Assessing The Digital Literacy Skills of Postgraduate Students: A Case Study of BRA Bihar University, Muzaffarpur, Bihar

[1]Dr. Kaushal Kishor Chaudhary, [2]Dr. Amit Kishore,[3]Kumari Soni,[4]Dr. Akash Kumar Singh,[5]Dr. Amita Singh

[1]University Librarian, BRA Bihar University, Muzaffarpur, Bihar-842001
  kkchaudhary1968@yahoo.com
[2]Librarian, Kendriya Vidyalaya ECR, Samastipur, Bihar-848101
  akishor.82@gmail.com
[3]Research Scholar, Dept of Library and Information Science,
SKD University, Hanumangarh, Rajasthan-335513
  skishor.89@gmail.com
[4]Assistant Professor, Dept of Library and Information Science,
SKD University, Hanumangarh, Rajasthan-335513
  akashkumarsingh0107@gmail.com
[5]Librarian, **Government Hamidia** Arts And Commerce **College**, Bhopal, M.P.
  amita.singh0602@gmail.com

Abstract

This study aims to assess the digital literacy skills of postgraduate students at B.R.A. Bihar University, Muzaffarpur, Bihar, in response to the growing importance of digital competencies in academic and professional contexts. Data were collected through a structured questionnaire designed to assess key dimensions of digital literacy. A total of 120 questionnaire distributed to a sample of postgraduate students across various disciplines, out of which 107 responded. Once the data were collected, statistical analyses were conducted using SPSS and MS-Excel. The results presented in suitable tabular forms and charts, facilitating fair and comprehensive conclusions drawn from this study. The study found that smartphones are the primary device used for academic activities by 58.44% of respondents, while only 26.44% use computers or laptops regularly. This shift towards mobile learning may impact the depth of engagement with academic content. A significant contradiction exists between respondents' high search engine proficiency (95.21%) and their low ability to critically evaluate online sources (36.26%). Moreover, while many (45.26%) feel confident in their digital skills, a significant minority (8.25%) lacks confidence. This research contributes to the existing literature on digital literacy by providing specific insights into the context of B.R.A. Bihar University, a region that has received limited attention in this field.

Keywords: BRA Bihar University; Digital Literacy; Digital Literacy Skills; Information Literacy; ICT Skills; Postgraduate Students.

1. Introduction

In the contemporary educational landscape, digital literacy has emerged as a critical competency for students at all levels of education. As technology continues to evolve rapidly, the ability to effectively navigate digital tools and resources is essential for academic success and future career opportunities. This is particularly relevant for postgraduate students, who are expected to engage with complex information sources, collaborate online, and utilize various digital platforms for research and communication.

Digital literacy encompasses the skills and knowledge required to effectively navigate, evaluate, and create information in various digital formats. It is crucial for individuals to engage with digital technologies and the internet safely and responsibly. As society increasingly relies on digital tools for communication, education, and commerce, the ability to discern credible information and utilize technology effectively has become essential. 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." Digital literacy is a fundamental skill set that empowers individuals to thrive in a digital world. As technology continues to advance, fostering digital literacy will be essential for academic achievement, career development, and active citizenship. By prioritizing digital literacy education and addressing barriers to access, we can cultivate a more informed and engaged society.

B.R.A. Bihar University, located in Muzaffarpur, Bihar, is a significant institution in the region, offering a diverse range of postgraduate programs across various disciplines. Established with a vision to provide quality education and foster research, the university plays a crucial role in shaping the academic and professional trajectories of its students. However, as the integration of technology in education becomes more pronounced, it is imperative to evaluate the digital literacy skills of its postgraduate students to ensure they are adequately prepared for the demands of a digitally driven world.

Despite the increasing recognition of digital literacy's importance, there remains a gap in understanding the specific competencies possessed by students at B.R.A. Bihar University. This research aims to assess the digital literacy skills of postgraduate students, focusing on their proficiency in key areas such as information retrieval, online communication, content creation, and ethical use of digital resources. By identifying the strengths and weaknesses in their digital literacy, the study seeks to inform educators and policymakers about necessary interventions and training programs to enhance these skills.

1.1 Key Components of Digital Literacy

Digital literacy refers to the ability to effectively and critically navigate, evaluate, and create information using a range of digital technologies. It encompasses various skills, including the ability to use digital devices, communicate and collaborate online, and critically assess the credibility of information. In today's increasingly digital world, digital literacy is essential for personal, academic, and professional success. Following are the key components of Digital Literacy:

(a) **Technological skills:** This includes proficiency in using digital devices such as computers, tablets and smartphones and being familiar with software applications, social media platforms and digital communication tools.

(b) **Information literacy:** This includes the ability to locate, evaluate and use information effectively and to distinguish credible from unreliable sources, especially in an age of misinformation.

(c) **Communication and collaboration:** This includes understanding how to communicate effectively in a digital environment and the skills to collaborate with others through digital platforms, manage online projects and participate in virtual teams.

(d) **Critical thinking:** The ability to critically analyse and evaluate digital content and develop a questioning mindset towards information found online is also an important element of digital literacy.

(e) **Ethical and responsible use:** Understanding the ethical implications of digital actions, such as respecting copyright and privacy. Engaging in responsible online behaviour, including digital footprint management and cyberbullying awareness, etc. are included in its ethical use.

1.2 Importance of Digital Literacy

(a) **Academic Success**: In educational settings, digital literacy enhances students' ability to conduct research, collaborate on projects, and engage with a variety of multimedia resources. It is crucial for adapting to diverse learning environments, especially in online or hybrid formats.

(b) **Career Readiness**: Employers increasingly seek candidates who possess strong digital skills. Digital literacy equips individuals to thrive in modern workplaces, where technology plays a central role in communication, project management, and data analysis.

(c) **Informed Citizenship**: A digitally literate population is essential for a healthy democracy. Individuals who can critically assess information are better equipped to participate in public discourse, make informed decisions, and engage with civic life.

(d) **Lifelong Learning**: As technology evolves, the need for continuous learning becomes paramount. Digital literacy fosters a mindset of adaptability and curiosity, empowering individuals to keep pace with new tools and trends.

1.3 Challenges to Digital Literacy

(a) **Access and Equity**: Not all individuals have equal access to digital tools and the internet, which can create disparities in digital literacy. Addressing this digital divide is crucial for ensuring that everyone has the opportunity to develop their skills.

(b) **Evolving Technology**: The rapid pace of technological change can make it challenging for individuals to stay updated. Continuous training and support are necessary to help people adapt to new tools and platforms.

(c) **Misinformation**: The prevalence of misinformation online complicates the landscape of digital literacy. Individuals must be equipped to navigate this challenge and develop strong critical thinking skills.

2. Review of Literature

Borgohain and Gamit (2024) identified deficiencies in digital literacy among postgraduate students at Dibrugarh University, especially regarding the effective location and use of digital information. Similarly, Sari et al. (2023) examined digital literacy within vocational education, noting that while students had a favourable attitude toward digital technology, their skills varied, particularly in less commonly used areas. Garba et al. (2023), which explored digital literacy among Nigerian students, revealing proficiency in basic digital skills but highlighting the necessity for ongoing education about issues like cybersecurity.

Mawia and Gyashree (2022) investigated digital literacy among undergraduates in Assam, finding that while students were generally aware of digital literacy concepts, they needed formal training to enhance their skills. Assessing digital literacy presents unique challenges, particularly regarding defining the competencies to be measured and the methodologies employed. Many studies rely on self-reported data, which can lead to biases in understanding students' actual skills (Coldwell-Neilson, 2020).

Kaeophanuek et al. (2018) assessed the digital literacy landscape among Thai university students and instructors, finding that students possessed moderate skills in digital transformation. Siddiq et al. (2017) found that digital competencies significantly predict the integration of technology in teaching practices, suggesting that educators must prioritize digital literacy training in their curricula. 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. Eshet-Alkalai (2012) defines digital literacy as a combination of technical-procedural, cognitive, and socio-emotional skills that enable individuals to navigate the digital landscape effectively.

3. Objectives of The Study

The main objective of this study is to assess the digital literacy skills of postgraduate students across various disciplines at B.R.A. Bihar University, Muzaffarpur. The specific objectives are as follows:

(a) To evaluate the use of digital devices, Internet access, and level of digital literacy among postgraduate students in various disciplines at B.R.A. Bihar University, Muzaffarpur;

(b) To examine the patterns of digital technology usage among postgraduate students, including frequency, types of technologies used, and purposes for which they are employed;

(c) To examine the availability and effectiveness of digital literacy training programs for postgraduate students, examining the types of training received and their relationship with students' confidence in their digital skills;

(d) To identify the challenges and barriers faced by students in developing and enhancing their digital literacy skills.

(e) To develop recommendations for enhancing digital literacy programs and resources at Bra Bihar University based on the findings of the assessment.

4. Methodology

This study employs a quantitative survey method to assess the digital literacy skills of postgraduate students at B.R.A. Bihar University, Muzaffarpur, Bihar. The research design includes the following key components:

4.1 Sample Selection

A sample of postgraduate students was selected using a stratified random sampling technique representing approximately 10% of the total population. This approach ensures representation from various disciplines within the university, including social sciences, humanities, and natural sciences.

4.2 Data Collection

Data were collected through a structured questionnaire designed to assess key dimensions of digital literacy. A total of 120 questionnaire distributed to a sample of postgraduate students across various disciplines, out of which 107 responded.

4.3 Statistical Analysis

Once the data were collected, statistical analyses were conducted using SPSS (Statistical Package for the Social Sciences) and MS-Excel. The results presented in suitable tabular forms and charts, facilitating fair and comprehensive conclusions drawn from this study.

4.4 Scope and Limitations

The scope of this study is primarily confined to postgraduate students enrolled at B.R.A. Bihar University. This focus allows for an in-depth analysis of the digital literacy landscape within a specific academic context. However, this study also has limitations. The findings may not be generalizable to other institutions in Bihar or India, as each university may have unique digital literacy challenges and resource availability.

5. **Data Analysis and Interpretation**

   5.1 Demographic and Academic Profile of the Respondents

   5.1.1 Demographic Profile (Gender-wise Response)

   Data collection involved a structured questionnaire aimed at evaluating key aspects of digital literacy among postgraduate students. Out of 120 distributed questionnaires, 107 were completed, yielding a response rate of 89.16%. The gender distribution reveals that 64.48% of the respondents were male, while 35.52% were female (see Figure 1).
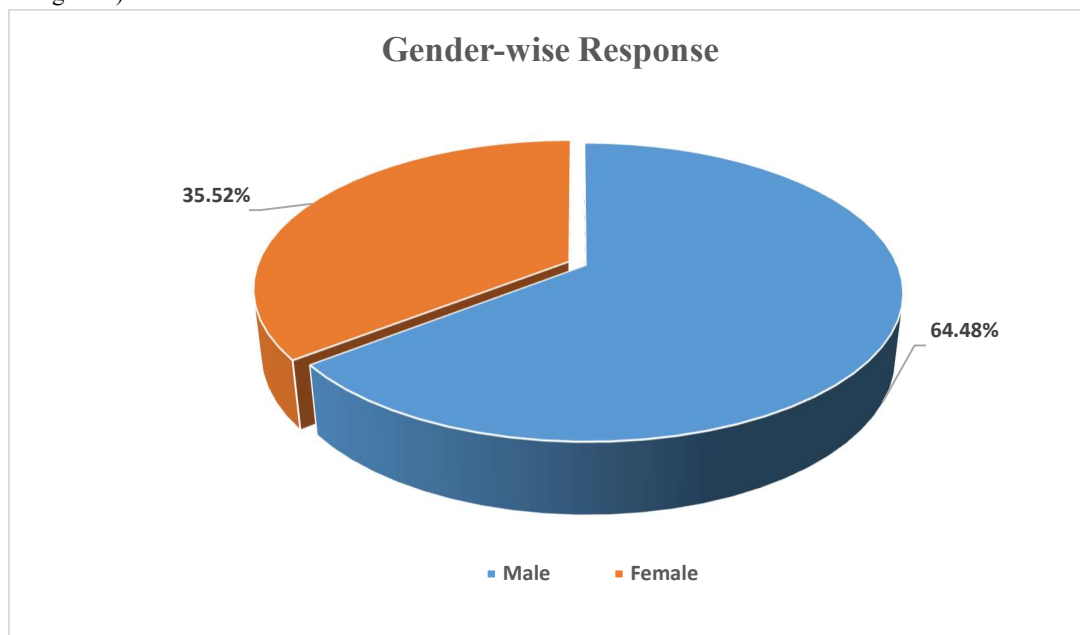

Figure-1 (Gender-wise Response)

5.1.2 Demographic Profile (Age-wise Response)

The age distribution of respondents indicates a predominant representation of younger students. As illustrated in Figure-2, 50.46% of participants were under 25 years of age, followed by 33.65% in the 25 to 30 years age group, and 15.89% over 30 years old.
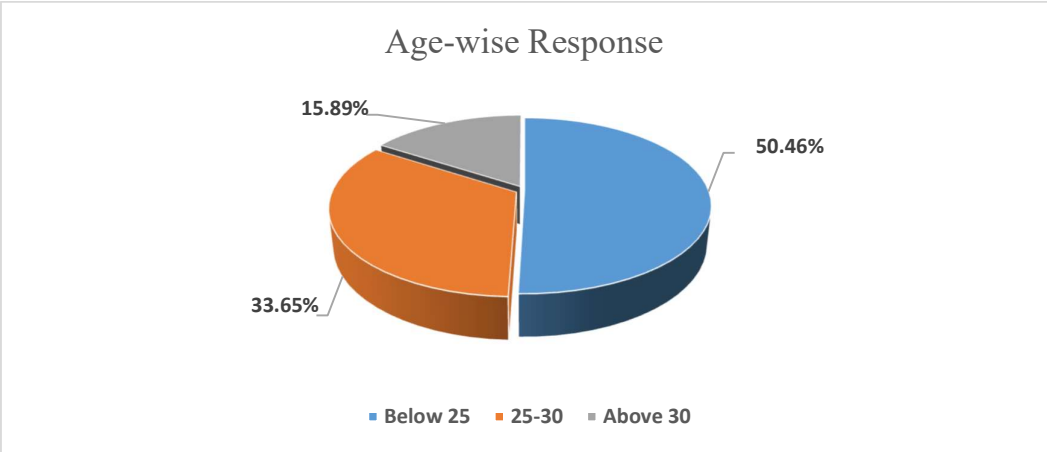
Figure-2 (Age-wise Response)

5.1.3 Demographic Profile (Discipline-wise Response)

Respondents hailed from diverse academic disciplines, as shown in Table 1. The breakdown is as follows: Social Sciences: 37.38%; Science: 31.77% and Humanities: 27.10%.

Discipline	Response			
	Male	Female	Total	Percentage
Social Science	25	15	**40**	37.38%
Science	24	14	**38**	35.51%
Humanities	20	9	**29**	27.11%
Total	**69**	**38**	**107**	**100%**

Table 1 (Discipline-wise Response)

5.2 Access to Digital Tools/Resources

5.2.1 Regular access to a Computer or Laptop

Figure 3 reveals that only 26.44% of respondents regularly utilize computers or laptops for their studies, indicating a significant reliance on smartphones for academic activities.
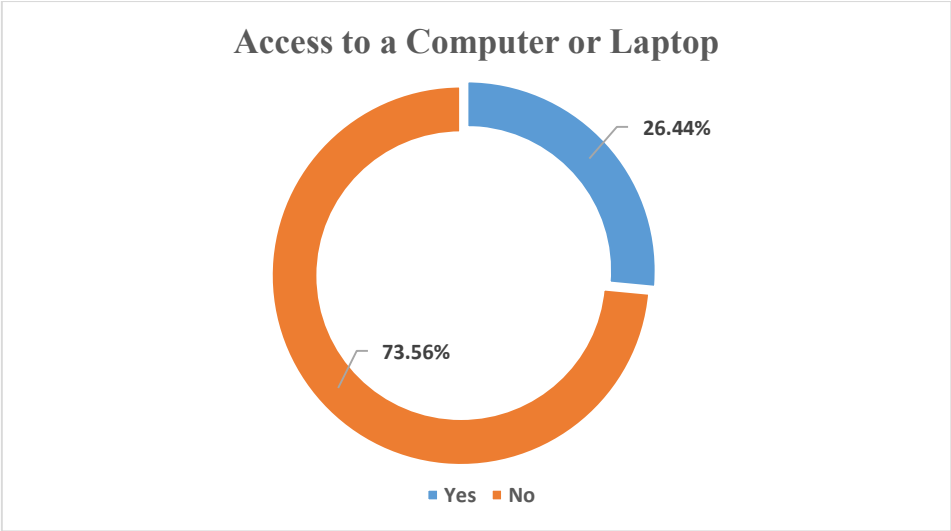

Figure-3 (Regular access to a Computer or Laptop)

#### 5.2.2 Digital Devices Primarily Used for Academic Purposes

Table 2 shows that smartphones are the primary devices for academic use, reported by 58.44% of respondents, followed by laptops (20.77%), tablets (14.56%), and desktops (6.23%).

Devices	Percentage (%)
Desktop Computer	6.23%
Laptop	20.77%
Tablet	14.56%
Smartphone	58.44%

Table 2 (Devices Primarily Used For Academic Purposes) (N=107)

5.2.3 Access to the Internet

According to Figure 4, a vast majority (97.22%) of students have internet access, with the primary means being smartphones. Only 2.78% of respondents reported lack of internet access.
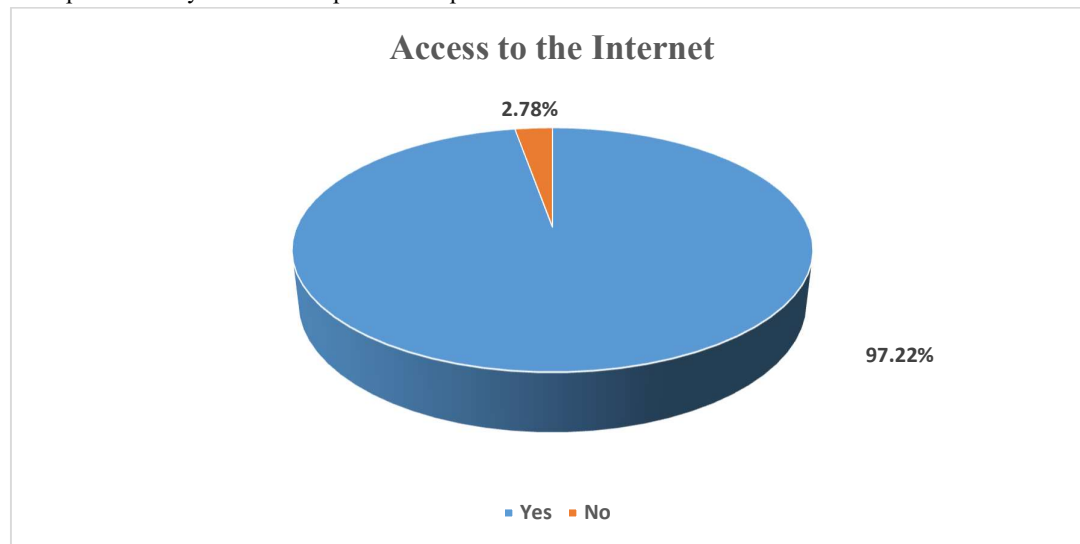
Figure-4 (Regular access to a Computer or Laptop)

5.3 Digital Skills Assessment

5.3.1 Proficient in Digital Skills

Table 3 assesses digital skill proficiency among respondents. Notably, 95.21% can effectively use search engines, while fewer have the ability to evaluate online source credibility (36.26%) or create/manage digital documents (38.46%). Skills such as using presentation software (31.56%) and accessing academic databases (14.36%) are less common, with understanding online privacy and security at only 11.68%.

Proficient in Digital Skills	Percentage (Multiple Answers Permitted)
Using search engines effectively	95.21%
Evaluating the credibility of online sources	36.26%
Using academic databases (e.g., JSTOR, Google Scholar)	14.36%
Creating and managing digital documents (e.g., Word, Google Docs)	38.46%
Using presentation software (e.g., PowerPoint, Prezi)	31.56%
Understanding online privacy and security	11.68%

Table 3 (Proficient in Digital Skills) (N=107)

5.3.2 Digital Skills Confidence

In terms of confidence in digital skills (Table 4), 45.26% of respondents consider themselves confident, while 40.27% feel somewhat confident. A minority feel very confident (6.22%) or not confident (8.25%).

Digital Skills Confidence	Percentage
Not Confident	8.25%
Somewhat Confident	40.27%
Confident	45.26%
Very Confident	6.22%

Table 4 (Digital Skills Confidence) (N=107)

5.4 Digital Literacy Training

5.4.1 Digital Literacy Training

Figure 4 indicates that only 8.67% of respondents have received formal Digital Literacy Training.
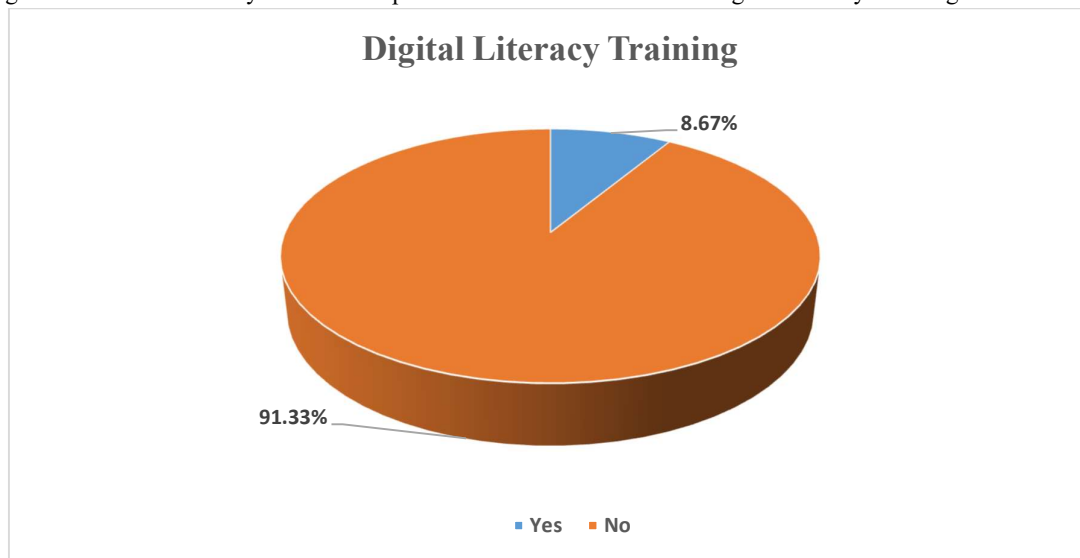

Figure-5 (Regular access to a Computer or Laptop)

5.4.2 Types of Training

Table 5 outlines the sources of training for those who have received it. The majority (61.22%) participated in university/organization workshops, followed by online courses (23.64%), self-study (33.36%), and other means (6.21%).

Types Of Training	Percentage (Multiple Answers Permitted)
University/Organization Workshops	61.22%
Online Courses	23.64%
Self-Study	33.36%
Other	6.21%

Table 5 (Digital Skills Confidence) (N=107)

5.5 Practical Application

5.5.1 Frequency of Use of Digital Devices for Their Academic Work

Table 6 shows that most respondents use digital devices for academic purposes on a weekly basis, with negligible numbers reporting rare or no use.

Frequency of use of digital devices for their academic work	Percentage (Multiple Answers Permitted)
Daily	27.24%
Weekly	63.36%
Monthly	6.18%
Rarely / Never	3.22%

Table 6 (Digital Skills Confidence) (N=107)

5.5.2 Challenges/Difficulties Faced While Using Digital Devices for Academic Purposes

Table 7 highlights that many respondents encounter various challenges when utilizing digital tools, indicating a need for improved support and resources.

Challenges/ Difficulties	Percentage

	(Multiple Answers Permitted)
Technical difficulties (e.g., slow internet, software crashes, hardware issues)	66%
Difficult to use certain digital tools due to their complexity or lack of user-friendliness	69%
Difficult to stay focused and engaged while using digital tools for academic purposes	71%
Experienced information overload or difficulty evaluating the reliability of online sources	68%
Do you have any concerns about privacy or security	34%
Other	54%

Table 7 (Digital Skills Confidence) (N=107)

6. Important Findings
6.1 Demographic and Academic Profile of the Respondents
- The study achieved a high response rate of 89.16%, with a notable gender imbalance: 64.48% of respondents identified as male and 35.52% as female. This suggests a potential need for further investigation into the gender dynamics within postgraduate programs.
- A significant portion of respondents (50.46%) were under 25 years old, indicating that younger students constitute the majority of the postgraduate population surveyed. This demographic trend may influence their digital literacy needs and preferences.
- Respondents came from diverse academic backgrounds, with Social Sciences (37.38%) and Science (31.77%) being the most represented fields, followed by Humanities (27.10%). This diversity underscores the necessity of tailored digital literacy strategies to address the unique requirements of different disciplines.

6.2 Access to Digital Tools and Resources
- Only 26.44% of respondents reported regular use of computers or laptops for academic purposes, highlighting a significant reliance on smartphones for educational activities. This reliance may impact the depth of engagement with academic content.
- Smartphones were identified as the primary academic device for 58.44% of respondents, followed by laptops (20.77%). The low usage of traditional computers and desktops (6.23%) suggests a shift towards mobile learning, which may require adjustments in teaching methods.
- An overwhelming 97.22% of respondents have internet access, predominantly through smartphones. This high level of connectivity is encouraging but also raises questions about the quality and reliability of internet access for academic work.

6.3 Digital Skills Assessment
- While 95.21% of respondents are proficient in using search engines, only 36.26% can effectively evaluate the credibility of online sources. This disparity indicates a critical gap in essential digital literacy skills that need to be addressed.
- A majority of respondents (45.26%) felt confident about their digital skills, but 8.25% reported feeling not confident at all. This indicates a need for targeted interventions to bolster digital literacy confidence among students.

6.4 Digital Literacy Training
- Only 8.67% of respondents have received formal Digital Literacy Training, suggesting a significant gap in structured educational support for developing digital skills.
- Among those who received training, the majority (61.22%) participated in workshops organized by their universities. This reliance on institutional training points to the importance of enhancing such programs to improve digital literacy.

6.5 Practical Application
- Most respondents use digital devices for academic work on a weekly basis, with very few indicating rare or no use. This consistent use underscores the integration of digital tools into their academic practices.

- The data reveal that many respondents encounter challenges while using digital tools, indicating a pressing need for improved support systems and resources to enhance their academic experiences. Addressing these challenges is essential for fostering effective digital literacy development.

7. Suggestions and Discussion
7.1 Suggestions

This research highlights several critical aspects of digital literacy among postgraduate students at B.R.A. Bihar University, revealing a significant reliance on smartphones for academic purposes and a notable gap in essential digital skills. The findings underscore the necessity for targeted interventions and enhanced educational support to foster digital literacy and some important suggestions for this are as follows.

(a) **Integrate Digital Literacy into Curriculum:** Educational institutions should incorporate digital literacy training within the existing curriculum. This could involve courses dedicated to evaluating online sources, using digital tools effectively, and understanding online privacy and security.

(b) **Expand Access to Formal Training Programs:** With only 8.67% of respondents having received formal training, universities should develop comprehensive digital literacy programs. This could include online modules, workshops, and seminars that equip students with essential skills.

(c) **Promote Multi-Device Learning:** Given the low usage of laptops and desktops, universities should encourage a balanced approach to device usage. Developing resources that are accessible on multiple platforms can help students engage more deeply with academic content.

(d) **Enhance Support Services:** Establish dedicated support systems, such as help desks or online forums, where students can seek assistance with digital tools. This would address the challenges many students face and facilitate smoother integration of technology in their academic work.

(e) **Conduct Workshops Focused on Source Evaluation:** Specific workshops aimed at teaching students how to evaluate the credibility of online sources are essential. These could be part of the digital literacy training programs and facilitated by librarians or digital literacy experts.

(f) **Foster Peer Learning Communities:** Encourage the formation of peer learning groups where students can share digital skills and resources. This collaborative environment can help bolster confidence and competence in using digital tools.

(g) **Leverage Online Resources and Tools:** Create an online repository of digital literacy resources, including tutorials, articles, and guides. This can serve as a valuable tool for students looking to enhance their skills independently.

7.2 Discussion

The findings indicate a significant shift in how postgraduate students engage with technology for academic purposes. The reliance on smartphones, while providing accessibility, raises concerns about the depth of engagement with academic content. This trend suggests a need for pedagogical adaptations that embrace mobile learning while ensuring that students are equipped with the skills necessary for effective digital engagement. The disparity between proficiency in search engine use and the ability to evaluate sources highlights a critical gap in digital literacy. Addressing this issue is paramount, as the ability to discern credible information is essential in today's information-rich environment. The low percentage of students receiving formal training further exacerbates this gap, indicating a missed opportunity for structured skill development.

Moreover, the confidence levels among students regarding their digital skills reveal a dual narrative: while many feel capable, a significant minority do not. This underscores the importance of creating supportive learning environments that cater to diverse skill levels and bolster overall confidence. In conclusion, addressing the challenges identified in this study through targeted interventions and enhanced training programs can significantly improve digital literacy among postgraduate students. By fostering a culture of digital competency, educational institutions can better prepare students for the demands of the modern academic landscape and beyond. The findings indicate a significant shift towards mobile learning among students, accompanied by notable gaps in digital literacy skills and training. By addressing these issues through targeted interventions, educational institutions can better prepare students for the increasingly digital academic landscape, ultimately leading to improved academic performance and greater confidence in their digital capabilities.

7. Conclusion

This study provides a comprehensive assessment of digital literacy skills among postgraduate students at B.R.A. Bihar University, Muzaffarpur. With a high response rate of 89.16%, the findings reveal a notable gender imbalance and a predominance of younger students under 25 years of age, reflecting the demographic trends within the university. The reliance on smartphones as the primary device for academic activities underscores a significant shift towards mobile learning, while the low regular use of computers suggests potential limitations in students' engagement with more complex academic tasks.

The analysis of digital skills proficiency indicates that while students are adept at using search engines, there are critical gaps in evaluating online sources and understanding privacy and security issues. Furthermore, the limited exposure to formal digital literacy training highlights an urgent need for structured educational support. Despite a majority of respondents expressing confidence in their digital skills, the challenges faced in using digital tools suggest that additional resources and support systems are essential to enhance their academic experiences. Overall, this research emphasizes the necessity for tailored digital literacy programs that address the specific needs of diverse academic disciplines and demographic groups, ultimately aiming to improve the digital competencies of postgraduate students in a rapidly evolving educational landscape.

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