

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Library Philosophy and Practice (e-journal)

Libraries at University of Nebraska-Lincoln

---

12-21-2021

## Exploring End-Users' Digital Literacy Skills in the Islamia University of Bahawalpur, Pakistan

Muhammad Younus

*The Islamia University of Bahawalpur, Pakistan, younus35@hotmail.com*

Muhammad Irfan Saleem

*The Islamia University of Bahawalpur, Pakistan*

Follow this and additional works at: <https://digitalcommons.unl.edu/libphilprac>



Part of the [Library and Information Science Commons](#)

---

Younus, Muhammad and Saleem, Muhammad Irfan, "Exploring End-Users' Digital Literacy Skills in the Islamia University of Bahawalpur, Pakistan" (2021). *Library Philosophy and Practice (e-journal)*. 6772. <https://digitalcommons.unl.edu/libphilprac/6772>

# **Exploring End-Users' Digital Literacy Skills in the Islamia University of Bahawalpur, Pakistan**

**Dr. Muhammad Younus 1**  
**Muhammad Irfan Saleem 2**

*1Assistant Professor, Department of Library and Information Science, The Islamia  
University of Bahawalpur, Pakistan;*

*2M.Phil Scholar, Department of Library and Information Science, The Islamia  
University of Bahawalpur, Pakistan*

## **Exploring End-Users' Digital Literacy Skills in the Islamia University of Bahawalpur, Pakistan**

*Muhammad Younus*

*Muhammad Irfan Saleem*

### **Abstract**

This study aimed to explore end-users' digital literacy skills in the Islamia University of Bahawalpur, Pakistan. The study employed the quantitative research method to address the research questions. The quantitative data were collected from research students (M.Phil. and PhD) studying at different departments in the university through the questionnaire. The findings of the study suggest that the respondents had a high level of knowledge and skills to use the Internet, MS Word and computers. The participants were not aware of most of electronic resources. They possessed a low level of skills to retrieve digital information, produce and create digital contents, and evaluate digital information. The findings of the study will help university authorities, academic departments and the university library to take necessary measures to develop and improve students' digital literacy skills, so that they can use digital resources effectively and undertake their research and study efficiently.

**Key words:** Digital literacy, digital literacy skills, end users, students, the Islamia University of Bahawalpur, Pakistan

## **Introduction**

The term ‘digital literacy’ means the basic knowledge about computers, digital materials, OPAC, web, e-journals, e-literature, e-papers etc. (Bawden, 2001). Digital literacy is “the ability to understand information and more importantly to evaluate and integrate information in multiple formats that the computer can deliver” (Meurant, 2009). The spectacular advancements in information technology have opened new potentials for digital literacy, information creation, access, storage, duplication, digital repository, presentation and distribution. In the modern world, all information users are required to be equipped with necessary digital literacy skills so that they can access and use digital resources effectively (Chauhan & Mahapatra, 2013).

A large amount of digital information is available on the web, and various varieties of digital formats are also available nowadays. Digital literacy skills have made it very easy to access digital information. However, the huge irrelevant information creates a massive challenge to the selection of required information for the user. A lavish progression in digital reading material and it’s all breeds requires an advanced level of digital literacy skills among users. The computing skill provides speed, accuracy and flexibility, and it boosts efficiency and effectiveness in digital literacy (Adeleke, 2016). Ananiadou and Claro (2009) have noted that quick changes in digital technology have caused information explosion, and technological changes demand new skills to gauge, search and establish new digital information in digital environments. The development in libraries demands literacy skills in different areas of technology. The practice of digital literacy has meaningfully enhanced in the libraries. So, this is very necessary to educate the user about new skills and expertise in different fields of digital information technology (Choi & Rasmussen, 2009). End-users

need to possess the knowledge and digital literacy skills needed to deal with digital information resources (Raju, 2014).

Libraries consume the major part of their budgets on electronic information systems and products i.e. CD-ROMs, OPAC, e-books, online databases, e-journals, etc. Information from e-resources cannot be obtained in the same manner as printed resources were consulted previously. Adequate knowledge about ICT tools and retrieval techniques are required to search these digital resources effectively. The technological developments have thus provided new opportunities as well as created new challenges for individuals, forcing them to obtain necessary skills to gain benefits from these developments (Sunata and Murthy 2009).

Davis and Davis (1990) have noted that, “end-user computing has become an area of major importance to organizations including libraries over the past several years. As non-professional computer users come to rely on computer systems to perform more and more of their basic tasks, digital resources’ managers need to ensure that those individuals learn to use software packages effectively. Two common, and often complementary, approaches for achieving this goal have been to develop in-house training programs and to utilize computer systems that are user friendly”. It is the responsibility of library professionals to provide training and support to end-users so that users can easily select, access, retrieve, analyze and utilize the huge volume of networked and digital resources. End-users in institutions of higher learning are required to be equipped with necessary skills to use networked and digital resources effectively. Apart from learning how to obtain information, they are required to learn how to assess critically the digital contents to check their validity (Isah, Abdul Momin, 2010).

Digital resources are important for learning and research. Users' access to global digital resources needs to be enhanced to enable them to perform scholarly activities effectively. The importance of electronic resources has become apparent as they complement greatly to print resources and their acquisition is not restricted by geographical location (Isah, Abdul Momin, 2010). Therefore, digital literacy skills among end-users, training for literacy skills in the broadest sense are very essential for effective exploitation of digital resources, and the library and information services area is the relevant field in which it can take place.

### **Statement of the problem**

The purpose of an academic library is to support learning, teaching and research activities of the academic institution (Klain-Gabbay and Shoham, 2017). Students and researchers in universities use computers to search for material and locate online resources for their study and research purposes. They may sometimes not be able to search their required information efficiently (Robert C. Meurant, 2009). A large number of students have no idea how to use digital resources. However, library staff are more knowledgeable and able to use digital resources than students (Robert C Meurant, 2009) . The use of digital resources could improve quality, efficiency and effectiveness of education. In this regard, students' digital literacy skills and the rapid access to necessary digital information can help them to benefit from the massive amount of digitized contents. They can help to enhance the quality of searching, retrieval, and can also encourage the students to utilize these e-resources (Majid & Fanilievna Abazova, 1999). The Islamia University of Bahawalpur library has provided a large number of digital resources to meet users' information needs. To find out how far the library has been successful in meeting users' information needs by

getting its digital resources exploited by users, there was a need to explore students' (end-users) digital literacy skills in order to determine their ability to utilize electronic resources effectively.

### **Research questions of the study**

The purpose of this study is to explore digital literacy skills of end-users in the Islamia University of Bahawalpur, Pakistan. The study aims to address the following research questions:

RQ 1. What are end-users' knowledge and skills to use ICT tools?

RQ 2. What is the level of end-users' awareness about electronic resources?

RQ 3. What is the level of end-users' skills to retrieve digital information?

RQ 4. What is the level of end-users' skills to produce and create digital contents?

RQ 5. What is the level of end-users' skills to evaluate digital information?

### **Literature review**

#### **Concept of digital literacy**

Chanchinmawia et.al (2018) have described digital literacy as "the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills." Spires and Bartlett (2012) have noted that digital literacy consists of three components:

- 1) "Finding and consuming digital content;
- 2) Creating digital content; and

### 3) Communicating or sharing digital content”.

Ba and colleagues (2002) have defined digital literacy as "the set of habits through which young people use information technologies to learn, work, and have fun." This definition is general, but it highlights an important paradox in contemporary education; that is, the skills necessary for increasing technological development.

Leu et al. (2007) stated that most of new literacies, including digital literacy, share four assumptions. They,

- i. “include the new skills, dispositions and social practices that are required by new technologies for information and communication;
- ii. are central to full participation in a global community;
- iii. regularly change as their defining technologies change; and
- iv. are multifaceted and our understanding of benefits from multiple points of view”.

Digital literacy can be defined very simply as, ‘the ability to access, evaluate and use information from different sources.’ Digital literacy is a skill, ability, and experience of a person to find the correct information from the correct source (Prasad, 2016).

### **Digital literacy skills**

The term digital literacy skills refer to the ability to use the computer, software, internet tools such as, web browser, e-mail, OPAC, discussion groups in order to access, retrieve, communicate, evaluate and utilize electronic information effectively in different formats available inside the library or outside the library (Rao & Babu, 2011). The use of electronic resources could enhance efficiency, effectiveness, and the quality of education. In this regard, the digital literacy of end-users and their ability to quickly access necessary



information can help them to benefit from the vast amount of digitized contents. It can help to improve the quality of their work and encourage them to utilize e-resources for preparing their projects and assignments. A computer literate person is more comfortable in utilizing e-resources (Majid and Albazova, 1998).

Computer self-efficacy, be it a positive experience or otherwise, may affect one's electronic library resources (ELRs) use. The implementation of ELRs in academic libraries requires students to possess high level of computer self-efficacy. Moreover, students are required to have the ability to use the computer. It is often little in the way of formal training, and low computer self-efficacy may be a significant limiting factor for students exploring ELRs vital for academic achievements. Computer self-efficacy is the key to overcoming apprehension of users' experiences. In order to use ELRs in an effective manner, students are required to have self-confidence in performing tasks relating to the computer (Wu and Yeh, 2012; Sadiku and Kpakiko, 2017). Sujatha and Murthy (2010) have noted that a computer literate person is expected to gain benefits from obtaining the required information from e-resources effectively, browse the World Wide Web confidently and use online services efficiently. Effective use of e-resources for accessing required information would be difficult without having adequate digital literacy skills.

Mutula and van Brakel (2006) have observed that the dissemination of literacy through the online method could improve the skills of researchers more than the individual teaching approach. Zahid and Shoeb (2010) have stated that digital media education is linked to the ability to use the computer, Internet and social networks, and that people having a high level of digital media literacy are often more active in their social activities and to express their viewpoints. Kenton and Blummer (2010) have noted that librarians can

develop students' computer and digital skills by providing several technical training to them. Digital literacy skills assist students in effective technological interaction in several academic conditions.

Adeniran (2018) carried out a study to explore the effects of literacy skills and computer self-efficacy on the use of e-resources by students in university libraries in Nigeria. He discovered a significant positive correlation between literacy skills and the use of e-resources by the students. Moreover, there was a positive correlation between computer self-efficacy and the use of e-resources. The study concluded that the use of e-resources promoted access to the latest information among students in the universities. The study recommended that the university library management should ensure the provision of e-resources on a continuous basis with adequate ICT infrastructure to facilitate their use.

Chanchinmawia and Verma (2018) conducted a study to assess information literacy among researchers at the University of Mizoram, India. They found that the researchers had sufficient skills to process information for basic needs. Most of the scholars knew the basics of the library, and were able to obtain information through printed and electronic forms, but they needed improvement in the handling of information, especially in resource evaluation. The study suggested that a literacy program/course should be included in the curriculum. Birandar and Naik (2017) carried out a survey-based study to explore digital literacy skills among the research students in universities in Bangalore, India. The findings revealed that 56% of the respondents believed that they were good in internet skills, 86% participants preferred to utilize e-journals and e-books, and 52% audiovisual resources, and 37 % social network, which is the common method of learning the skills to use e-resources.

Eshet-Alkalai and Amichai-Hamburger (2002) studied digital literacy skills among different age groups in University of Israel, Galilee, Israel, and found improvement over time in all age groups, especially in adults, to perform tasks that required technical skills and control in the use of technology. They discovered a decrease in skills that required critical and creative thinking in information and reproductive skills, especially in younger respondents. Emmett and Emde (2007) conducted a study to assess graduating students' information literacy skills by using ACRL's information literacy competency standards for higher education in the USA. They found a significant improvement in students' information literacy skills over a period of three years. Sakthi (2011) undertook a study to assess digital literacy skills among full-time researchers at the University of Madras and its affiliated universities in India. The study found that most of the participants possessed a high level of digital literacy skills. November and Day (2012) carried out a study to explore how digital literacy skills of undergraduate students could be utilized to improve their discipline-specific writing. Eyal (2012) has detailed the major functions of a teacher in the digital environment, and focused on the competencies, abilities and understanding required by the teacher in the digital environment for assessment. He has stressed the need for adopting different technologies for the evaluation, termed as 'digital assessment mastery', which requires a number of digital literacy skills.

Ameen and Gorman (2009) has noted that digital literacy is practiced in some university libraries in Pakistan. The country is deprived of the opportunity to develop digital literacy programs in the context of lifelong learning. Neither the government nor the information industry in the country appears willing to consider this need as an operational priority. Salma (2018) conducted a study to explore digital literacy skills among secondary

school students in Pakistan. The study suggested that most of respondents possessed a high level of digital literacy skills. They possessed high skills to use mobile phones, and had low skills to prevent computers from viruses. She suggested that a policy should be formulated to enhance students' proficiency to exploit technological resources. Abbas, Hussain and Rasool (2019) explored the impact of digital literacy on research students' academic progress in universities in Pakistan. The findings of the study showed that digital literacy had significant impact on students' research skills, communication skills and confidence.

### **Research methodology**

The study employed the quantitative research method to address the research questions. On the basis of the literature review, a questionnaire was developed to collect the quantitative data from MPhil and PhD students studying at various departments in the Islamia University of Bahawalpur by employing the convenience sampling technique. A total of 400 questionnaires were distributed among the respondents, out of which 302 respondents filled and returned the questionnaires with a response rate of 75.5%. The quantitative data collected through the questionnaire were analyzed by using IBM SPSS, Statistics, V21.

### **Data analysis**

In order to address research questions of the study, descriptive statistics (i.e. frequency, percentages, mean and standard deviation) have been used to analyze the quantitative data collected through the questionnaire. The data are analyzed and presented in the following sections.

## Demographic information

### *Respondents' gender*

Among 302 total respondents, 139 (46.0 %) respondents were male and 163 (54%) were female (Table 1).

Table 1: Respondents' gender (N=302)

<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>
Female	163	54.0
Male	139	46.0
<b>Total</b>	<b>302</b>	<b>100.0</b>

### *Respondents' age group*

As regards respondents' age groups, the majority of the respondents 143 (47.4%) were aged below 25 years, 110 (36.4%) respondents were aged between 26-30 years, 26 (8.6%) between 31-35, while 23 (7.6%) respondents were above 35 years of age (Table 2).

Table 2: Respondents' age group (N=302)

<b>Age Group</b>	<b>Frequency</b>	<b>Percent</b>
Below 25	143	47.4
26-30	110	36.4
31-35	26	8.6
Above 35	23	7.6
<b>Total</b>	<b>302</b>	<b>100.0</b>

### *Respondents' programme of study*

Participants were required to inform about their programme of study. Out of 302

respondents, the majority of the respondents (247, 81.80%) were undertaking MPhil degree programme, while 55 (18.2%) respondents were doing PhD at different faculties (Table 3).

Table 3: Respondents' programme of study (N=302)

Programme of Study	Frequency	Percent
MPhil	247	81.8
PhD	55	18.2
<b>Total</b>	<b>302</b>	<b>100.0</b>

### Knowledge and skills to use ICT tools

The participants were required to rate the level of their knowledge and skills to use various ICT tools by using a five-point Likert scale (1=Very Low, 2=Low, 3=Moderate, 4=High, 5=Very High). The respondents reported that they had knowledge and skills to use the Internet (M=3.79, SD= .964), MS Word (M=3.61, SD=1.143), computers (M=3.55, SD=1.019), PowerPoint (M=3.41, SD=1.179), MS Excel (M=3.41, SD=1.179), Adobe Reader (M=3.00, SD =1.311), operating system (window) (M=2.86, SD =1.259), printer (M=2.82, SD=2.275), scanner (M=2.60, SD =1.227), MS Access Database (M=2.53, SD =1.222), Adobe Photoshop (M=2.45 , SD =1.157), InPage Urdu Software (M=2.40 , SD =1.201) (Table 5).

Table 5: Respondents' knowledge and skills to use ICT tools (N=302)

Rank	Skills	N	Mean	Percent
1	Internet	302	3.79	.946
2	MS Word	302	3.61	1.143
3	Computer	302	3.55	1.019
4	MS PowerPoint	302	3.41	1.179
5	MS Excel	302	3.21	1.224

6	Adobe Reader	302	3.00	1.311
7	Operating System (Window)	302	2.86	1.259
8	Printer	302	2.82	1.275
9	Scanner	302	2.60	1.227
10	MS Access Database	302	2.53	1.222
11	Adobe Photoshop	302	2.45	1.157
12	InPage Urdu Software	302	2.40	1.201

T test was performed to determine the difference between the participants' levels of knowledge and skills to use ICT tools with regard to their gender and programme of study. It was found that there is a significant difference between the levels of knowledge and skills of participants to use ICT tools with regard to their gender and programme of study with the significant value of 0.016, 0.027 respectively (Table 6 and 7).

Table 6: Result of t-test regarding respondents' level of knowledge and skills to use ICT tools with respect to gender.

Statement	N	Gender	Mean	T	Sig
Level of knowledge and skills to use	139	Male	37.9191	2.413	.016
various ICT tools	163	Female	34.9565		

Table 7: Result of t-test regarding respondents' level of knowledge and skills to use ICT tools with respect to programme of study.

Statement	N	Programme	Mean	T	Sig
Level of knowledge and skills	253	MPhil	10.37092	-2.230	.027
to use various ICT tools	49	PhD	11.41021		

### Awareness of electronic resources

The participants were required to rate the level of their awareness about various electronic resources by using a five-point Likert scale (1=No idea, 2=Poor, 3=Adequate, 4=Good, 5=Very Good). The respondents indicated that they were aware of Websites (M=3.76, SD =1.353), social networking sites (M=3.62, SD =1.39), e-books (M=3.39, SD =1.414), e-journals (M=3.37, SD =1.474), electronic/online databases (M=3.37, SD =1.442), e-newspapers (M=3.30, SD =1.473), HEC digital library (M=3.17, SD =1.455), OPAC (Online Public Access Catalog), (M=3.02, SD =1.441), IUB institutional repository (M=2.82, SD =1.515) (Table 8).

**Table 8: Awareness about electronic-resources (N=302)**

<b>Rank</b>	<b>Electronic Resources</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
1	Knowledge of Websites	302	3.76	1.353
2	Social Networking Sites	302	3.62	1.379
3	e-Books	302	3.39	1.414
4	e-Journals	302	3.37	1.474
5	Electronic Online Database	302	3.37	1.442
6	e-Newspapers	302	3.30	1.423
7	HEC Digital Library	302	3.17	1.455
8	OPAC (Online Public Access catalogue)	300	3.02	1.441
9	IUB Institutional Repository	302	2.82	1.515

T test was performed to determine the difference between respondents' levels of awareness about electronic resources with regard to their gender and programme of study. It



was found that there is no significant difference between the levels of awareness about electronic resources of male and female participants, with the significant value of 0.337 (Table 9). Whereas, there is significant difference between participant' levels of awareness about electronic resources with regard to their programme of study with the significant value of 0.000 (Table 10).

Table 9: Result of t-test regarding the respondents' level of awareness about various electronic resources with respect to gender

Statement	N	Gender	Mean	T	Sig
The user level of awareness about	137	Male	30.4444	.961	.337
various electronic resources	165	Female	29.2565		

Table10: Result of t-test regarding the respondents' level of awareness about various electronic resources with respect to programme of study

Statement	N	Programme	Mean	T	Sig
The user level of awareness	256	MPhil	29.5554	-3.768	.000
about various electronic	46	PhD	36.5000		
resources					

### Digital information retrieval skills

The respondents were asked to rate the level of their skills to retrieve digital information by using various techniques and through various sources. They were required to use a five-point Likert scale (1=Very Low, 2=Low, 3=Moderate, 4=High, 5=Very High) to rate their skills. The respondents indicated that they possessed skills to retrieve digital information by using search engines (M=3.45, SD=1.278), URL (M=3.26, SD=1.278), advanced search fields (M=3.08, SD=1.97) , online full-text databases (M=2.99, SD=1.215),

HEC digital library (M=2.99, SD=1.258), online bibliographic databases (M=2.96, SD=1.216), meta-search engines (M=2.95, SD=1.225), phrase searching (M=2.92, SD=1.179), IUB institutional repository (M=2.89, SD=1.258), Web 2.0 applications (SNS, Wikis, Blogs, etc.) (M=2.84, SD=1.286), proximity operators (M=2.64, SD=1.125), truncation searching technique (M=2.54, SD=1.164), and Boolean searching techniques (M=2.52, SD=1.172) (Table 11).

Table11: Digital information retrieval skills (N=302)

<b>Rank</b>	<b>Source/Technique</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
1	Search engines	302	3.45	1.278
2	URL	302	3.26	1.273
3	Advanced search fields	302	3.08	1.197
4	Online full-text databases	302	2.99	1.215
5	HEC digital library	302	2.99	1.258
6	Online bibliographic databases	302	2.96	1.216
7	Metasearch engines	302	2.95	1.225
8	Phrase searching technique	302	2.92	1.179
9	IUB institutional repository	302	2.89	1.258
10	Web 2.0 applications (SNS, Wikis, Blogs, etc.)	302	2.84	1.286
11	Using proximity operators	302	2.64	1.125
12	Truncation searching technique	302	2.54	1.164
13	Boolean searching techniques	302	2.52	1.172

T test was performed to determine the difference between participants' levels of digital information retrieval skills with regard to their gender and programme of study. It

was found that there is no significant difference between participants' levels of digital information retrieval skills with regard to their gender and programme of study with the significant value of 0.706, 0.251 respectively (Table 12 and 13).

Table 12: Result of t-test regarding respondents' level of skills to retrieve digital information by using various techniques and sources with respect to gender.

Statement	N	Gender	Mean	T	Sig
The level of skills to retrieve digital information by using various techniques and various sources	139	Male	38.3309	.378	.706
	163	Female	37.7673		

Table 13: Result of t-test regarding respondents' level of skills to retrieve digital information by using various techniques and sources with respect to programme of study

Statement	N	Programme	Mean	T	Sig
The level of skills to retrieve digital information by using various techniques and various sources	254	MPhil	17.3274	1.150	.251
	48	PhD	18.4324		

### Digital productivity and creativity

The respondents were asked to rate the level of their skills to produce and create digital information by using a five-point Likert scale (1=Very Low, 2=Low, 3=Moderate, 4=High, 5=Very High). The respondents informed that they had skills to share digital information (M=3.53, SD=1.242), use digital media to complete tasks (M=3.52, SD=1.222), create digital contents by using digital media (M=3.31, SD=1.239), organize digital information (M=3.31, SD=1.277), and protect digital information (M=3.26, SD=1.265) (Table 14).

Table 14: Digital productivity and creativity (N= 302)

Rank	Skills	N	Mean	Std. Deviation
1	Share digital information	302	3.52	1.242
2	Use digital media to complete tasks	302	3.52	1.222
3	Create digital content by using digital media	302	3.31	1.239
4	Organize digital information	302	3.31	1.277
5	Protect digital information	302	3.26	1.265

T-test was performed to determine the difference between participants' levels of skills to produce and create digital contents with regard to their gender and programme of study. It was found that there is no significant difference between participants' levels of skills to produce and create digital contents with regard to their gender and programme of study with the significant value of 0.726, 0.212 respectively (Table 15 and 16).

Table 15: Result of t-test regarding respondents' level of skills to produce and create digital information with respect to gender.

Statement	N	Gender	Mean	T	Sig
The level of skills to produce and create digital information	139	Male	17.0870	.351	.726
	163	Female	16.8634		

Table 16: Result of t-test regarding respondents' level of skills to produce and create digital information with respect to programme of study.

Statement	N	Programme	Mean	T	Sig
The level of skills to produce and create digital information	256	MPhil	15.0708	-1.252	.212
	46	PhD	16.1944		

### Evaluation of digital information

The respondents were asked to rate their ability to evaluate digital information by using a five-point Likert scale (1=Very Low, 2=Low, 3=Moderate, 4=High, 5=Very High). They indicated that they had the ability to compare information from various digital resources to assess its reliability and validity ( $M=3.05$ ,  $SD=1.132$ ), assess the authenticity of digital information ( $M=3.04$ ,  $SD=1.092$ ), evaluate digital resource and information ( $M=3.03$ ,  $SD=1.108$ ), evaluate digital information for its accuracy, currency and value ( $M=3.01$ ,  $SD=1.128$ ), assess the bias and authority of digital information ( $M=2.86$ ,  $SD=1.124$ ) (Table 17).

Table 17: Evaluation of digital information (N=299)

Rank	Skills	N	Mean	Std. Deviation
1	Compare information from various digital resources to assess its reliability and validity	302	3.05	1.132
2	Assess the authenticity of digital information	302	3.04	1.092
3	Evaluate digital information resources and information	302	3.03	1.108
4	Evaluate digital information for its accuracy, currency and value.	302	3.01	1.128
5	Assess the bias and authority of digital information	302	2.86	1.124

T test was performed to determine the difference between participants' abilities to evaluate digital information with regard to their gender and programme of study. It was found that there is no significant difference between participants' abilities to evaluate digital

information with regard to their gender and programme of study with the significant value of 0.199, 0.212 respectively (Table 18 and 19).

Table 18: Result of t-test regarding respondents' ability to evaluate digital information with respect to gender.

Statement	N	Gender	Mean	T	Sig
Ability to evaluate digital information	256	Male	15.3381	1.287	.212
	46	Female	14.6025		

Table 19: Result of t-test regarding respondents' ability to evaluate digital information with respect to gender.

Statement	N	Programme	Mean	T	Sig
Ability to evaluate digital information	140	MPhil	15.3381	1.287	.199
	162	PhD	14.6025		

### Findings of the study

The major findings of the study with relation to the research questions are described as follows:

#### ***R.Q1. What are end-users' knowledge and skills to use IT tools?***

The findings of the study show that the respondents had a high level of knowledge and skills to use the internet, MS Word and computers, whereas they rated their knowledge and skills to use PowerPoint, MS Excel, Adobe Reader, operating system (window), printer, scanner, MS Access, Database Adobe Photoshop, InPage Urdu Software as low. Moreover, it was found that there was significant difference between the participants' levels of

knowledge and skills to use ICT tools with respect to their gender and programme of study (MPhil & PhD).

***RQ 2. What is the level of end-users' awareness about electronic resources?***

The results show that the respondents were aware of various websites and social networking sites, but their level of awareness about e-books, e-journals, electronic/online databases, e-newspapers, HEC digital library, OPAC (Online Public Access Catalog), IUB institutional repository was low.

***RQ 3. What is the level of end-users' skills to retrieve digital information?***

The findings reveal that the participants had a low level of skills to retrieve digital information by using search engines, URL, advanced search fields, online full-text databases, HEC digital library, online bibliographic databases, meta-search engines, phrase searching, IUB institutional repository, Web 2.0 applications (SNS, Wikis, Blogs, etc.), proximity operators, truncation searching technique, and Boolean searching techniques. It was found that there was no significant difference between the respondents' levels of skills to retrieve digital information with respect to their gender and programme of study.

***RQ 4. What is the level of end-users' skills to produce and create digital contents?***

The results reveal that the participants had a high level of skills to share digital information, use digital media to complete tasks, whereas they possessed low skills to create digital contents by using digital media, organize digital information, and protect digital information. It was found that there was no significant difference between the respondents'

levels of skills to produce and create digital contents with respect to their gender and programme of study.

***RQ 5. What is the level of end-users' skills to evaluate digital information?***

It was found that the respondents possessed a low level of skills to compare information from various digital resources to assess its reliability and validity, assess the authenticity of digital information, evaluate digital resource and information, evaluate digital information for its accuracy, currency and value, and assess the bias and authority of digital information. It was found that there was no significant difference between the respondents' levels of skills to evaluate digital information with respect to their gender and programme of study.

### **Conclusion**

The study aimed to explore digital literacy skills of end-users (research students) in the Islamia University of Bahawalpur, Pakistan. In order to address the research questions, the study employed the quantitative research method. The findings of the study suggest that the respondents possessed a high level of knowledge and skills to use the internet, MS word and computers, whereas their skills to use other ICT tools were low. The respondents were aware of various websites and social networking sites, but their level of awareness about e-books, e-journals, electronic/online databases, e-newspapers, HEC digital library, OPAC (Online Public Access Catalog), IUB institutional repository was low. The participants had a high level of skills to share digital information, use digital media to complete tasks. Whereas, the participants rated their skills to retrieve digital information by using search engines, URL, advanced search fields, online full-text databases, HEC digital library, online



bibliographic databases, meta-search engines, phrase searching, IUB institutional repository, Web 2.0 applications (SNS, Wikis, Blogs, etc.), proximity operators, truncation searching technique, and Boolean searching techniques as low. The respondents also had a low level of skills to create digital contents by using digital media, organize digital information, protect digital information, compare information from various digital resources to assess its reliability and validity, assess the authenticity of digital information, evaluate digital resource and information, evaluate digital information for its accuracy, currency and value, and assess the bias and authority of digital information. Furthermore, it was found that there was no significant difference between the respondents' levels of overall digital literacy skills with respect to their gender and programme of study. The findings of the study will help academic departments, the library management and relevant university authorities to take necessary steps to develop and improve students' digital literacy skills, so that they can use digital resources effectively.

### **Recommendations**

The following recommendations are made:

1. The university authorities should enhance ICT infrastructure including Wi-Fi, internet speed, VPN service, computer labs in academic departments and the university library so that students can use ICT tools effectively.
2. The academic departments need to take steps to develop students' ICT skills by incorporating necessary contents in the curriculum.
3. The academic departments need to take measures to equip students with digital literacy skills by incorporating necessary contents in the curriculum.

4. The university library should design and offer training programmes to students to develop ICT skills and digital literacy skills.
5. The university library should arrange training programmes for students to use various electronic resources such as, HEC digital library, OPAC e-book, e-journals, online databases, IUB institutional repository effectively.
6. The library should design effective strategies to market and publicize electronic resources to enhance their usage among students.
7. The library should subscribe to more electronic resources including e-journals, e-books, online databases so that students can fulfill their information and research needs.
8. Library associations in the province should organize seminars, workshops and training sessions in universities including the Islamia University of Bahawalpur for students to develop their digital literacy skills.

### **References**

- Adeniran, P. (2018), "Information literacy skills and computer self-efficacy on postgraduate students' use of e-resources in private university libraries in Nigeria", PhD Thesis, Department of Information Resources Management. School of Management. Babcock University, Ilishan-Remo, Ogun State, available at: [www.babcock.edu.ng/oer/project\\_theses/college\\_of\\_postgraduate\\_studies/](http://www.babcock.edu.ng/oer/project_theses/college_of_postgraduate_studies/) (accessed 16 November 2018).
- Ameen, K., & Gorman, G. (2009). Information and digital literacy: a stumbling block to development? A Pakistan perspective. *Library Management*.

- Ananiadou, K., & Claro, M. (2009). 21st century skills and competences for new millennium learners in OECD countries.
- Bawden, D. (2001). Information and digital literacies: a review of concepts. *Journal of documentation*.
- Beavis, C. e. a. (2009). Literacy in the digital age: Learning from computer games. *English in Education*, 43(2), 162-175.
- Bryman, A., Becker, S., & Sempik, J. (2008). Quality criteria for quantitative, qualitative and mixed methods research: A view from social policy. *International journal of social research methodology*, 11(4), 261-276.
- Chanchinmawia, F., & Verma, M. K. (2018). Assessment of Information Literacy Skills among Research Scholars of Mizoram University. *International Journal of Library and Information Studies*, 8.
- Chauhan, K., & Mahapatra, R. K. (2013). Information seeking behavior in digital environments and libraries in enhancing the use of digital information *Design, Development, and Management of Resources for Digital Library Services* (pp. 289-299): IGI Global.
- Choi, Y., & Rasmussen, E. (2009). What qualifications and skills are important for digital librarian positions in academic libraries? A job advertisement analysis. *The journal of academic librarianship*, 35(5), 457-467.
- Davis, D. L., & Davis, D. F. (1990). The effect of training techniques and personal characteristics on training end users of information systems. *Journal of Management Information Systems*, 7(2), 93-110.

- Dubnjakovic, A. (2012). Electronic Resource Expenditure and the Decline in Reference Transaction Statistics in Academic Libraries *The journal of academic librarianship*, 38, 94-100.
- Dukić, D. (2013). Online databases as research support and the role of librarians in their promotion: The case of Croatia. *Library Collections, Acquisitions, and Technical Services*, 37(1-2), 56-65. doi:10.1080/14649055.2013.10766347
- Emmett, A., & Emde, J. (2007). Assessing information literacy skills using the ACRL standards as a guide. *Reference Services Review*.
- Hoskins, R. (2005). Information and communication technology (ICT) knowledge and skills of subject librarians at the university libraries of KwaZulu-Natal. *South African Journal of Libraries and Information Science*, 71(2), 151-163.
- Hsieh-Yee, I. (1997). Teaching online and CD-ROM resources: LIS educators' views and practices. *Journal of Education for Library and Information Science*, 14-34.
- Jackman, L. W., & Weiner, S. A. (2017). The rescinding of the ACRL 2000 Information Literacy Competency Standards for Higher Education—Really?? *College & Undergraduate Libraries*, 24(1), 117-119.
- Johnson, E., & Vasudevan, L. (2012). Seeing and hearing students' lived and embodied critical literacy practices. *Theory into Practice*, 51(1), 34-41.
- Kenton, J., & Blummer, B. (2010). Promoting digital literacy skills: Examples from the literature and implications for academic librarians. *Community & Junior College Libraries*, 16(2), 84-99.
- Klain-Gabbay, L., & Shoham, S. (2017). How is the role of academic library workers perceived by both faculty members and library workers? *Libri*, 67(4), 261-281.

- Lata, S., & Sharma, S. (2013). Information Literacy among Faculty and Students of Postgraduate Institute of Medical Education and Research, Chandigarh and Pt. BD Sharma University of Health Sciences, Rohtak. *International Journal of Information Dissemination & Technology*, 3(4).
- Leu, D. J., Zawilinski, L., Castek, J., Banerjee, M., Housand, B., Liu, Y., & O'Neil, M. (2007). What is new about the new literacies of online reading comprehension. *Secondary school literacy: What research reveals for classroom practices*, 37-68.
- Majid, S., & Fanilievna Abazova, A. (1999). Computer literacy and use of electronic information sources by academics. *Asian Libraries*, 8(4), 100-111.  
doi:10.1108/10176749910275867
- Manda, P. A. (2005). Electronic resource usage in academic and research institutions in Tanzania. *Information development*, 21(4), 269-282.
- Meurant, R. C. (2009). *Developing critical L2 digital literacy through the use of computer-based internet-hosted learning management systems such as Moodle*. Paper presented at the International Conference on Multimedia, Computer Graphics, and Broadcasting.
- Meurant, R. C. (2009). The Significance of Second Language Digital Literacy Why English-Language Digital Literacy Skills Should be Fostered in Korea. 369-374.  
doi:10.1109/iccit.2009.192
- Mutula, S. M., & van Brakel, P. (2006). E-readiness of SMEs in the ICT sector in Botswana with respect to information access. *The Electronic Library*.

- November, N., & Day, K. (2012). Using Undergraduates' Digital Literacy Skills to Improve Their Discipline-Specific Writing: A Dialogue. *International Journal for the Scholarship of Teaching and Learning*, 6(2). doi:10.20429/ijstl.2012.060205
- Pickard, A. J. (2013). *Research methods in information*: Facet publishing.
- Powell, R., & Connaway, L. (2004). Basic research methods for libraries. Libraries Unlimited. Westport, CT.
- Raju, J. (2014). Knowledge and skills for the digital era academic library. *The journal of academic librarianship*, 40(2), 163-170.
- Rao, K. N., & Babu, K. (2011). Role of Librarian in Internet and World Wide Web Environment
- Ryan, G. W., & Bernard, H. R. (2000). Techniques to identify themes in qualitative data. *Handbook of Qualitative Research. 2nd ed. Thousand Oaks, CA: Sage Publications.*
- Sujatha, H., & Murthy, H. S. (2010). End-user training on the utilization of electronic information sources in fisheries sciences institutions in South India. *The Electronic Library*.
- Thanuskodi, S., & Ravi, S. (2011). Use of digital resources by faculty and research scholars of Manonmaniam Sundaranar University, Tirunelveli. *DESIDOC Journal of Library & Information Technology*, 31(1).
- Wu, M.D. and Yeh, S.T. (2012), "Effects of undergraduate student computer competence on usage of library electronic collections", *Journal of Library and Information Studies*, Vol. 10 No. 1, pp. 1-17.
- Bhandari, Pritha (2020), "An introduction to quantitative research" The cribbr.com