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**RESEARCH PAPER**

## Digital Literacy in Action: An Assessment of Awareness, Career Skills, and Librarian Support for Women Students

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**ABSTRACT**

This research aimed to assess the digital literacy skills among senior female students at Federal Government Women's Colleges in Islamabad, Pakistan. The key aspects explored in this research are to investigate their level of digital literacy, examine the importance of these skills for their careers, and examine the role of libraries and librarians in promoting them. The study population comprised 224 BS final-year students pursuing bachelor's degrees in various programs. The Statistical Package for the Social Sciences (SPSS, version 24.0) was used for data analysis, and appropriate statistical tests were employed, including t-tests, means, and standard deviations. The quantitative study reveals that students face distinct challenges in their academic and professional contexts when successfully applying these skills. This study concluded that students need to learn to use technology, a key component of digital literacy. As college students become more adept at navigating digital tools, they should also stay up to date with technology. A higher education institution, such as a college, has the responsibility not only to produce skilled students but also to foster responsible digital citizens who are aware of the broader impacts of their actions in the digital literacy arena. The study recommends acquiring an in-depth understanding of digital literacy, organizing multiple workshops and programs, and hiring only professional, qualified librarians to help students. It also creates space for suggestions to delegations, programs, course planning, as well as opportunities for student growth, library support, and academic collaborations.

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**KEYWORDS** Digital Literacy, Career Preparedness, Women Students, Role of Libraries, Librarians

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**Introduction**

The college's role is to help students achieve successful careers after graduation and their life goals. Digital literacy plays a very important role in helping one get a job (Scott et al., 2024). Digital literacy educates students about digital tools, technologies, and applications in our lives that are relevant to their personal and professional lives (Dhillon & Padmanabhan, 2023). Digital literacy has become a foundation of education and the use of modern technology in today's era (Jia & Huang, 2023) and plays a vital role in sustaining student involvement in online and everyday life settings (Hanif & Warraich, 2023). It enhances students' capabilities, such as learning and problem-solving in the digital age. The research aims to examine students' awareness of digital literacy and its importance for career preparedness. The study will also encourage students to engage with digital platforms such as Google, Zoom, LinkedIn, MS Word, Excel, and

PowerPoint. Most importantly, this study will highlight the role of libraries and librarians in promoting digital literacy in colleges.

### **Literature Review**

Most college students are Generation Z, born from 1997 onward (Dimock, 2019). Digital literacy has become universal in their lives; they always use the internet, World Wide Web, Wi-Fi, and smartphones. Generation Z students have always used social media for entertainment and virtual reality (Dimock, 2019). Moreover, they are also the first digital natives. The word “digital natives” is introduced to native speakers of the language of digital literacy (Prensky, 2001). The concentration concludes that Generation Z is more expressive in digital literacy skills across a wide range of technologies and needs to know how to use digital content (Smith et al., 2020). The minimize on digital literacy among college students can be attributed to the fact that they are fundamentally digitally smart, given their categorization as digital born, pass over from the early 1980 and 2005. Many times, connected with (GA) Generation Alpha, which is born between 2010 to 2024, Generation Z, which is born from 1997 to 2012, and Millennials, which is born from 1981 to 1996, these groups are known for their skills in absorbing digital data quickly and handling several tools and programs with facility (Gifford, 2023). Although undergraduate students are often perceived as having a better routine and convenience with digital literacy, it mainly provides them with motivation and awareness of procedures in their daily lives. In the context of the rise of the organized era with digital literacy, students still need guidance to become selective users of digital data, understanding its advantages and drawbacks (Jose, 2016). According to Mustafa Kayali, digital literacy is very important for creating learning settings, promoting engagement with digital literacy, and participating in 18 immersive learning opportunities, such as internships, interdisciplinary learning, and real-world problem-solving tasks. Furthermore, digital literacy skills include analytical thinking and the ability to navigate ethical dilemmas related to technology use. As virtual platforms evolve, they are becoming increasingly popular in both personal and professional domains. Higher education institutions, such as colleges, have a unique responsibility to promote student awareness of these complicated topics. By incorporating digital literacy across multiple disciplines, colleges can produce graduates who are not only technically proficient but also conscientious and responsible citizens (Kayali, 2020). Digital literacy has spread throughout society and will play an important role in higher education, teaching students to use digital technology ethically (Elliott et al., 2021). Career counseling initiatives have developed a combination of digital literacy, social media networks, and empowerment provided to students and job seekers. The use of social platforms in career guidance work has become a popular and helpful tool, expanding the scope of the target audience and adapting teaching materials to the independent learning attribute (S. A. Fradinata et al., 2023). The promotion of blended learning and career orientation forums has become essential for empowerment. Laser-focused on elements, special interests, digital literacy skills, and strengths with comprehensive knowledge of educational and career prospects, and then be career-ready (M. N. A. Neva et al, 2023). Additionally, there is an extensive understanding of the effects of digital technology on future job seekers' ability to secure desirable jobs, highlighting the importance of integrating career-principles resources into education curricula to support college students' career readiness for the developing workforce (S. Nababan, 2023). In 2020, Johnston examined workshops and digital literacy training programs to help students obtain a diversity of digital literacy skills. Many libraries organize workshops and one-on-one training sessions. Basic computer skills and additional subjects, such as using databases, evaluating e-sources, and using digital publishing tools, are included in these workshops

(Johnston, 2020). Moreover, libraries and academic institutions can ensure that students not only have access to educational information but also have the digital tools necessary to succeed in the digital age through cooperation. College libraries and other libraries inspire media literacy as part of their digital literacy plan (Johnston, 2020). As an engagement capability, digital literacy is a fundamental need for college students in the present modern world. Moreover, we need to include information literacy in educational institutions, government plans, and community programs (Hanif & Hassan, 2025). At the same time, a recent study highlighted that “there is a dire need to design and implement comprehensive information literacy programs that strengthen students' abilities to locate, evaluate, and ethically use information (Habib et al., 2026). Moreover, the digital literacy skills can even provide equal opportunities to girls in rural areas (Sadiq et al., 2025, p. 58).

Libraries have become important centers for offering digital literacy guidance and resources to help college students develop the required digital literacy skills. But the significance of digital literacy is increasingly widely acknowledged. Libraries still face numerous hurdles when it comes to promoting digital literacy, particularly in implementing digital literacy plans. On the other hand, librarians may also struggle with their own digital literacy skills, including a lack of confidence and resistance to change, and need to be updated on new technologies, as recommended by Hanif et al. (2024). These are major and very important challenges arising from a set of circumstances, limited digital resources, varying user needs, technological limitations, and the rapid assessment of digital literacy (Choudhary, 2022).

## Material and Methods

This research was quantitative and examined digital literacy and its impact on career readiness. Quantitative research emphasizes the production of analytical data that can be statistically tested to identify patterns and relationships among variables. (Creswell, 2017). The validity and reliability of the questionnaire were checked through expert opinion and pilot testing with 20 students. The researcher collected data in person by visiting each college. The data were analyzed using Statistical Package for Social Sciences 24.0 (SPSS) software, and appropriate statistical tests, such as the T-test, means, and standard deviation. Digital literacy is being used in some forms in colleges. Colleges that offer a range of digital literacy courses and organize workshops specifically focused on digital literacy skills. Out of eleven women's colleges in Islamabad, eight offer BS programs, so the data were collected from these eight colleges. Researchers typically use 10-30 % of the total population when deciding on a sample size to achieve accurate, reliable, and representative results without requiring the researcher to survey the entire population. This approach is feasible in terms of time, cost, and data collection resources (Asenahabi et al., 2023). We have maintained a sample size of 30% of the population. The inquiry gathered scenario and statistical data related to the students. A simple random sampling technique was used for this study. The total population is 746, collected from 8 women's colleges. These participants comprised a many demographic ranges, across age from 18 to 35 stages to expressive their how digital literacy prepares BS college students for career preparedness.

**Table 1**  
**Distribution of the sample by independent variables**

College	Faculty	Department	Students
Islamabad Model College for Girls (PG) F- 7/2	Religion studies	BS. Islamic studies	50
	Natural Sciences	BS. Chemistry	50
	Social Sciences	BS. Psychology	50

		BS. Economics	50
Islamabad Model College for Girls, F-6/2 Street-25	Science Information Technology ADP(Associate Degree program)	BS. Mathematics BS. Computer Science ADP Social / Natural Sciences	42 37 50
Islamabad Model College for Girls F-10/2	Social Science	BS. Psychology	56
Islamabad Model College Commerce for Girls F-10/3	Business and Finance	BS. Commerce BS. Accounting	27 38
Federal Girls College of Home Economics & Management Sciences F-11/1, Islamabad	Home Economics with Specialization	BS. Textile and Fashion BS. Interior BS. Art and Design BS. Food and Nutrition BS. Human Development ADP Graphic Designing	14 13 18 12 11 15
Islamabad Model College for Girls (PG) Margalla F-7/4	Social Science	BS. English BS. Mathematics	49 32
Islamabad Model College for Girls (PG) G-10/4	Sciences Information Technology Natural Science	BS. Mathematic BS. Computer Science BS. Zoology	30 23 47
Islamabad Model College for Girls F-7/4, Street-52	Language and Literature	BS. Urdu	32
			Total 746*30/1 00=224

## Results and Discussion

Strict measures were taken to protect confidentiality. All students' data were unnamed in difference with ethical instructions, college rules, and principles. Personal identification was either removed to protect identities during the research. Access to student details was severely restricted to official and additional minimizing the risk of unofficial acknowledgement. The respondents were informed of their all rights to withdraw from the research whenever without facing any unpleasant outcomes or forfeitures, highlights their obligation to uphold their self-determination. This focus on willing contribution assures respondents consolation during the fact-finding process. The viewpoints collected were important, giving a comprehensive convention of digital literacy within college specifically in the framework of women's colleges. By acquiring the various exposures and perspectives of respondents, the study intends to make important contributions continuing conversation.

**Table 2**  
**Participants Percentage**

Participants	Percentage
IMCG, F-7/2	30%
IMCG, F-6/2	5%
IMCG, F-10/2	5%
IMCCG, F-10/3	15%
IMCG. (PG), G- 10/4	15%
IMCG, F-7/4 St.52	3%
FG Home economics F-11/1	20%
IMCG, (PG), Margalla F-7/4	7%

These women colleges and their participants are in percentage terms of how many students took part in this survey. Demographic data analysis revealed that most respondents received IMCG F-7/2 from students (n=67, 29.91%).

**Table 3**  
**Student perception about digital literacy**

Statements	Strongly Disagree f	Disagree f	Neutral f	Agree f	Strongly Agree f	Mean	SD
I can understand copyright law when I am using online content.	67	67	22	67	0	2.40	1.20
I am not aware of artificial intelligence tools, and I don't know how automation tools work on the digital platform.	45	45	34	78	22	2.94	1.32
I can use digital communication tools like emails and use meeting apps for online classes, such as Zoom.	0	0	0	67	157	4.70	0.46
I am aware of the necessary digital skills and abilities for the technology requirements of my future profession.	0	79	58	41	45	3.23	1.14
I can easily understand how to browse websites and find suitable information online.	0	0	13	147	63	4.22	0.54

The first statement is whether students can understand copyright law when using online materials. The majority students (n = 67, 29.9%) strongly agreed that they are not familiar with copyright law. The remaining students (n = 67, 29.9%) also disagreed with this statement. (n=67, 29.9%) Agreed with this statement, and some students (n = 22, 9.8%) are neutral on this statement. No students strongly agreed with this statement. These results showed that 60% of students 30% of students are unaware of the ethics of using other materials, 30% are familiar with the ethics of using other materials, and 30% are familiar with copyright law. This means that most students need to be aware of the ethics involved in using online materials.

The second statement is that students are platforms. Many students (n = 78, 34.8%) agreed that they are not ethically aware of AI tools. The remaining students (n = 45, 20.0%) also strongly disagreed with this statement. (n=45, 20.0%) disagreed with this statement, and some students (n=22, 9.8%) were neutral with this statement. (n=20, 8.9%) strongly agreed with this statement. These results indicate that many students are aware of the use of AI tools. Students are aware of AI. The next statement is that students can utilize digital communication tools, such as email and meeting apps, for online classes. Many students (n = 157, 29.9%) strongly agreed that they use these types of apps frequently, while the remaining students (n = 67, 12.9%) also agreed with this statement. No students expressed strong disagreement, disagreement, or neutrality with this statement. These results indicate that most students are familiar with email and meeting apps and use them very diligently. Similarly the results about student awareness of the digital skills and abilities necessary for the technology requirements of their future profession. The majority students (n=79, 35.2%) agreed that students are not aware of digital technology, while the remaining students (n=67, 29.9%) are neutral with this statement. Some students (n=45, 20.0%) strongly agree that they are aware of digital

technology, and a small portion of the population (n=41, 18.3%) agrees that they are also aware of it. No student strongly disagreed with this statement. These results indicate that the majority students are aware of digital technology, and some are not. The last statement of the first research question is that students can easily understand how to browse the website and find appropriate information online. The majority students (n=147, 65.6%) agreed that students can browse the website while the remaining students (n=63, 28.1%) also strongly agreed with this statement. Some students (n=13, 5.8%) are neutral about that they are aware of websites for educational information. No student strongly disagreed or disagreed with this statement. These results indicate that the majority students are aware of these websites.

**Table 4**  
**Importance of Digital Literacy and Career Goals**

Statements	Strongly Disagree <i>f</i>	Disagree <i>f</i>	Neutral <i>f</i>	Agree <i>f</i>	Strongly Agree <i>f</i>	Mean	SD
Digital literacy is very important and compulsory for the future building.	45	0	90	90	0	3.00	1.10
Digital literacy will help students to progress in their workplace.	0	0	67	101	56	3.95	0.74
Practical classes on digital literacy will be very beneficial for students.	0	0	90	0	135	4.20	0.98
Being an expert in using a basic computer and smartphone will help in everyday tasks.	0	0	0	67	157	4.70	0.46
Online tools like Google Drive, MS Word, etc. will be useful for my study.	0	0	67	135	22	3.80	0.60

The students were asked to rate the level at which they agreed that digital literacy is highly essential for career goals. The majority of students (n = 89, 39.7%) agreed that digital literacy is very essential and necessary for a successful career. The remaining students (n = 89, 39.7%) did not strongly disagree with this statement, and a small portion of the population (n=44, 8.9%) strongly disagreed with it. No students disagreed or strongly agreed with this statement. These analysis results navigate a consensus among students in the studies on the significance of digital literacy for a career preparedness. The digital literacy, helping students thrive in their workplace. Majority of students (n=100, 44.6%) agreed that digital literacy helps students thrive in their careers. The remaining students (n = 67, 29.9%) were neutral about this statement, and a quarter of the population (n = 56, 25%) strongly agreed with it. No students strongly disagreed or disagreed with this statement. These results suggest that digital literacy enables students to thrive in the workforce.

The third statement that focuses on practical classes on digital literacy in colleges is very beneficial for students and helps them to progress in their workplace. More than fifty percent of students (n = 134, 59.8%) strongly agreed that practical classes are helpful to students. And the remaining students (n = 89, 39.7%) were neutral regarding this statement. No students strongly disagreed, disagreed, or agreed with this statement. These results indicate that students need practical classes on digital literacy, and it is a basic need for students to understand how to use it skilfully. Next statement focuses on the use of computers and smartphones for educational purposes by students. The

majority students (n = 157, 70.0%) emphasized that computers and smartphones assist them in their daily tasks. The remaining students (n = 67, 29.9%) also agreed with this statement. No students expressed strong disagreement, disagreement, or neutrality with this statement. These results showed that expert students use computers and smartphones in their daily lives. Online tools like Google Drive, MS Word, and many software will be useful for education. The majority of the students (n=135, 70.0%) agreed that they use this type of software for their daily college work. The remaining students (n=67, 39.7%) were neutral toward this statement. And some students (n=22, 9.8%) agreed on this statement. No student expressed strong disagreement with this statement. These results showed that students use basic software for education and fulfill online job requirements with it.

**Table 5**  
**Librarian Role in the Library to Promote Digital Literacy**

Statements	Strongly Disagree f	Disagree f	Neutral f	Agree f	Strongly Agree f	Mean	SD
The librarian at your college library is helping you with digital literacy to help you access information online.	0	25	147	22	45	3.36	0.90
Does your college library offer training programs and workshops on digital literacy skills?	78	25	56	31	0	2.21	1.15
Do you think libraries should promote digital literacy through online platforms such as e-libraries?	0	33	29	34	4	3.09	0.91
Are you using digital resources in your college library, and is it beneficial for your education?	0	13	34	98	78	4.08	0.85
Use of digital tools in college libraries, such as e-books, e-journals, and database systems, is it improving your ability to use digital literacy skills?	0	80	72	72	0	2.96	0.82
Is it important for you that your college librarian is qualified and knowledgeable about digital tools so that he/she can run the library effectively and provide you with online materials?	0	9	36	101	78	4.11	0.81
Do you think colleges should invest in emerging technologies, such as AI tools, to enhance digital literacy in their college libraries?	0	7	27	85	123	4.34	0.79

The third research question was designed to know whether the college librarian is helping students in digital literacy so that the student can access online information. The majority of students (n=147, 65.6%) are neutral, as they say the college librarian does not help them regularly. The rest of the students (n = 45, 20.0%) strongly agree with the first statement that the college librarian helps students access online information. Some students (n = 25, 11.1%) disagree, a small portion (n = 22, 9.8%) agrees, and a small portion (n = 22, 9.8%) agrees. No student strongly disagreed with this statement. These results show that the majority of students agree that the college library helps them, but some are neutral about it. The College libraries offer training programs and workshops on digital literacy skills. Most students (n = 78, 34.8%) strongly disagreed that college libraries do not offer training programs or workshops on digital literacy. The remaining

students (n = 56, 25%) were neutral. Some students (n = 31, 15.1%) agreed, while a small portion of the population (n = 25, 11.1%) disagreed. No students strongly agreed with this statement. These results indicate that the majority students agree that college libraries do not offer any workshops or training programs for students. The Students believe libraries should promote digital literacy through online platforms, such as e-libraries. The majority students (n=78, 34.8%) disagreed that college libraries do not promote digital literacy. The remaining students (n = 34, 15.1%) agreed. Some students (n = 31, 15.1%) agreed, and a small portion of the population (n = 29, 12.9%) remained neutral. A very small portion strongly agreed (n=4, 1.7%), and no student strongly disagreed with this statement. These results show that many students disagree that college libraries promote digital literacy platforms.

Students believe digital resources should be used in the college library and that this is beneficial for their education. Most students (n=98, 43.7%) agreed with this statement. The remaining students (n = 78, 34.8%) strongly agreed. Some students (n = 34, 15.1%) were neutral, and a small proportion of the population (n = 13, 5.8%) also reported neutrality. And a very small portion strongly agreed (n=4, 1.7%), and no students strongly disagreed with this statement. These results indicate that many students agree that digital resources are used in the college library and that they are beneficial for education. Students utilize digital tools in the college library, including e-books, e-journals, and database systems. Does this improve students' ability to use digital literacy skills? Many students (n=72, 32.1%) agreed with this statement. The remaining students (n = 78, 34.8%) were neutral. And (n = 80, 35.7%) disagreed, with no students strongly disagreeing. These results indicate that the majority of students agree that the use of digital tools in the college library improves their ability to use digital literacy skills and enhances their effective use of those skills. The next statement was whether it is important for a college librarian to be competent and knowledgeable about digital tools so that he/she can effectively run the library and provide students with online content. Many students (n = 101, 45.8%) strongly agreed with this statement. The remaining students (n=78, 34.8%) agreed, (n=36, 16.0%) were neutral, and (9,4.0%) disagreed. No student strongly disagreed with this statement. These results suggest that students require a competent librarian at their college library who can provide timely, accurate information.

The final statement of the second research question was that colleges need to invest in emerging technologies, such as AI tools to enhance digital literacy in their college libraries. Most students (n = 123, 54.9%) strongly agreed with this statement. The remaining students (n=85, 37.9%) agreed, (n=27, 12.0%) were neutral, and (7,3.1%) disagreed. No students strongly disagreed with this statement. These results indicate that the student strongly agreed that colleges need to invest in emerging technologies to enhance digital literacy in college libraries.

The research examined college students' digital usage design to gain insight into their use of digital technology. Creating a broad institutional culture that promotes digital literacy is another essential way to develop students' digital skills very efficiently. This requires not only integrating digital literacy into the curriculum but also incorporating it into the broader environment, encouraging digital literacy through campus initiatives such as digital literacy awareness campaigns, competitions, and programs that celebrate digital innovation and creativity (Chan et al., 2017). The knowledge important for digital literacy is complex, encompassing technical skills and the ability to interact effectively with technologies. The research examines how college students use digital literacy and how this use influences their future preparedness.

Students were from various majors who needed computer and digital literacy. Students shared their appraisal in digital literacy as it relates to developing the future. To increase digital literacy among all college students, colleges should prioritize accessibility in their digital literacy activities. This requires recognizing and supporting the various needs of students, as well as those with disabilities, those from disadvantaged backgrounds, and those who may have digital technology barriers. Assuring that digital literacy programs are extensive making important deliberations about how digital tools and information are designed, distributed, and shared (Iniesto et al, 2021). Overall, college students embrace digital technology and utilize it in a variety of ways. The research analysis that 60% of respondents grab the utilize of technology and welcome fresh ideas. The adoption of new digital technologies, with a crucial review of digital skills, is necessary for career preparedness. The college students who can proficiently adopt upgraded tools and critically analyze data are better prepared to address digital technology resources, make well-informed decisions, and adapt to new digital hurdles to meet workforce requirements. The study emphasizes the importance of visionary involvement in future guidance in developing career-related outcomes among women college students. Moreover, college students who diligently use digital resources for future guidance achieve high self-esteem in future planning, engage in more cautious job-seeking behaviors, and perceive higher levels of employability. This highlights the require for colleges to build up their future guidance programs and increase students' awareness of accessible digital literacy resources. Research from various studies focuses the important effect of career guidance intervention on women college students' future-related skills and information (Sharapova et al, 2023).

### **Conclusion**

In conclusion, this research defined digital literacy and its skills as it relates to college students by exploring its importance, student perspectives, and indications for career preparedness. Digital literacy is critical for students to thrive in the rapidly evolving digital landscape of the modern century. Because technology shapes every aspect of human life, colleges should prioritize the development of digital literacy skills. Furthermore, this study focused on the use of technology, a key component of digital literacy. As college students become more adept at navigating digital tools, they should also stay up to date with technology. A higher education institution, such as a college, has the responsibility not only to produce skilled students but also to foster responsible digital citizens who are aware of the broader impacts of their actions in the digital literacy arena. The successful integration of 57 digital literacy into higher education requires a holistic approach that includes students' syllabus design and investments in college infrastructure.

### **Recommendations**

Multiple suggestions for forthcoming research are needed to extend the current research, few of them are mentioned below

#### **Acquire an Extensive Understanding of Digital Literacy.**

It's important for college students to obtain a broader understanding of digital literacy. For example, how to understand it in different educational environments, through comparative studies are recommended.

#### **Arrangement of Training Programs and Workshops**

The college should organize training programs and workshops for students and staff in its institute and enhance digital skills day by day. Technologies are changing with the times.

### **Efficient college librarians**

College librarians should be qualified in their field, such as "Library Information Sciences." This is a specific degree for the library field, but some college librarians hold degrees in other fields, which is highly unethical and unfair to the library. A competent librarian will be well organized, and the training program should be managed by the librarian.

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