

Assessing Digital Information Literacy Skills Among Research Scholars: A Case Study of the University of Allahabad

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Abstract

This investigation evaluates the Digital Information Literacy (DIL) competencies exhibited by research scholars within the Science Faculty at the University of Allahabad, concentrating on their adeptness in accessing, assessing and employing digital resources. Employing a descriptive survey research methodology, data were gathered via structured questionnaires disseminated to 350 research scholars, resulting in 270 valid responses and a response rate of 77%. The subsequent analysis was executed utilising MS Excel and SPSS software. The findings indicate that although 97.8% of scholars reported proficiency in locating academic journals and 88.1% exhibited familiarity with advanced search methodologies, various challenges remain. A significant 40.16% of respondents indicated a deficiency in technical knowledge, 33.01% encountered restricted access to requisite software and tools and 14.16% acknowledged issues related to connectivity. Furthermore, while scholars demonstrated a high level of competence in word processing (84.8%) and spreadsheet applications (71.9%), their proficiency in utilising data analysis tools (22.6%) and reference management software (22.6%) was notably lower. Importantly, 98.9% of participants expressed a desire to partake in digital literacy workshops, underscoring the necessity for specialised training programmes. The study accentuates the critical role of enhancing digital literacy to elevate research productivity. It advocates for the integration of structured training initiatives within academic curricula and the provision of institutional support to address existing competency

deficiencies, thereby cultivating a digitally proficient research community.

Keywords: Digital Literacy, Research Scholars, Allahabad University, Assessment, Research Tools

Introduction

The advent of Information and Communication Technology (ICT) has precipitated a transformation in every facet of societal life, consequently leading to numerous alterations in the methods of task execution. In contemporary society, it has become increasingly imperative to possess the requisite competencies and to be proficient in the utilisation of these information and communication technologies in order to effectively fulfil one's responsibilities. Moreover, digital literacy is critically significant in the management of e-learning, given that a majority of educational institutions have initiated the transition to online pedagogical frameworks (Biradar & Naik, 2017). In the contemporary digital landscape, academic researchers increasingly depend on electronic platforms for the purposes of acquiring, assessing and disseminating scholarly information. DIL constitutes an essential skill set that empowers researchers to proficiently navigate online resources, critically evaluate the authenticity of digital materials and ethically utilise information for scholarly and research endeavours (Bawden, 2008; Martin, 2006). This skill set encompasses

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a diverse array of competencies, including information retrieval, source assessment, management of citations and awareness of cybersecurity (Eshet-Alkalai, 2012). The escalating volume of scientific literature accessible via electronic databases, open-access repositories and digital archives compels academic researchers to cultivate robust digital literacy competencies to engage effectively with these resources (Miksa & Oliver, 2020; Secker & Coonan, 2013). Digital literacy encompasses a spectrum of literacies linked to the utilisation of digital technologies (Sohala, 2015). The capacity to retrieve, assess and apply information constitutes an essential foundation for continuous learning and serves as a fundamental necessity within the information society.

Definitions of Digital Literacy

Digital literacy has been conceptualised in a multitude of ways since its inception by Paul Gilster in 1997, as articulated in his seminal work entitled ‘Digital Literacy’, wherein the author delineated digital literacy as “the capability to comprehend and utilize information across diverse formats sourced from a broad spectrum of origins when delivered via computational devices.” Subsequently, in 2005, Martin characterised digital literacy as “the capacity to thrive in interactions with the electronic infrastructures and tools that facilitate the contemporary milieu of the 21st century.” The author in this investigation recognised the imperative of mastering electronic tools as vital to the achievement within educational communities. Moreover, Bell and Shank (2008) articulated digital literacy as the cognisance, disposition and capacity of individuals to employ digital tools and resources to identify, access, manage, integrate, evaluate, analyse and synthesise digital materials, construct novel knowledge, create media expressions and engage in communication with others, all within the context of specific life circumstances to foster constructive social action; alongside the necessity to engage in reflective practices concerning this process.” Despo and Nikleia (2011) characterised digital literacy as “the capability to comprehend information and, more critically, to assess and integrate information across the various formats that computers can provide.” The American Library Association (2013) described digital literacy as the proficiency to employ information and communication technologies to locate, comprehend,

evaluate, generate and disseminate digital information. Digital literacy represents an indispensable prerequisite for all individuals amidst the continuous evolution of information within the digital culture, which equips individuals with the competencies necessary for effectively leveraging digital technology across all domains of life. It encompasses an individual’s adeptness to create and disseminate information in various modes and formats, to generate, to communicate and to comprehend how and when digital technologies can be optimally utilised to enhance these processes.

Review of Literature

Singh and Pratap (2018) investigate the digital literacy competencies of both students and research scholars at the Law School, Banaras Hindu University. Through a comprehensive survey involving 90 participants, the study reveals that a substantial majority engage with digital resources on a daily basis, primarily for the purpose of enhancing their subject knowledge. It underscores the increasing imperative for digital literacy within the academic sphere and the urgent requirement for training programmes aimed at improving digital proficiency. The research further delves into the digital resource preferences of students, their information technology skills and their methodologies for information retrieval. Singh and Pratap advocate for the incorporation of digital literacy into the academic curriculum to facilitate effective learning and research practices in the contemporary digital landscape.

Krishnamurthy and Shettappanavar (2019) examined the phenomenon of digital literacy among female postgraduate scholars at Karnatak University, Dharwad. The research evaluates competencies in ICT, the frequency of internet utilisation, awareness of digital resources and strategies employed in information retrieval. A survey conducted with 77 participants indicates that Google is the most favoured search engine, with 68.83% of respondents utilising Google Scholar. Despite the regular engagement with digital resources, students encounter obstacles such as inadequate network connectivity and insufficient training. Their awareness of copyright matters and advanced search methodologies remains limited. The research highlights the imperative for digital literacy training through organised workshops and advocates for the incorporation of digital competency programmes within the academic curriculum.

Lokesha and Adithya (2019) investigate the phenomenon of digital information literacy among the student population at Mangalore University, concentrating on the utilisation of digital resources, the frequency of access and the methodologies employed in searching for information. Through an analysis of a survey comprising 180 participants, the research reveals that 63.33% of the respondents engage with digital resources on a daily basis, with libraries and residential locations identified as the predominant access points. The findings underscore an escalating dependence on digital resources, including e-newspapers, e-books and various websites, with Google emerging as the favoured search engine, utilised by 96.67% of the respondents. Nevertheless, obstacles such as a lack of awareness, issues related to accessibility and insufficient training remain prevalent, thereby accentuating the imperative for the implementation of digital literacy initiatives within academic environments.

Ranjan and Patel (2021) analyse the competency of digital literacy among library users at Central University of Jharkhand, with a specific focus on ICT skills, database utilisation and the application of digital learning tools. Their investigation, which is grounded in responses from 83 users, reveals that a significant proportion of the respondents exhibit comfort in employing computers and frequently depend on platforms such as Google Scholar, Directory of Open Access Journals (DOAJ) and Zotero for academic endeavours. However, impediments such as sluggish internet connectivity, a deficiency in training, and challenges associated with locating pertinent information impede effective digital engagement. The study emphasises the necessity for the establishment of structured digital literacy programs aimed at enhancing research efficiency.

Deka (2020) conducts an examination of digital literacy competencies amongst research scholars at Gauhati University, concentrating on their utilisation frequency of digital resources, information technology skills and search methodologies. Drawing upon 87 survey responses, the research reveals that an impressive 95.4% of scholars engage with digital resources on a daily basis, predominantly for purposes related to research, knowledge enhancement and the composition of academic publications. The most frequently utilised resources include e-articles, e-theses and e-journals. Although all participants demonstrate proficiency in the use of

MS Word and internet navigation, more sophisticated search strategies, such as Boolean logic and truncation searches, are notably under-employed. The findings of the study underscore the imperative for the implementation of training initiatives aimed at augmenting the digital literacy skills of research scholars.

Wahid et al. (2025) focused on information literacy and digital literacy among research scholars, particularly at the University of Kashmir. It explores global standards and studies on information literacy, emphasising the role of library orientation, digital literacy and critical thinking in academic success. Studies have shown that information literacy competencies improve as students' progress in higher education, with greater reliance on electronic resources such as e-journals and databases. The review also highlights the importance of library usage and training programmes in developing research skills. The findings support integrating information literacy into academic curricula for enhanced research outcomes.

Munsi, Biswas and Barsha (2023) highlighted its crucial role in modern library management and services. Studies indicate that librarians are generally proficient in subscribing to e-resources, database searching and digital collection building. Research also emphasises the integration of technology in library services, including email communication, social media marketing and digital preservation. However, gaps remain in areas like website development, indexing and cybersecurity. Prior studies suggest that training programmes and professional development initiatives can enhance digital competencies. This study contributes to existing research by assessing digital skills among government-aided college librarians in West Bengal, aiding future strategic improvements.

Objectives of the Study

- To assess the availability and accessibility of digital devices and internet connectivity among research scholars at the University of Allahabad.
- To evaluate the proficiency of research scholars in using various digital tools and online databases.
- To analyse the awareness and effectiveness of academic journal search strategies.
- To determine the frequency and purpose of digital tool usage in research.

- To identify the major challenges faced by research scholars in utilising digital tools.
- To examine the significance of digital literacy in research success and explore scholars' interest in attending digital literacy training workshops.
- To investigate the preferred online research platforms and databases used by research scholars.

Scope and Research Methodology of the Study

The present investigation concentrates on "Assessing Digital Information Literacy Skills among Research Scholars: A Case Study of the University of Allahabad". It scrutinises the availability and accessibility of digital devices alongside internet connectivity, assesses the scholars' adeptness in utilising digital tools and online databases and examines their cognisance of academic journal search methodologies.

This research adopted a descriptive survey approach to gather data from research scholars through a meticulously structured questionnaire. Random sampling has been used for collecting data from research scholars. A total of 350 questionnaires were disseminated among the doctoral candidates within the Schools of Humanities (Languages), Social Sciences, Law Faculty and Sciences. From the 350 questionnaires distributed, the researcher successfully acquired 270 completed responses from the participants. This sample yields a response rate of 77%, derived from the 350 questionnaires that were circulated. Random sampling was employed in the data collection process from the respondents. The data collected via the questionnaires was subjected to analysis using MS Excel and SPSS software.

Data Analysis and Interpretation

Table 1: Gender of the Respondents

	Frequency	Percent
Female	87	32.2
Male	183	67.8
Total	270	100.0

This table delineates the gender composition of the respondents. Among the total of 270 participants, 32.2% identified as female, whereas 67.8% identified as male.

Table 2: Age of the Respondents

	Frequency	Percent
20-25	50	18.5
26-30	100	37.0
31-35	97	35.9
36 Above	23	8.5
Total	270	100.0

Age Distribution: The table elucidates the age categorisation of the respondents. The predominant age group (37%) comprised individuals aged 26-30, followed by 35.9% within the 31-35 age range.

Table 3: Regular Access of Internet

	Frequency	Percent
Basic internet	119	44.1
High-speed internet	134	49.6
No reliable internet access	17	6.3
Total	270	100.0

Table 3 Shows that a significant proportion of respondents (49.6%) reported having access to high-speed internet, 44.1% utilised basic internet services and 6.3% lacked reliable internet access.

Table 4: Search Academic Journals Effectively

	Frequency	Percent
No	6	2.2
Yes	264	97.8
Total	270	100.0

It illustrates the respondents' self-evaluated competence in effectively searching academic journals. A substantial majority (97.8%) indicated that they possessed the requisite skills for searching, while a mere 2.2% acknowledged a lack of such ability.

Table 5: Advanced Search Techniques

	Frequency	Percent
No	32	11.9
Yes	238	88.1
Total	270	100.0

This table evaluates the respondents' familiarity with advanced search methodologies, including Boolean operators. Approximately 88.1% reported familiarity

with these techniques, in contrast to 11.9% who indicated unfamiliarity.

Table 6: Use of Digital Tools for Research

	Frequency	Percent
Daily	56	20.7
Monthly	89	33.0
Rarely	29	10.7
Weekly	96	35.6
Total	270	100.0

Frequency of Digital Tool Usage: The table emphasises the frequency with which respondents engage with digital tools for research purposes. Weekly utilisation was prevalent (35.6%), followed closely by monthly usage (33%), daily interaction (20.7%) and infrequent use (10.7%).

Table 7: Primary Purpose of Your Digital Usage

	Frequency	Percent
Communication & and networking	27	10.0
Data analysis	95	35.2
Literature review	60	22.2
Writing and publishing papers	88	32.6
Total	270	100.0

Primary Purpose of Digital Usage: Respondents primarily engaged digital tools for various purposes, including data analysis (35.2%), writing and publishing scholarly articles (32.6%), conducting literature reviews (22.2%) and facilitating communication/networking (10%).

Table 8: Formal Training in Digital Literacy

	Frequency	Percent
No	21	7.8
Yes	249	92.2
Total	270	100.0

Formal Training in Digital Literacy: This table indicates that 92.2% of respondents have undergone formal training in digital literacy, whereas 7.8% have not received such training.

Table 9: Important Role of Digital Literacy in Success of Research

	Frequency	Percent
Neutral	18	6.7
Not important at all	1	.4
Somewhat important	86	31.9
Very important	165	61.1
Total	270	100.0

Importance of Digital Literacy for Research: A majority of respondents (61.1%) deemed digital literacy to be of paramount importance for achieving research success. Others regarded it as somewhat important (31.9%), neutral (6.7%), or entirely unimportant (0.4%).

Table 10: Interested in Attending Workshops or Training on Digital Literacy

	Frequency	Percent
No	3	1.1
Yes	267	98.9
Total	270	100.0

Interest in Digital Literacy Workshops: An overwhelming majority (98.9%) demonstrated interest in participating in workshops or training sessions focusing on digital literacy, leaving only 1.1% expressing disinterest.

Table 11: Preferred Academic Databases

	Responses	Percent
Google Scholar	75	18.7%
Scopus	108	26.9%
PubMed	64	16.0%
Web of Science	116	28.9%
JSTOR	38	9.5%
	401	100.0%

This table delineates the frequency of database utilisation. Web of Science (28.9%) and Scopus (26.9%) emerged as the most frequently used databases, followed by Google Scholar (18.7%), PubMed (16%) and JSTOR (9.5%).

Table 12: Devices Used for Research

Device Used for Research	Number	Percent
Desktop	173	24.16
Laptop	237	33.09
Tablet	139	19.41
Smartphone	167	23.32
Total	716	100

Respondents predominantly utilised laptops (33.09%) and desktops (24.16%) as their primary devices for research. Additionally, smartphones (23.32%) and tablets (19.41%) were also employed.

Table 13: Challenges in Using Digital Tools

Challenges Faced During Using Digital Tools for Research	Number	Percentage
Lack of technical knowledge	247	40.16
Limited access to software/tools	203	33.01
Connectivity issues	92	14.16
Lack of training or support	73	11.87
Total	615	100

The principal challenges encountered included a deficiency in technical knowledge (40.16%), limited access to software (33.01%), connectivity difficulties (14.16%) and insufficient training or support (11.87%).

Table 14: Proficiency in Using Tools/Software

Proficiency of Using Tools	Very Proficient	Moderately Proficient	Proficient	Slightly Proficient	Not Proficient
Word processing software (e.g., MS Word)	229 (84.8%)	21 (7.8%)	10 (3.7%)	6 (2.2%)	4 (1.5%)
Spreadsheet tools (e.g., MS Excel)	193 (71.9%)	47 (17.4%)	15 (5.6%)	11 (4.1%)	4 (1.5%)
Data analysis tools (e.g., SPSS, R, Python)	64 (22.6%)	72 (26.7%)	69 (25.6%)	53 (19.6%)	15 (5.6%)
Online databases (e.g., Scopus, PubMed, JSTOR)	56 (20.7%)	45 (16.7%)	70 (25.9%)	80 (29.6%)	19 (7.0%)
Reference management tools (e.g., Zotero, EndNote)	61 (22.6%)	44 (16.3%)	73 (27.0%)	77 (28.5%)	15 (5.6%)

The table assesses the proficiency levels in utilising various tools on a scale from 1 to 5. Respondents exhibited high proficiency in word processing (84.8%) and spreadsheet applications (71.9%). Moderate proficiency was observed in data analysis tools, online databases and reference management software, with numerous participants demonstrating lesser confidence in these domains.

Major Findings of the Research

- A predominant proportion of participants identified as male (67.8%), while female respondents constituted 32.2%, thereby indicating a notable gender disparity. This observation suggests a diminished representation of female scholars, potentially reflecting broader inequities within the realms of higher education and research involvement.
- The majority of respondents were situated within the age brackets of 26-30 years (37%) and 31-35 years (35.9%), indicative of individuals in the early to mid-career stages of their research endeavours. A smaller segment, comprising 18.5%, was aged 20-25 years, whereas merely 8.5% were aged 36 years or above, suggesting a restricted engagement from more seasoned researchers.
- While 49.6% of respondents reported possessing access to high-speed internet, and 44.1% had basic internet connectivity, 6.3% indicated experiencing challenges related to connectivity. This underscores the existence of a digital divide, particularly in territories characterised by inadequate infrastructure,

which may impede research productivity.

- An overwhelming majority (97.8%) acknowledged their capability to proficiently search academic journals, thereby reflecting robust research competencies. Nevertheless, 2.2% of respondents indicated a lack of such knowledge, implying a necessity for targeted training initiatives aimed at novice researchers.
- A significant proportion of respondents (88.1%) expressed familiarity with advanced search methodologies, such as Boolean operators, thereby demonstrating a commendable ability to refine research inquiries. Conversely, 11.9% of participants indicated a deficiency in this knowledge, which may adversely affect the efficiency and precision of their literature searches.
- Digital tools were predominantly utilised on a weekly basis (35.6%), followed by monthly usage (33%). A mere 20.7% engaged with these tools daily, while 10.7% reported infrequent use. This indicates that the usage of research tools is primarily dictated by the exigencies of specific projects rather than being a habitual practice.
- The foremost motivations for employing digital tools included data analysis (35.2%) and the writing and publication of academic papers (32.6%). Additionally, 22.2% utilised these tools for conducting literature reviews, while 10% primarily engaged them for purposes of communication and networking. This highlights the pivotal role of digital tools within the research continuum.
- A substantial 40.16% of respondents identified a lack of technical expertise as a significant obstacle, while 33.01% encountered limited access to requisite software and tools. Furthermore, 14.16% faced issues related to connectivity, and 11.87% reported insufficient training or support. Addressing these impediments is crucial for the enhancement of digital literacy.
- Web of Science (28.9%) and Scopus (26.9%) emerged as the most favoured databases, reflecting their reliability and extensive coverage. Google Scholar (18.7%) was utilised for rapid access to articles, while PubMed (16%) and JSTOR (9.5%)

were also frequently accessed within specialised disciplines.

- Laptops (33.09%) were identified as the most frequently employed devices for research, succeeded by desktops (24.16%), likely attributable to their convenience and portability. Smartphones (23.32%) and tablets (19.41%) were also utilised, indicating an increasing trend towards mobile access to research resources.
- Respondents exhibited a high degree of proficiency in the utilisation of word processing software (84.8%) and spreadsheet applications (71.9%). However, proficiency levels concerning data analysis tools (22.6%) and reference management software (22.6%) were comparatively lower. This suggests an imperative for further training in specialised research instruments.
- A substantial 98.9% of participants indicated a keen interest in engaging with workshops or training sessions focused on digital literacy, underscoring the pronounced demand for opportunities aimed at skill enhancement. Instruction in data analysis instruments, online repositories and reference management software has the potential to markedly improve research efficiency.
- A notable 61.1% of participants deemed digital literacy to be of paramount importance for achieving research success, whereas 31.9% regarded it as somewhat important. A mere fraction (6.7% remained neutral, and 0.4% dismissed it as unimportant), thereby demonstrating a broad acknowledgement of digital literacy as an essential component of academic success.

Conclusion

This investigation underscores the pivotal significance of DIL in the realm of academic research, particularly among the scholarly cohort at the University of Allahabad. Although a majority of respondents demonstrate basic digital competencies, deficiencies in sophisticated search methodologies, data analytical instruments and reference management software suggest an urgent requirement for specialised training initiatives. The results indicate

a pronounced desire among scholars to augment their digital literacy, with nearly all participants expressing a keen interest in workshops and educational programmes.

Moreover, the research uncovered a notable digital divide, as a segment of scholars is devoid of reliable internet connectivity and encounters challenges in the utilisation of fundamental digital tools. Technical impediments, insufficient exposure to advanced software and inadequate institutional backing persist as significant barriers to the optimal employment of digital resources. These obstacles impede the successful execution of research activities, ranging from literature reviews to data analysis and scholarly publication. Addressing these deficiencies through extensive digital literacy programmes can empower scholars to proficiently navigate academic databases, implement advanced search techniques and efficiently manage research outputs.

Academic institutions ought to prioritise the integration of digital literacy training within the academic curriculum, providing workshops, practical sessions and on-going educational opportunities. The establishment of dedicated support systems, encompassing digital resource centers and mentorship initiatives, can further bolster scholars' competencies. Additionally, collaboration with libraries, ICT professionals and subject matter experts can facilitate access to cutting-edge tools and technologies.

The findings of this study accentuate that the promotion of digital literacy is not solely advantageous for individual researchers but also significantly contributes to the overarching academic excellence of institutions. As digital platforms perpetually evolve, equipping scholars with robust digital competencies will assure their active engagement in the global research ecosystem. By cultivating a digitally proficient research community, universities can stimulate innovation, support knowledge generation and enhance their research impact both nationally and internationally.

References

- Biradar, K., & Naik, K. J. (2017). Digital literacy skills and competencies among the research scholars and PG students of deemed university libraries, Bangalore: A study. *Journal of Advances in Library and Information Science*, 3(6), 252-257.
- Bawden, D. (2008). Origins and concepts of digital literacy. *Digital Literacies: Concepts, Policies and Practices*, 30(2008), 17-32.
- Eshet-Alkalai, Y. (2012). Thinking in the digital era: A revised model for digital literacy. *Issues in Informing Science and Information Technology*, 9, 267-276.
- Secker, J., & Coonan, E. (Eds.). (2013). *Rethinking information literacy: A practical framework for supporting learning*. London: Facet.
- Martin, A. (2005). DigEuLit – A European framework for digital literacy: A progress report. *Journal of eLiteracy*, 2(2), 130-136.
- American Library Association. (2013). Digital literacy, libraries, and public policy: Report of the Office for Information Technology Policy's Digital Literacy Task Force.
- Pratap, R. V., & Singh, K. (2018). Digital literacy skills among students and research scholars of the Law School, Banaras Hindu University, Varanasi, India: A study. *International Journal of Next Generation Library and Technologies*, 4(1), 1-11.
- Krishnamurthy, C., & Shettappanavar, L. (2019). Digital literacy among female postgraduate students of Karnatak University, Dharwad, Karnataka, India: A study. *Library Philosophy and Practice (e-journal)*. 2934.
- Lokesha, M., & Adithya, K.H. (2019). Digital information literacy of Mangalore University students: A study. *International Journal of Information Dissemination and Technology*, 9(1), 40-43.
- Ranjan, J., & Patel, M. (2021). Digital literacy competency among library users of Central University of Jharkhand: A Study. *Library Philosophy and Practice (e-journal)*. 6444.
- Deka, P. (2020). A study on accessing digital literacy skill of research scholars of Gauhati university, Guwahati, Assam. *International Peer Reviewed E-Journal Of Multidisciplinary Research*, 1(7), 18-24.
- Wahid, A., Vijayakumar, K., Lone, M. I., & Bhat, B. G. (2024). Are research scholars of University of Kashmir information literate? A story from post-graduation to PhD education for information, 01678329251323450.
- Munshi, S. A., Biswas, A., & Barsha, S. (2023). Librarians' self-efficacy in digital literacy skills: an investigation of librarians working in libraries of government-aided colleges in West Bengal. *Science & Technology Libraries*, 1-15.