



Empowering Digital Natives: Assessing Digital Literacy Among the Students of Chandigarh University

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ARTICLE INFO

Keywords: Digital Literacy; Information Literacy; ICT Skills; Undergraduate Students; Postgraduate Students; Chandigarh University

doi:10.48165/lt.2024.10.2.2

ABSTRACT

This study explores the level of digital literacy among postgraduate and undergraduate students in different departments of Chandigarh University. With the increasing integration of digital tools and resources in education, it is essential to assess the proficiency of students in digital literacy skills, such as information literacy, internet literacy, ICT literacy, and media literacy. A survey method was employed, using a structured questionnaire to collect data from 110 students, selected through random sampling. The study analyzes the extent to which students are equipped with the necessary digital skills to navigate, evaluate, and effectively utilize online resources for academic and personal growth. The findings reveal that while a significant portion of students possess basic digital literacy awareness, there are gaps in advanced digital competencies. Additionally, the results highlight the growing importance of digital literacy in today's academic environment and suggest that more targeted educational interventions are required to fully equip students with the skills necessary for success in a digitally-driven world. The study emphasizes the role of academic institutions in providing proper digital literacy training, ensuring that students are prepared to meet the demands of the evolving digital landscape. These insights will serve as a foundation for future research and policy development to enhance digital literacy education.

INTRODUCTION

In today's ever-evolving educational landscape, digital literacy stands as a transformative skill that unlocks endless possibilities for students, enabling them to thrive in a

technology-driven world (Jain, 2023). As education continues to advance, shaped by the Information and Communication Technology (ICT) revolution, digital literacy has become essential. This shift has impacted all levels of learning, from

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traditional to professional, reshaping how individuals teach and acquire knowledge.

Digital literacy equips students with the tools to navigate the complexities of the digital age, offering them access to vast resources and enhancing their learning experience (Gupta, 2023). This paper explores the role of digital literacy among undergraduate and postgraduate students at Chandigarh University, highlighting its potential to unlock latent talents and foster holistic growth in a rapidly changing world.

Chandigarh University & its Library System

Chandigarh University is a full-fledged university established by the Punjab State Legislature (ref. The Chandigarh University Act 2012) (Department of Legal and Legislative Affairs, Punjab Govt., 2012) and is recognized by University Grants Commission under Section 2(f) with the right to confer degrees as per Section 22(1) of the UGC Act, 1956 (Chandigarh University, 2024a). During the last ten years, Chandigarh University is a leading university envisioned to excel in research, innovation & entrepreneurship provides inspirational learning to nurture our students to lead the professional world.

The CU Library serves as a vibrant academic center, providing an extensive range of print and digital resources such as books, journals, e-books, and online databases. With 24/7 internet access, extended operating hours, and a spacious environment of 96,279 sq. ft. accommodating 2,800 seats, it offers a conducive space for both individual and collaborative research. The library includes dedicated areas for faculty and researchers, discussion rooms for students, and a variety of facilities, including 152 digital library systems, full Wi-Fi coverage, and power backup. It supports research with subscriptions to Scopus, Web of Science, J-Gate, Manupatra, HeinOnline, and other key databases. Access is managed via IP-based authentication on-campus, and off-campus via VPN. Additionally, the library houses 138,130 printed books, 353 periodicals, 38,823 e-journals, and 247 theses; operating under a detailed Library SOP. (Chandigarh University, 2024b)

LITERATURE REVIEW

Digital literacy has been extensively explored across various educational contexts, with research highlighting both strengths and gaps in student competencies. Adeoye and Adeoye (2017) conducted a study among Nigerian university undergraduates, revealing a high level of digital literacy skills, particularly in selecting tools for information retrieval. This aligns with findings by Borgohain and Deka (2019), who also noted that students at Royal Global University,

Guwahati, were confident in their information retrieval skills, but struggled to evaluate the authenticity of digital resources. Both studies underscore the importance of not just access to digital tools but also the need for training in critical evaluation.

Further exploring this theme, Kaeophanuek et al. (2018) studied the digital literacy environment among Thai university students and instructors, identifying that students had moderate digital transformation skills. This resonates with the findings of Perdana et al. (2019), who observed low digital literacy skills among high school students in Yogyakarta. While Kaeophanuek et al. suggested improving the teaching environment, Perdana et al. emphasized the need for integrating digital literacy into the curriculum, especially in ICT learning. Both studies advocate for educational reforms that enhance digital literacy.

In the context of elementary education, Kumala et al. (2020) assessed digital literacy skills among students in Malang, Indonesia, and found that while students demonstrated strong internet searching abilities, their overall digital literacy was moderate. Similarly, Wijayati and Imron (2024) examined digital literacy among students from elementary to high school in Indonesia, identifying difficulties across various digital competencies, such as identifying tools and protecting personal data. Both studies highlighted the early onset of digital literacy challenges, suggesting that interventions should begin at the elementary level to foster more robust skills as students advance.

On a broader societal level, Mawia and Gyashree (2022) examined digital literacy among undergraduates in Assam, noting that students were familiar with digital literacy but required formal training to maximize their skills. This parallels the findings of Garba et al. (2023), who studied digital literacy among Nigerian students and found proficiency in basic digital skills but recognized the need for continuous awareness on issues such as cybersecurity. Both studies stress the importance of formal training programs to supplement existing digital skills.

Lastly, Sari et al. (2023) explored digital literacy in vocational education, revealing that while students had positive attitudes toward digital technology, their skills were inconsistent, especially in areas less frequently used in their studies. Borgohain and Gamit (2024) similarly identified gaps in digital literacy among postgraduate students at Dibrugarh University, particularly in locating and utilizing digital information effectively. Both studies highlight the necessity for targeted interventions that focus on practical, domain-specific digital literacy skills to enhance student performance.

Together, these studies suggest that while students across different educational levels exhibit varying degrees of digital

literacy, the common challenge lies in the critical evaluation and application of digital tools. Researchers consistently emphasize the need for structured training and curriculum integration to elevate digital literacy from basic competencies to advanced, context-specific skills.

THEORETICAL FRAMEWORK FOR DIGITAL LITERACY ENHANCEMENT

Digital Literacy Definition and Components

Digital literacy is a multifaceted concept that encompasses a wide range of skills and competencies necessary for effective engagement with digital technologies and information in the modern world. According to Gilster (1997), digital literacy refers to “the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers.” This definition highlights the need for individuals to not only access information but also to critically evaluate and utilize it across diverse digital platforms.

To comprehensively address digital literacy, Bawden and Robinson (2009) identified some components as facets of digital literacy, which include:

- i) Information Literacy - the ability to locate, evaluate, and ethically use digital information while discerning credible sources and avoiding plagiarism (ALA, 2018).
- ii) Technological Literacy - the proficiency in using digital tools and technologies, ranging from basic skills like navigating software and managing files to advanced capabilities such as programming, coding, and utilizing emerging technologies (ITEA/ITEEA, 2000).
- iii) Media Literacy - emphasizes critically analyzing media content in digital formats, recognizing bias and misinformation, and responsibly creating and sharing media (Udoudom et al., 2023).
- iv) Communication and Collaboration - includes skills for effective communication and collaboration in online settings, covering digital platforms, online etiquette, virtual teamwork, and constructive engagement in digital communities (Jenkins, 2009).
- v) Digital Citizenship - entails the responsible and ethical use of digital technologies, addressing online safety, pri-

vacancy protection, copyright compliance, and awareness of digital rights and responsibilities (Ribble, 2015).

Opportunities and Affordances of Digital Literacy

- i) Enhanced Learning through Authentic Problem-Solving: Digital literacy enables learners to engage in meaningful, real-world problem-solving activities, fostering a deeper understanding of concepts.
- ii) Access to Multimedia-Based Simulations: ICT provides learners with multimedia simulations, offering insights into complex processes across various fields, such as medicine and engineering, that are often inaccessible in traditional settings.
- iii) Flexibility in Learning Modes: Digital literacy supports various learning formats, including self-paced online and offline options, as well as synchronous and asynchronous group learning, accommodating diverse learner preferences (Bower et al., 2015).
- iv) Authentic and Problem-Based Learning Environments: It facilitates the creation of real-world learning contexts where students can apply knowledge through hands-on experiences, enhancing their practical skills (Lave & Wenger, 1991).
- v) Accessibility and Inclusivity: Digital literacy initiatives can be tailored to meet the needs of diverse learners, including those with disabilities, ensuring an inclusive educational environment.

Need and Importance for Digital Literacy

The need and importance of digital literacy can be seen in numerous ways (EdTechReview, 2023; Egeli & Sağdıncı, 2021; Rintaningrum & Pangaribuan, 2021):

- i) Adaptation to Technological Advancements: Digital literacy is essential for navigating and adapting to the rapidly evolving technology landscape in education, work,

and daily life.

- ii) **Effective Information Access:** It enables individuals to search, evaluate, and utilize vast amounts of online information and resources for educational and professional purposes.
- iii) **Employment Readiness:** Digital skills are increasingly required for many job roles, making digital literacy crucial for employability and career advancement.
- iv) **Enhanced Communication and Collaboration:** Digital literacy fosters effective online communication and teamwork through various digital platforms.
- v) **Empowerment for Lifelong Learning:** It encourages individuals to engage in continuous learning through online courses and digital resources, promoting personal and professional growth.

Challenges Faced by Digital Literacy

- i) **Digital Divide:** Disparities in access to technology and the internet hinder the development of digital literacy skills among different socioeconomic groups (DiMaggio et al., 2004).
- ii) **Technological Obsolescence:** Rapid technological advancements can quickly render digital skills outdated, posing challenges for individuals, especially older generations (Van Dijk, 2012).
- iii) **Information Overload:** The vast amount of online information can overwhelm individuals, making it difficult to identify credible sources (Roetzel, 2019).
- iv) **Digital Security and Privacy Concerns:** Understanding online security risks and privacy issues is crucial for managing cybersecurity threats and data breaches (Kothari, n.d.; Ailoaiei, 2023).
- v) **Misinformation and Skills Gap:** The spread of misinfor-

mation complicates decision-making, while a gap exists between the demand for digital skills in the job market and the available digitally literate workforce (Anthonysamy & Sivakumar, 2022; Komlósi, 2016).

Academic Libraries and Digital Literacy

Academic libraries are essential in promoting digital literacy among students and faculty by providing access to digital resources, tools, and services that develop critical digital skills for academic success and lifelong learning (Inamdar, 2021). They offer training sessions, workshops, and online tutorials to empower users in navigating information, critically evaluating resources, and engaging in ethical online practices (Martzoukou, 2021). By curating vast digital collections and leveraging communication technologies, academic libraries facilitate seamless access to electronic resources, supporting both on-campus and distance learners (Lukasiewicz, 2007; Dhiman, 2010). Integrating digital literacy into the curriculum, they help students and faculty undertake research without needing physical library visits, while a holistic approach combines traditional and digital methods to enhance learning (Maiwada, 2019). Overall, academic libraries play a crucial role in fostering an environment where digital literacy thrives, enriching the academic experience for the university community.

1. OBJECTIVES OF THE STUDY

The main objectives of this study are to assess the digital literacy skills of postgraduate and undergraduate students in different departments of Chandigarh University. The specific objectives include:

- i) To assess the digital literacy skills required by postgraduate and undergraduate students to access digital information resources.
- ii) To understand the ICT skills needed to explore internet resources.
- iii) To determine the overall knowledge level and performance of students in using virtual literacy.
- iv) To explore the virtual literacy tools endorsed for students.
- v) To examine the frequency of digital sources used by students.
- vi) To identify the IT abilities possessed by the respondents.

RESEARCH METHODOLOGY

Method of Study:

This study employs a survey method, utilizing a structured questionnaire consisting of both open-ended and closed-ended questions to gather relevant data from the participants.

Population:

The study focuses on undergraduate (UG) and postgraduate (PG) students from various departments of Chandigarh University, encompassing both postgraduate and undergraduate levels.

Sample Selection:

To ensure representative results, the sample is selected using a random access method. The researchers will interact with postgraduate and undergraduate students available in different departments of Chandigarh University during the survey period.

Sample Size & Sampling Techniques:

The sample for this study comprises 110 postgraduate and undergraduate students from diverse departments within Chandigarh University. A random sampling method is employed to determine the appropriate sample population size.

Data Collection Tool:

To collect data effectively, a well-structured questionnaire is prepared. The final version of the questionnaire is personally distributed or sent via email to postgraduate and undergraduate students across different departments of Chandigarh University.

Statistical Analysis:

The obtained data undergoes various descriptive statistical techniques, with Microsoft Excel used for analysis. The results are then presented through appropriate tables and charts, facilitating fair and comprehensive conclusions from the study.

DATA ANALYSIS AND FINDINGS

The analysis and interpretation of the data from the present study, based on the responses of undergraduate (UG), postgraduate (PG) students, research scholars, and faculty members of the Chandigarh University focusing on the components of digital literacy listed in the prepared questionnaire.

A total of 150 students from the Chandigarh University were surveyed for the questionnaire, out of which 115 responded. The details are as follows:

Table 1: Sample Selection

Sr. No.	Questionnaire Distributed	Response Received	Finalize Sample
1	150	44	35
2		82	80

Figure 1 illustrates the awareness levels of digital literacy among undergraduate (UG) and postgraduate (PG) students. The data reveals that a significant majority, comprising 91.4% of UG students and 97.5% of PG students, are well-informed about digital literacy. However, there remains a smaller portion, constituting 8.6% of UG students and 2.5% of PG students, who seem to lack awareness in this domain. Combining the responses, an impressive 95.7% (110) of the total respondents demonstrate a level of awareness about digital literacy.

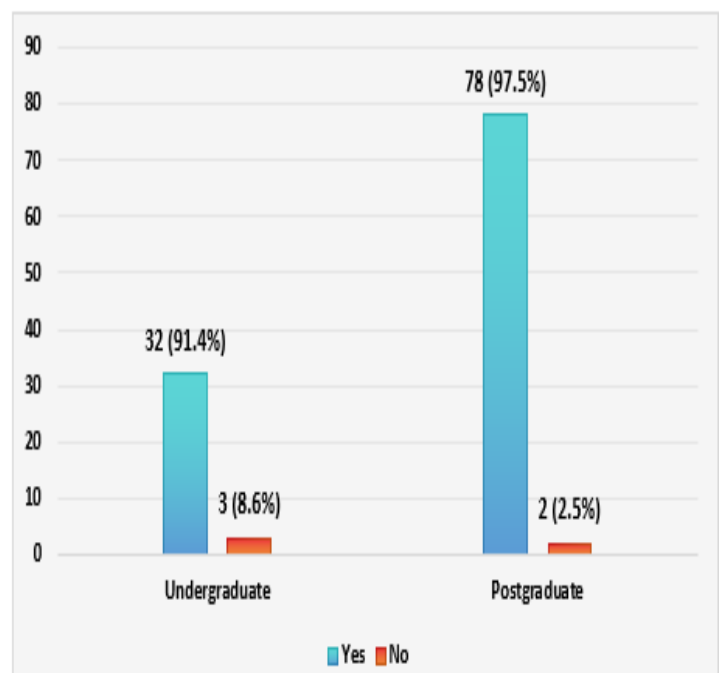


Figure 1: Digital Literacy Awareness

For the remainder of the study, only the responses from these 110 students ('Yes' to digital literacy awareness) will be analyzed, as they pertain to digital literacy and its related concerns.

Table 2: Key Digital Resources Used by Users

Sr. No.	Particulars	UG Student(32)	PG Student(78)
1.	Library Website	16(50%)	65(83.3%)
2.	Web OPAC	6(18.8%)	47(60.3%)
3.	Digital Journals	10(31.3%)	36(46.2%)
4.	Online Databases	2(6.3%)	28(35.9%)
5.	Institutional Repositories	3(9.4%)	18(23.1%)
6.	Multimedia Resources	4(12.5%)	43(55.1%)
7.	E-Books	3(9.4%)	20(25.6%)
8.	Plagiarism Detection Software	1(3.1%)	4(5.1%)
9.	E-Resources Access Platforms	1(3.1%)	13(16.7%)
10.	Citation and Referencing Tools	0(0.0%)	8(10.3%)
11.	Online Learning and Tutorials	2(6.3%)	21(26.9%)

Table 2 indicates that 50% of UG students and 83.3% of PG students access the library website. Web OPAC is preferred by 18.8% of UG and 60.3% of PG students as a digital resource tool. Digital journals are used by 31.3% of UG and 46.2% of PG students, while online databases are accessed by 6.3% of UG and 35.9% of PG students. Institutional repositories are used by 9.4% of UG and 23.1% of PG students, with 12.1% of UG and 55.1% of PG students using multimedia resources. E-books are used by 9.4% of UG and 25.6% of PG students. Plagiarism detection software is used by 3.1% of UG and 5.1% of PG students, while 3.1% of UG and 16.7% of PG students utilize e-resource access platforms. Citation and referencing tools are used by 10.3% of PG students, and 6.3% of UG and 26.9% of PG students engage with online learning and tutorials.

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	6965.598546	3	2321.866182	5.527906857	0.002920308	4.327355627
Within Groups	16381.02512	39	420.0262852		(P<.01)	
					Significant	
Total	23346.62367	42				

Table 3: Reasons for Not Using Digital Resources

Sr. No.	Particulars	UG Student (32)	PG Student (78)
1.	Don't Require	20 (62.5%)	52 (66.7%)
2.	Lack of Time	8 (25%)	26 (33.3%)
3.	Don't Know How to Use	4 (12.5%)	0 (0.0%)

One-way ANOVA Table revealed a significant difference in the key digital resources used between UG and PG students at the 1% level of significance ($P < 0.01$).

using resources. Additionally, 12.5% of UG and 14.3% of PG students are unaware of how to use the available resources.

Table 3 shows that 62.5% of UG and 66.7% of PG students do not require additional resources. Meanwhile, 25% of UG and 33.3% of PG students cite a lack of time as a barrier to

One-way ANOVA Table revealed no significant difference in resource usage between UG and PG students at the 1% level of significance ($P > 0.01$).

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	476.6666667	3	158.8888889	0.255447174	0.8549 91237	9.779538241
Within Groups	3732.017533	6	622.0029222		($P > .01$) Not Significant	
Total	4208.6842	9				

Table 4: Frequency of Using Digital Resources

Sr. No.	Particulars	UG Student	PG Student
		(32)	(78)
1.	Everyday	5 (15.6%)	32 (41%)
2.	Weekly	10 (31.3%)	29 (37.2%)
3.	Monthly	4 (12.5%)	6 (7.7%)
4.	Sometimes	8 (25%)	11 (14.1%)
5.	Never	5 (15.6%)	-

Table 4 reveals the frequency of resource usage: 15.6% of UG and 41% of PG students use resources daily, 31.3% of UG and 37.2% of PG students use them weekly, 12.5% of UG and 7.7% of PG students use them monthly, while 25% of UG and 14.1% of PG students use them occasionally. Additionally, 15.6% of UG students never use the resources.

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	88.08831324	3	29.36277108	0.085330239	0.966841427	5.739380285
Within Groups	4473.396875	13	344.1074519		($P > .01$) Not Significant	
Total	4561.485188	16				

One-way ANOVA Table revealed no significant difference in the frequent use of resources between UG and PG students at the 1% level of significance ($P > 0.01$).

Table 5: Locations for Using Resources

Sr. No.	Particulars	UG Student	PG Student
		(32)	(78)
1.	Central Library	11 (34.4%)	35 (44.9%)
2.	Departmental Library	7 (21.9%)	28 (35.9%)
3.	Computer Centre	12 (37.5%)	31 (39.7%)
4.	Cyber Café	10 (31.3%)	23 (29.5%)

Table 5 indicates that 34.4% of UG students and 44.9% of PG students utilize resources in the central library. Additionally, 21.9% of UG students and 35.9% of PG students access resources in departmental libraries. Meanwhile, 37.5% of UG students and 39.7% of PG students use resources in the computer center, and 31.3% of UG students and 29.5% of PG students utilize resources in a cyber cafe.

Table 6: Purpose of Using Digital Literacy Resources

Sr. No.	Particulars	UG Student	PG Student
		(32)	(78)
1.	Writing Projects	17 (53.1%)	38 (48.7%)
2.	Assignment Work	17 (53.1%)	42 (53.8%)
3.	Preparing Notes	9 (28.1%)	37 (47.4%)
4.	Academic Research Work	0 (0.0%)	27 (34.7%)
5.	Multipurpose	6 (18.8%)	24 (30.8%)

Table 6 reveals that 53.1% of UG students and 48.7% of PG students prefer using digital literacy resources for writing projects. Additionally, 53.1% of UG students and 53.8% of PG students utilize these resources for assignment work. Moreover, 28.1% of UG students and 47.4% of PG students use digital literacy resources for preparing notes, while 34.7% of PG students employ them for academic research. Lastly, 18.8% of UG students and 30.8% of PG students utilize digital literacy resources for multiple purposes.

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	981.2028808	3	327.0676269	1.284529849	0.315754455	5.416964863
Within Groups	3819.307435	15	254.6204957		(P>.01) Not Significant	
Total	4800.510316	18				

One-way ANOVA revealed no significant difference among different individuals with UG and PG regarding the purpose of using resources at a 1% level of significance (i.e., $P > 0.01$).

Table 7: Sources for Obtaining Digital Literacy Resources

Sr. No.	Particulars	UG Student	PG Student
		(32)	(78)
1.	Library Bulletin	12 (37.5%)	34 (44.6%)
2.	Library Webpage	9 (28.1%)	43 (55.1%)
3.	Personally from Library Staff	4 (12.5%)	14 (17.9%)
4.	User Orientation Programs	2 (6.3%)	7 (9%)
5.	Library Training Sessions	5 (15.6%)	2 (2.6%)

Table 7 shows that 37.5% of UG students and 44.6% of PG students use the library bulletin as a source for obtaining digital literacy resources. Additionally, 28.1% of UG students and 55.1% of PG students prefer the library webpage. Furthermore, 12.5% of UG students and 17.9% of PG students obtain digital literacy resources personally from library staff. Only 6.3% of UG students and 9% of PG students prefer orientation programs, while 15.6% of UG students and 2.6% of PG students obtain digital literacy resources during library training sessions.

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1227.806895	3	409.268965	1.051774689	0.396858202	5.292214052
Within Groups	6225.95648	16	389.12228		($P > .01$)	
Total	7453.763375	19			Not Significant	

One-way ANOVA in Table 5 revealed no significant difference among different individuals with UG and PG backgrounds in obtaining digital literacy resources, at the 1% level of significance ($P > .01$).

SUGGESTIONS

Based on the findings, the following suggestions can be made:

- Increase Awareness: Implement training sessions to familiarize users with digital literacy resources and available tools.

- Enhance Accessibility: Improve access to electronic resources by ensuring reliable internet and access terminals.
- User-Friendly Interfaces: Develop intuitive interfaces and search engines for efficient information retrieval.
- Tailored Training: Offer specific training programs based on user needs to maximize resource utilization.
- Promote Research Resources: Conduct workshops to encourage the use of electronic resources for academic purposes.
- Evaluate Usability: Regularly assess resource usability and adjust based on user feedback to align with needs.

By implementing these suggestions, the utilization and ef-

fectiveness of digital literacy resources in the Chandigarh University students can be significantly improved.

CONCLUSION

The study emphasizes the importance of digital literacy in higher education institutions and the role of the internet in accessing and disseminating information. The study found that students who use technology as a tool are better at managing information, communicating, and presenting ideas. Digital literacy facilitates easy access to electronic documents and commercial databases, providing users with useful information. Modernizing library services through digital literacy systems is crucial, and the librarian should communicate with users through digital means. The World Wide Web serves as a powerful medium for information publishing and access, with various sources available for education and research. The study highlights the significant role of the Chandigarh University in exploring and promoting the impact of digital literacy. The library provides user-friendly and informative resources at reduced expenses and time. The availability of resources through the university's website is rapidly utilized by users. The study encourages students, research scholars, and faculty members to make more use of these resources. Overall, users are satisfied with the library services and resources, although some face difficulties due to unfamiliarity with digital literacy resources. Organized training and orientation programs are necessary to familiarize users with digital literacy. The majority of users access resources through the computer center and departmental libraries, resulting in easy information access for research scholars and faculty members. E-learning is considered highly essential for career development.

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