Examining Digital Information Literacy Skills of Faculty Members in the Public Sector Universities in Peshawar, Pakistan

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Abstract

The study analyzes the level of digital information literacy skills (DILS) of university teachers of Peshawar and its relationship with their certain personal and academic variables. Using survey method of research, a research instrument based on similar studies was administered to the university teachers working in the public sector universities of Peshawar for collecting the data. Total population of this study was comprised of 1678 faculty members in all six public sector universities situated in Peshawar, Pakistan. The research instrument was sent to a sample of 500 faculty members with a representation of 30% from each university. The researchers received back 340 usable questionnaires with 68% response rate. Results indicated that faculty members were comfortable with 13 DILS. They showed least comfort in the use of digital journals, digital books, listserv and discussion groups. The study found that participants were well acquainted in computer usage; however, they were not well versed in searching literature of their choice. Moreover, the study observed significant differences in faculty members' specialty, educational qualification (degree), their proficiency in English, and the accessibility to computers or laptops at their homes. Similarly, significant difference was also found keeping in view respondents' sex and societal background. The study concluded that university teachers, in general, lack DILS. The available literature indicates that only a few studies on such kind of topics have been conducted in Pakistan and elsewhere. However, no study till date has examined DILS of teachers of public sector

universities in Peshawar, Pakistan. Being a pioneering study, It will help in promoting and organizing digital information literacy programs for faculty members and improve their DILS.

Keywords: Digital Information, literature search skills, ICTs, university teachers, online information usage, information searching skills.

Introduction

In the present knowledge society, developments in every field have accelerated the worth of knowledge and information as a strategic resource for global economy. This ever-increasing growth of knowledge and information in multiple shapes and forms has also necessitated the need for the ability of its consumers to examine these varied formats of information resources. Keeping in view the diversity in such resources, the notion of information literacy has got significant consideration in universities and institutes of higher learning. Despite of the countless advantages of ICTs, its complexity has also made it difficult to search for the relevant information without knowing digital information literacy skills (DILS). Information literacy skill is a technique that enables the user to find out the needed information. It makes us to systematically search, examine and use the required information in an efficient and lifting manner. Thus Information literacy is the ability "to recognize when information is needed and have the ability to locate, assess, and use effectively the needed information" (ALAPCIL, 1998). According to ALA *"to be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use the needed information effectively"* (Rafique, 2014). According to Ashukuzzaman (2023); Asadullah (2014) and Park, Kim and Park (2021),

DILS is the capability to identify and locate the required informational stuff, examine its credibility and quality, efficiently and ethically use it, and properly cite and communicate the acquired knowledge. It encompasses skills, competencies, and attitudes that enable individuals to navigate and make sense of the vast information available in various formats, including digital and print. It requires hi-tech skills to use the internet, library catalogues, OPAC, databases and other repositories for information storage and retrieval. (Rothbaur, Hook and Budd 2013). Digital information literacy is a dynamic and evolving concept that must continuously adapt to the changing environment shaped by technological advancements, digital transformation, and shifting societal norms. As our world becomes increasingly digital, digital information literacy must

expand and transform to encompass broader skills and competencies. It now encompasses a multifaceted skill set that includes critical thinking, information evaluation, media literacy, data literacy, cyber security awareness, and digital well-being. Individuals must navigate various digital platforms, tools, and media, requiring diverse competencies (Falloon (2020) and Ashukuzzaman, 2023).

. It is an accepted fact that teaching, learning and research are primarily rooted in information and knowledge. Every facet of teaching learning and research needs to collect, manage and disseminate knowledge and information. Few decades back, education was mostly dependent on printed information sources but this trend has been changed due to the fast and ever-changing developments in the field of ICTs. Information resources, these days, are available in a variety of forms which has not only changed the reading habits of students and researchers but it has also transformed teaching methodologies to a greater extent. Students and teachers of every field are now-a-days turning towards information resources available on the internet (Eisenberg, 2010). It is imperative on university faculty to acquire IL skills. University teachers of all fields spend most of their time in searching, retrieving and using information resources (Rosenzweig and Gardner, 1994). They are the integral part of the workforce of their universities and contribute a lot in achieving the aims and objectives of their institutions. They have to browse a vast bulk of resources for their information and educational needs. study and research needs. It is here that IL skills equip the university teachers with the essential information searching techniques they needs to become well-informed regarding the new and up-to-date trends employed in teaching and research.

In spite of the significance of DILS in education, a cursory examination of the available literature indicates that researchers have shown meager interest in studying such type of skills. Some studies covering various aspects of IL skills of different category of peoples have been undertaken in various countries including Pakistan most of them were confined to the IL skills of students. However, studies related to the DILS of university teachers were lacking to a greater extent. The study has attempted to fill up this gap and framed the following questions to address:

1. What is the level of digital information literacy skills of the faculty members working in the public sector universities of Peshawar?
2. What is the relationship of faculty members' perceived digital information literacy skills with their different personal and academic variables?

Limitations and delimitations of the study

The study covers all public universities of Peshawar, Khyber Pakhtunkhwa, Pakistan. Respondents of the study include permanent faculty members only. It does not include non-permanent or visiting faculty, instructors, research associates and demonstrators.

Literature Review

The rapid proliferation and integration of ICTs across various domains, such as education, business, health, agriculture, and beyond, has ushered in a profound societal transformation. The internet has greatly augmented the bulk of e-resources. A large volume of databases, electronic journals, books, encyclopedia in a variety of formats are available over the internet. These developments have challenged the current mechanism of handling, assimilating and sharing digital resources (Rafi, Jian and Ahmad, 2020). In this digital landscape, individuals are confronted with a multitude of digitalized information, leading to a heightened complexity in the information identification and selection process. In response, the cultivation of IL has emerged as an imperative in the digital era. With computers now entrenched as indispensable components of contemporary society, proficiency in computer usage has become a pervasive requirement across numerous employment opportunities. As the bedrock of lifelong learning and autonomous knowledge acquisition, Information Literacy finds universal applicability across disciplines, learning environments, and educational tiers (Rafiq, Subhpot, Idrees 2023; Falloon, 2020; Ashukuzzaman, 2023; Humhlhi and Munaza, 2019 and Shahzad, Tariq and Naeem, 2021). Literature shows that DL, now-a-days, is a hot topic of interest for many researchers. Due to the wider use of ICTs, it has become essential for LIS professionals working in university libraries to provide know how of DL to the students and faculty members and to promptly process library resources for effective use (Rafi, Jian & Ahmad, 2019). The incredible development in digital resources has transformed the whole picture of university education and information industry. Thus, It is important for faculty members as well as students to be well versed in modern information retrieval techniques. This competency will help in assuring their efficient utilization of digital information. Faculty members and learners should not only be competent in using just

the technology, but should also be well versed in the domain of its applicability and the competence required to determine what is needed by them and how they utilize it (Odede & Zawedde, 2018). Though digital information channels such, as the internet and its by-products like various online databases and social media platforms enable the users to share information, these channels also pose novel challenges to their users.. The rapid proliferation and use of digital resources has augmented the need for additional scholastic activities that require researchers to efficiently pursue and examine information resources in higher educational settings (Kingsley et al, 2011). At its core, Information Literacy encapsulates competencies that empower individuals to adeptly seek, locate, harness, and appropriately attribute high-caliber information swiftly and effectively. The information-seeking process embodies individuals' cognitive voyage to propel and potentially reshape their realm of knowledge. This cognitive endeavor is intrinsically tied to learning, problem-solving, and mastering techniques (Ashukuzzaman, 2023).

The available literature shows that several research studies on various aspects of IL skills have been undertaken in Pakistan and elsewhere. However, few of these studies have evaluated DILS of faculty members. Moreover, most of such studies have concentrated to examine students' DILS. Bhatti (2010) and Batool & Mahmood (2012) have indicated that there is dearth of literature examining IL skills of university teachers in Pakistan. A review of some of the major studies conducted in Pakistan and elsewhere, is presented here:

Mishra (2019) studied faculty members' use of digital information literacy in Sambhalpur University, India. The study highlighted various kinds of digital information literacy competencies needed by faculty members. Main focus of the study was on how faculty members use ICTs, what are the constraints that affect their information literacy competencies. The study has put forward various guidelines to the library professionals for meeting informational needs of university teachers from their libraries by embracing state-of-the-art solutions through evidence-based practices. Majed & Abazova (1999) have undertaken a research on computer literacy and utilization of various digital information resources by instructors in Malaysia. Results showed the existence of a significant relationship in digital literacy and internet-based information usage. The study concluded that university teachers with sufficient knowledge of digital literacy were more competent in the usage of internet-based resources. According to Maharana and Misra (2007) that university teachers used search engines more often to search for their needed information however,

online databases and digital libraries were seldom used by them. University teachers considered information authenticity and reliability as the most significant factors to evaluate and examine information. Floyd, Colvin and Bodur (2008) and Lau (2001) stated that those who are competent in information searching techniques were good in teaching and students were more satisfied from them in the class rooms. Such teachers can better guide their pupils in the preparation of class assignments and conduction of research and inquiry. Dacosta (2010) in his research paper on IL perception of faculty members reported that university teachers gave more importance to internet-based IL skills. They were able to incorporate such skills within the syllabus they to taught. He suggested that university libraries must organize trainings programs for both the university teachers and students for the acquisition of IL skills. Saryanto et al (2023) has undertaken a study to analyze IL skills of lecturers in their teaching and learning activities. The study examined IL abilities of lecturers working in different institutions of higher learning in the province of Bantin, Indonesia. The study was a qualitative survey using observations and interviews of lecturers of various disciplines. The study found that the information literacy competencies of lecturers were up to the mark to properly meet their teaching and learning requirements however, the IL competencies of some of the respondents were in the early stages and needed to acquire more skills to be competent enough to effectively search and find out their academic informational needs. Their paper concluded that university teachers, especially lecturers and instructors can further improve their information literacy skills by collaborating with librarians.

Afolabi and Oladokun (2020) undertook a research study to examine how the academics learn IL skills, how effectively they search for their required information and what are the effects of IL on their research output. They also examined the link between information availability, IL skills and research contribution of teachers at the Lead City University. The study showed a statistically significant association between information availability, IL skills and research contribution of the university teachers. The study suggested that library can play a positive role in helping teachers to learn IL skills; therefore, universities must spend more over digital information resources and their prompt accessibility. The study also suggested that the university libraries should organize trainings for the academics to affectively search for their needed information. Odede and Zawedde (2018), has undertaken a research study on examining the electronic IL competencies of students. The study focus was on various constructs of online information sources.

The findings showed a close relationship between IL skills and usage of e-resources. They indicated that complexity of the contemporary e-environment needs to be competent enough in different dimensional constructs of information literacy to use e-resources efficiently. It is therefore imperative on the part of universities, particularly their central libraries to organize information workshops, seminars and lectures on information literacy on regular intervals to enhance DILS of student population and faculty. In their study on IL skills of faculty members, Prasad and Kumber (2015) indicated that university teachers were more competent in searching their required information. They were competent enough in identifying the correct keyword of a particular subject. Moreover, faculty members knew about copyright and plagiarism issues while using internet-based information. However, they needed some more training in the usage of internet-based searching skills. Rafique (2014) in his research paper about IL competencies of university teachers has indicated that a number of the faculty were unable to use internet-based information in an effective manner. Major deficiencies included database searching, identifying relevant information resources, and creating proper keywords for searching. Rafiq, Ahmad and Jian (2021) have also found that the less use of digital database resources of many libraries show that faculty, students as well as library users lack digital information literacy.

Other studies conducted in Pakistan focusing mainly on students or library users' information literacy skills includes those conducted by Ullah and Amin (2014); Kausar and Mahmood (2015); Naveed and Rafiq (2018); Zeeshan, Idrees and Siddique (2020); Naveed and Sharif (2015); Mahmood (2013); Batool and Mahmood (2016); Humhlhi and Munaza (2019) Ali, (2022) and Naeem, Bhatti and Ahmad, (2020). Most of these studies were conducted highlighting the information lieracy skills of either students of various categories, librarians or library users. Rafiq (2014) and Bhatti (2010) also indicated that there is scarcity of literature about IL skills of university teachers. The present study, therefore, was designed to fill up this gap.

Material and method

This study is based on survey method of research. A questionnaire based on similar studies like Mahmood (2013), Kausar & Mahmood (2015) and Rafique (2014) was utilized to collect the data. In order to examine the reliability of the research instrument, Cronbach's alpha was used which was found to be 0.81. The population of this study was composed of 1678 permanent faculty working in all six public sector universities of Peshawar. The study used random sampling

technique. The data was collected from 500 faculty members with 30 percent representation from each university. Using survey monkey, the questionnaire was administered via Whatsapp and emails to all the sampled population. Some 150 questionnaires were also administered personally to those who were accessible to the researchers. In order to get maximum responses, many of the respondents were requested multiple times via telephone calls and Whatsapp messages to send back the completed questionnaires at their earliest. After a struggle of about three months, 340 usable questionnaires could be collected which had a response rate of 68%. The study used SPSS-20 for data analysis.

Research objectives

1. To know the level of DILS of the faculty members of the public sector universities of Peshawar as perceived by them.
2. To ascertain the relationship of faculty members' DILS with their personal and academic variables.

Following hypothesis were also developed in order to accurately achieve objectives of the study:

H_1 There exist no statistical significant difference between DILS of faculty of the public sector universities in Peshawar and their gender.

H_2 There is no statistical significant difference between DILS of the faculty and their discipline.

H_3 There is no statistical significant difference between DILS of the faculty members and their qualification.

H_4 There is no statistical significant difference between DILS of faculty members and their social background.

H_5 There exist no statistical significant difference between DILS of faculty members of the public sector universities of Peshawar and their English language proficiency.

H_6 The statistical difference between DILS of faculty members and their accessibility to computers at home is not significant..

Results and Discussion

Demographics:

Table-1 give details of the demographics of the study population and displays that majority of the study participants were males constituting 67.14% as compared to the female population who were found to be 32.35%. Similarly, 25.28% of them were from Engineering University (UET), 15% were respondents from Khyber Medical University (KMU) whereas 39.70% were from general universities that included Peshawar University, Islamia College (Chartered University) and Benazeer Bhutto Women University. As far participants academic qualification, 35.29% possessed Master and M.Phil degree, while 64.70% of the study participants held Ph. D or more qualification. About 73.52% of the were from rural background and 26.47% of the study participants had an urban background. Respondents who indicated that they have an excellent proficiency in the English language were found to be 88.82%, those who replied that there English proficiency is good were 8.82% while 2.05% of the faculty members were of the opinion that they have fair English language proficiency, however, a small percentage of the participants (0.29%) shown that their English language proficiency was poor. Similarly, 99.11% study participants indicated that they have personal computers at home therefore as against 0.88% of the faculty members who didn't have computer accessibility at their homes.

Table-1: Demographics (n=340)

Variables	**Respondents**	**Percent**
Gender		
Male	230	67.64
Female	110	32.35
Universities of the respondents		
Engineering (UET)		
Agriculture (UOA)		
Medical (KMU)	88	25.88
General (UOP, ICU and	51	15.00
BBWU)	66	19.41
	135	39.70

Highest academic degree		
Master/M.Phil	120	35.29
Ph.D/Post doc	220	64.70
Background		
Rural background	250	73.52
Urban background	90	26.47
English language Prof.		
Excellent	302	88.82
Good	30	8.82
Fair	7	2.05
Poor	1	0.29
Computer access at home		
Yes	337	99.11
No	03	0.88

Perceived digital information literacy skills

The study asked the participants to specify the level of their comfort with digital resources. They were given a total of 18 digital information related statements and were asked to tick those which they perceive to be more relevant to them on a 4 point likert-scale As depicted in table 2, faculty members showed their comfort with nine statements with mean scores of 2.58 or above. Out of these nine statements, the comfortability level of the faculty members with computer hardware usage such as keyboard, mouse, external discs etc was the highest with a mean score of 3.66 followed by word processor (mean= 3.62), internet browsing with search engine (mean= 3.60), email (mean= 3.58), power point (mean= 3.54, retrieval of required information for teaching, learning and research (mean= 3.52), information evaluation (mean= 2.95), finding the required stuff in general (m= 2.87) and the usage of electronic journals (m= 2.58) respectively. The faculty members showed least comfortability level with the digital library of HEC (mean= 2.11), using e-books (m= 2.11), and the usage of online/digital indices and abstracts (m= 2.21). Thus our results showed that the study participants had more comfortability in the usage of

computer hardware, and the usage of browsing via search engines. However, they had least acquaintance and familiarity with browsing online/digital resources. It can be inferred from the data that faculty members were lacking digital information skills which needs to be enhanced. However, the overall average mean scores of all 18 statements indicated that the DILS of the faculty members were satisfactory.

Table-2: *DILS skills of the respondents*

Ranks	I feel comfortable in:	M	SD
1	Computer hardware (key board use, mouse use, CD/DVD use)	3.66	0.98
2	Using MS word	3.62	0.89
3	Using search engines for internet browsing (Google, yahoo)	3.60	0.92
4	Email usage	3.58	0.88
5	Using power point presentations	3.54	0.99
6	Deciding to retrieve the required information for academic work	3.52	1.02
7	Evaluating of online/digital information resources	2.95	0.98
8	Finding the required information on the internet in general	2.87	1.13
9	Using e-journals	2.58	1.03
10	Fair use of digital information	2.49	1.11
11	Finding abstracts, references, citations	2.46	1.08
12	Information sharing via social media chatting and blogs	2.44	1.20
13	Finding digital reference books/sources	2.41	1.01
14	Searching OPACs	2.38	1.11
15	Searching online databases	2.24	1.02
16	Using digital indexes and abstracts	2.21	1.01
17	Usage of e-books	2.19	1.00
18	Using HEC digital library	2.11	1.02
Total:		2.82	0.96

Scale: 1 = never; 2 = sometimes; 3 = often; 4 = always

Hypotheses testing

To know about the relationship between digital information related activities and various demographic variables of the study participants, the study used Independent sample t-test as given in table 3.

Gender wise skill level of the respondents

The study employed independent t-tes in order to compare respondents' scores of digital information skill by gender. Results, as given in table-3, indicated no statistical difference in the mean and t-test values of male respondents (Mean = 2.57) and female respondents (Mean = 2.54); t=(.870) = 1.59, p=.351). Since there was a small proportion of the mean difference (eta squared = .003) therefore, it can be inferred that there was no link or association in the gender of the study participants. Thus, Hypothesis-1 is accepted. In their research on essential IL skills, Spitzer, Eisenberg and Lowe (1998) have also given similar results who reported no significant difference of the study respondents by gender.

*Respondents' Skill level and respondents' universitie*s

In order to know about the association between the mean values of respondents' DILS and their respective category of universities, an independent sample t-test was used. These results indicated a significant difference between the respondents' statistical values for Engineering University (UET) M=2.70 and Khyber Medical University (KMU) M=2.49) and University of Agriculture (UOA) (M=2.68), General Universities (UOP, SBBWU and ICU) (M= 2.39) t= (2.522), p=.(.000) and DILS. Thus our results showed an association between the category of respondents' universities and the level of DILS. Thus, H_2 is also rejected.

Respondents' digital IL Skill level and highest academic degree

The study compared the mean values of the faculty members' digital IL skill level with their highest academic qualifications by applying t-test. Results indicated a significant difference in the mean values for Masters/M. Phil (Mean: 2.59) and for Ph. D a mean score of 2.51 with t= (2.522), p=.(012). Thus the mean scores and t-test values showed an association between the highest academic degrees of the respondents and their digital IL skill level. Thus H_3 is also rejected.

Respondents' Digital IL Skill level and social background

Similarly, the independent sample t-test was run to compare respondents' mean values of digital IL skills with their social background. Results showed no significant difference in the values

of rural background (Mean=2.58) and urban background (Mean=2.61), t= (1.633), p= (.222) which mean that there was no link in the social background of the respondents and their digital IL skill level. So, H_4 is accepted.

Respondents' digital IL Skill level and English language proficiency

To assess faculty members' difference between DILS and their English language proficiency, the study also employed independent t-test. Results indicated a significant difference between digital IL skills of faculty members and their English language proficiency. For excellent proficiency, mean values were found to be M= 2.89, for Fair mean values were M=2.38, while for poor proficiency the mean value was M=2.19. Whereas independent t-test values were t= (2.112), p= (.000) Thus H_5 is also rejected.

Respondents' digital IL Skill level and computer access at home

Similarly, the study used independent-samples t-test to compare the mean values of digital IL skills of the study participants and their access to *computers at home*. The study found a significant difference in the mean values for those who had computer access at home (M=2.91), and those who didn't (M=2.00); t=(9.278), p=(.000). It showed an association between respondents' computer access at home and the level of digital IL skills. Thus H_6 is rejected.

Table-3, Association of demographic and educational characteristics with digital IL skills

Variables	**Mean**	**t-test**	**Sig.**
Gender		.870	.351
Males	2.57		
Females	2.54		
Category of respondents' universities		1.128	.000
UET	2.70		
KMU	2.49		
UOA	2.68		
UOP, SBBWU & ICU	2.39		
Highest qualification/academic degree		2.522	.012

Masters /M. Phil	2.59		
Ph.D or higher degree	2.51		
Social background		1.633	.222
Rural	2.58		
Urban	2.61		
English language proficiency		2.112	.000
Excellent	2.89		
Good	2.51		
Fair	2.38		
Poor	2.19		
Computer access at home		9.278	.000
Yes	2.91		
No	2.28		

Conclusion and recommendations

One of the most important findings that have emerged after data analysis of this study was that faculty members faced troubles while searching and finding their needed information sources and that they lacked advanced information searching techniques. The analysis indicated that faculty members used to rely more on the information that could be retrieved with little efforts. It can be inferred from the results that university teachers were not skilled in using advanced searching strategies and a majority of them were in the habit of using general search engines for retrieving digital information resources.

Digital information literacy skills bear greater importance for the university teachers to enhance their pedagogical and research capabilities. The complexity of the prevailing digital environment in universities and DAIs, necessitates the possession of different paradigms of IL for better usage of e-resources. It is therefore imperative to ensure faculty members possess DILS to be meticulously stranded in the usage of digital information resources. Though our results have indicated that there was a significant relationship between DILS and the different determinants of personal factors, the overall level of DILS of the study participants were scanty. In a nutshell, our results suggest that to augment the DILS of university teachers, a broad and realistic approach is

needed to provide in-depth training to the faculty members. It has been observed that the rapid development in ICTs and their integration in libraries and information centers have transformed the information search behavior of users. These developments have created an educational disparity between evolving technologies, knowledge and competency of the users. Since most of our study participants lacked essential skills in using digital technologies therefore it is imperative on the part of universities' administration to provide training to all the faculty members in the use of such technologies on regular bases. Hence to get maximum benefit from the huge bulk of informational resources present over the internet in digital form, university faculty needs to be educated. The staff of university libraries can do this job very well as they have the expertise to train faculty members in the usage of digital resources. This study found that though university faculty possessed rudimentary knowledge of retrieving digital information, they still needed to excel in using ICTs and improve their competencies. Thus, this study recommends more training of DILS to the faculty members for increasing their pedagogical and research output. The librarians of central libraries of all universities should chalk out training programs for faculty members. They should not only teach them ways and means in making the effective use of the traditional library resources but also of the digital information resources. There are several such instances that are being practiced in technological developed countries. These can be successfully implemented to Pakistani universities and their libraries, for example, California State University, Oxford University and University of Wisconsin have centers for faculty teaching and learning. University libraries in Pakistan also have the capacity to provide necessary paraphernalia related to digital technologies, computer related multimedia, and other necessary stuff to easily use and have an access to reaching, learning and research resources in various disciplines, utilize e-databases and accessing journals' tables of contents through the faculty members' email. This would certainly benefit university teachers both in teaching and their research productivity.

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