows that there is a reasonable interest among faculty members of Kuwait University in the use of the internet and its resources. However, if the results of this study are viewed in light of the university's recent interest in promoting e-learning, then the level of interest, nature of use and capability of these respondents seem to fall short of the requirements of the university's goal of developing e-learning.

The respondents' dependence on self-learning the use of the internet indicates a deficiency in formal training opportunities available to them at the university. A greater use of the internet by these respondents for personal objectives, be they communication, research or writing, and little interest shown in using it for teaching and class-room work points to another critical gap that counteracts with the university's plans for the use of more IT in teaching and learning.

An encouraging sign shown in the findings of this study is the awareness displayed by the participants of the usefulness of the internet and its resources for their academic work and in identifying concrete problems that they face while using these resources. They are also mindful of the need to upgrade their internet use skills. One can visualize an interesting situation developing with the current level of interest, nature of use, and skills of the faculty in relation to the enhanced future use of IT and e-learning at the university.

The observations made above have serious implications for the university's future teaching plans and its libraries. These demand immediate and serious attention in the following areas:

- Identification and preparation of plans for upgrading, as soon as possible, the IT infrastructure of the university, including its libraries, to bring it to a level compatible with the requirements of intensive IT based teaching, learning and research.
- Conducting a "training needs analysis" which will identify gaps in IT use skills among the faculty, staff, and students.
- Developing formal and differential training packages based on the results of the training needs analysis to improve IT competencies.
- Further improvement of access to electronic information resources, whether by fee or for free, required by the faculty for teaching and research is vital. The management of the university libraries ought to take up this responsibility more seriously.
- The management of the university libraries must take parallel steps to improve their in-house IT applications, staff IT competence, in-house and remotely available information resources, and focused formal training programmes essential for the use of these resources and services.

Area of skill improvement	Yes	%	No	%
Advanced search techniques	83	69.2	37	30.8
Advanced interfaces: gopher and www	60	50.0	60	50.0
Use of electronic journals	58	48.3	62	51.7
Using discussion lists/newsgroups	50	41.7	70	58.3
Using telnet/FTP	50	41.7	70	58.3
E-mail	27	22.5	93	77.5

Table X.
Need to improve the internet skills ($n = 120$)

The results of this survey point to some issues on which further research is required. There is a need to measure internet use skills of faculty, staff and students in a more concrete manner so that differentiated training packages can be prepared for various groups. In other words, a training needs analysis of various segments of the academic population should be undertaken. Prior to that, students' use of the internet needs to be studied. There is also a need to look at the training programs offered by the university libraries to see how effective they are. There is also a need to investigate the level of information evaluation skills of internet users and create an awareness of the importance of this activity in selecting and using internet resources for teaching, learning and research.

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