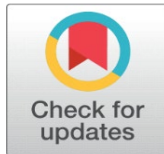


USE AND AWARENESS OF DIGITAL RESOURCES AND SERVICES BY THE STUDENTS OF SELECTED ENGINEERING COLLEGES IN NAGPUR CITY, MAHARASHTRA

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ABSTRACT

This study examines the awareness and utilization of digital resources and services among students at four engineering colleges in Nagpur, Maharashtra: Tulsiram Gaikwad Patil College of Engineering and Technology, Wainganga College of Engineering and Management, Guru Nanak Institute of Engineering & Technology, and Nagarjuna Institute of Engineering Technology & Management. Data was gathered from 371 out of 500 students using a standardized questionnaire, resulting in an 71.2% response rate. The findings show that 61.2% of students are computer literate, with audio-video (58.5%) and graphics (56.6%) being the most familiar digital resources and CD-ROM/DVD (28.6%) being the least familiar. Students extensively rely on self-study (76.3%) and self-help guides (62.8%) for learning and support, and they predominantly use digital resources for job development (59.8%) and knowledge upgrading (60.5%). The results point to the need for improved infrastructure, training, and awareness campaigns by exposing gaps in advanced skills, institutional access, and structured help. This study emphasises how crucial it is to address gaps in digital literacy in order to maximise learning outcomes in engineering education.

Keywords: Digital Resources, Digital Services, Computer Literacy, Awareness, Utilization, E- Learning, Online Database, Digital Libraries, Self-Study, Internet Access, E-Resources, Library Service

1. INTRODUCTION

In the modern digital age, the way people communicate, obtain information, and carry out daily tasks has changed as a result of technology's incorporation into many industries. The growth of digital resources and services has led to notable breakthroughs in a number of these industries, including professional services, research, and education. These resources, which range from digital libraries and collaborative platforms to online databases, e-books, and research repositories, have completely changed how knowledge is acquired and shared. The degree to which people and organizations are aware of and utilize these digital technologies varies greatly, even if these resources are becoming more widely available. The impact of digital resources and services on modern education and research cannot be emphasized. Their use has the ability to democratize access to knowledge, close geographic divides, and promote the development of a knowledge-based society. Effective use of these tools, however, depends on users' awareness, literacy, and digital ecosystem navigation skills. This study aims to investigate how various user groups use and are aware of

digital resources and services, looking at the factors that affect their use of these technologies as well as the potential and difficulties they bring.

The study intends to identify gaps and offer suggestions for improving accessibility, usability, and engagement with digital resources and services by comprehending the current levels of awareness and utilization. By doing this, it hopes to add to the current conversation about the digital divide, digital literacy, and how education and information sharing will develop in a quickly changing technological environment.

2. REVIEW OF LITERATURE

The increased reliance on digital resources has changed how students access and interact with academic content. Digital libraries and online databases provide students with access to a range of knowledge that would otherwise be difficult to gain via traditional library services. According to Kumar et al. (2019), digital tools allow students to easily access current research, improve educational quality, and facilitate self-directed learning.

In the context of engineering education, digital tools such as online technical journals, databases like IEEE Xplore and ScienceDirect, and digital libraries like SpringerLink are critical for students to stay up to date on the latest discoveries in their professions (Sharma & Sharma, 2021). Furthermore, digital resources have the benefit of remote access, allowing students to get information from anywhere, which is especially advantageous for engineering students who frequently need to access specialized technical content.

Awareness is a critical factor influencing the use of digital resources. Despite the abundance of online tools and services, many students are ignorant of the entire range of options available to them. According to Singh et al. (2020), whereas engineering students at metropolitan institutions have a high level of awareness of digital resources, students in rural or less-developed areas frequently have low awareness, preventing them from making good use of those tools.

A study by Patel (2022), postgraduate students were substantially more aware of digital libraries and online academic resources than undergraduate students were. This underscores the necessity for specialized programs to raise awareness, particularly among undergraduate engineering students. Furthermore, Sharma and Soni (2020) believe that orientation and training events at engineering institutions might significantly boost students' awareness of available digital resources.

Several factors influence how students use digital materials. These include internet connectivity, expertise with digital technologies, training session availability, and digital resource quality. Gupta et al. (2019) discovered that students at engineering institutions with strong internet infrastructure were more likely to use digital resources than those with restricted access to high-speed internet. Similarly, Adeyemi et al. (2021) found that students who received regular exposure to digital tools in their curriculum were more likely to effectively use online resources.

Additionally, the usability of digital platforms is vital. According to Bansal and Verma (2021), if students have difficulty exploring digital libraries and databases due to sophisticated interfaces, their use of these resources decreases.

Students encounter many obstacles to using digital resources effectively, even if their availability is increasing. Common impediments include technical challenges, a lack of training, and inadequate support from library workers. Joshi et al. (2021) found that many engineering students, while comfortable with fundamental digital resources, frequently struggle to use advanced research tools efficiently. This emphasizes the necessity for specialized training programs and support structures in institutions to assist students in overcoming these problems.

Agarwal and Prasad (2020) found that some students struggled to access some digital materials due to subscription-based limits, resulting in frustration and decreased utilisation of online resources. The availability and utilisation of digital resources directly affects students' academic performance. According to Gupta et al. (2020), students that use digital resources extensively, notably online journals, research papers, and e-books, outperform their peers academically. This is especially true for engineering students, who benefit from access to cutting-edge research that can help them grasp complex technical issues better.

Khanna et al. (2022) found that students' use of digital resources interacts favourably with research output, as students who engage with online resources are more likely to write research articles and attend academic conferences. This highlights the importance of digital resources in creating a research-oriented learning environment at engineering universities.

Libraries in engineering colleges are now offering digital literacy classes that teach students how to access e-resources, search for scholarly articles, and properly credit sources in their work. According to Verma et al. (2023), these training activities improve students' ability to use digital resources effectively.

3. OBJECTIVE OF THE STUDY

- 1) To find out computer literacy skill by the student
- 2) To study the frequency and average time spent in the library
- 3) To determine the awareness and purpose of digital library resources by selected engineering colleges.
- 4) To determine usage of digital resources and services of selected engineering colleges
- 5) To find out method of learning to use of digital resources by the selected engineering colleges.
- 6) To find out user satisfaction with digital resources and services.

4. SCOPE

The scope of the present study is limited to the libraries of four selected engineering colleges in Nagpur, Maharashtra (Table 1).

Table 1

Libraries of Selected Engineering Colleges in Nagpur, Maharashtra.

Sr. No	Name of Engineering Colleges	Place
1	Tulsiram Gaikwad Patil College of Engineering and Technology	Nagpur
2	Wainganga College of Engineering and Management	Nagpur
3	Guru Nanak Institute of Engineering & Technology	Nagpur
4	Nagarjuna Institute of Engineering Technology & Management	Nagpur

5. METHODOLOGY

A structured questionnaire approach is used to collect data in order to meet the study's objectives. The data collected from the questionnaire is analysed using the descriptive statistical approach. Information was collected from the libraries of the four engineering colleges that were chosen using a standardised google form questionnaire. The structured questionnaire was designed with the stated purpose in mind. A total of 550 questionnaires were distributed to students at the four engineering college libraries that were chosen, and 371 replies were received. The data was presented using some of these charts, tables, and diagrams.

6. ANALYSIS OF DATA

6.1. DEMOGRAPHIC INFORMATION

The response rate for the data collection from 4 selected engineering colleges was 82%. Of 400 participants, only 371 responded; College wise distribution of questionnaires are given in table no. 2 And figure 1

Table 2

College wise Distribution of Respondent

Sr. No	Name of Selected Engineering Colleges	Number of Distributed Questionnaires	Number of Questionnaire Responded	Response Rate %
1	Tulsiram Gaikwad Patil College of Engineering and Technology	200	134	67.00
2	Wainganga College of Engineering and Management	100	79	79.00
3	Guru Nanak Institute of Engineering & Technology	100	83	83.00

4	Nagarjuna Institute of Engineering Technology & Management	100	75	75.00
	Total	500	371	74.2

6.2. COMPUTER LITERACY SKILLS

Table 3 explains the computer literacy skills by the selected engineering colleges students. The majority of literacy for students are 61.2% basic skills, 21.3% Intermediate skills, 9.7% advanced skills, 7.3% proficiency skills (Table 3).

Table 3

Overall Descriptive statistics of respondents of computer literacy skills

Sr. No.	Computer Literacy Skills	Overall computer literacy skills	Percentage %
1	Proficiency	28	7.3
2	Advanced	37	9.7
3	Intermediate	79	21.3
4	Basic	227	61.2

6.3. COMPUTER/LAPTOP ARE BEING USED

Table no.4 explains the computer/laptop are being used by students. The majority of used computer/laptop are 26.1% 1-2 year being used, 14.8% 2-3 year being used, 27.2% aware but not using computer/laptop, 17% less than 1 year, 0.3% more than 5 year, 0.3% aware but not using computer/laptop. (Table 4).

Table 4

Descriptive of overall Computer/Laptop are Being Used

Sr. No.	Computer/Laptop are Being Used	Overall Computer/Laptop are Being Used	Percentage %
1	1-2 year	97	26.2
2	2-3 year	55	14.8
3	Aware but not using	101	27.2
4	Less than 1 year	63	17
5	More than 5 years	55	14.8

6.4. PLACE OF USING COMPUTER/LAPTOP

It is seen that 52.3% using computer/laptop in his home, 19.4% are using overall (home, library, internet center), 12.7% using computer/laptop in internet center, 15.5% using in library (Table 5).

Table 5

Descriptive overall Place of Using Computer/Laptop

Sr. No	Place of Using Computer/Laptop	Overall Using Place of Computer/Laptop	Percentage %
1	Home	194	52.3
2	Internet Center	47	12.7
3	Library	58	15.5
4	Overall (home, Internet center, library)	72	19.4

6.5. WEEKLY HOURS SPENT ON COMPUTER/LAPTOP

It is seen that 43.4% 1-3 hours weekly spent on computer/laptop, 30.7% aware but not using computer/laptop, 9.2% using 3-5 hours, 4.6% using 5-6 hours, 8.9% using more than 6 hours, 3.2% using rarely. (Table 6)

Table 6

Descriptive overall Weekly Hours Spent on Computer/Laptop

Sr. No	Weekly Hours	Overall Weekly Hours Spent on Computer/Laptop	Percentage %
1	1-3	161	43.4
2	3-5	34	9.2
3	5-6	17	4.6
4	More than 6	33	8.9
5	Rarely	12	3.2
6	Aware but not using	114	30.7

6.6. AWARENESS OF DIGITAL RESOURCES

This table 7 shows how many respondents know the type of database mentioned in the questionnaire. Different database were asked from the respondent, and the respondents responded as 58.5% Audio & Video, 56.6% Images, 39.9% Electronic records, 34.2% Open resources- e books, e- journal, 31.5% LMS (Teaching & Learning Resources), 28.6% CD ROM/DVD. (Table 7).

Table 7

Descriptive overall Awareness of Digital Resources

Sr. No.	Digital information Resources	Overall Awareness of Digital Resources	Percentage %
1	CD ROM/DVD	106	28.6
2	Electronic records like emails, spreadsheets	148	39.9
3	Open resources- e books, e-journals	127	34.2
4	Images	210	56.6
5	Audio & Video	217	58.5
6	LMS (Teaching & Learning Resources)	117	31.5

6.7. PURPOSE OF USING DIGITAL RESOURCES

The participants were prompted to share why they used the online tools. Most respondent 60.5% have used digital resources to upgrading the knowledge. Most participants 59.8% were using digital resources to carrier development. 44.5% of respondent were used to subject information. 42% of respondent were used to preparing notes. 41.5% of respondent were used to for communication. (Table 8).

Table 8

Overall Description Purpose of Using Digital Resources

Sr. No.	Purpose	Overall purpose of using digital resources	Percentages %
1	Carrier Development	222	59.8
2	Communications	154	41.5
3	Preparing Notes	156	42
4	Subject Information	165	44.5
5	Upgrading the Knowledge	223	60.5

6.8. METHOD OF LEARNING TO USE DIGITAL RESOURCES

Majority of the students (76.3%) method of learned how to use digital resources self-study. 37.7% learning from friends or colleagues. 21.3% guided from library staff. 28.6% thought formal course (Table 9).

Table 9

Overall Description of Method of Learning to use Digital Resources

Sr.No.	Method	Overall Method of Learning to use Digital Resources	Percentage %
1	Self-Study	283	76.3
2	Friends	140	37.7
3	Guidance from Library Staff	79	21.3
4	Through Formal Course	106	28.6

6.9. ASSISTANCE FOR USING DIGITAL RESOURCES

The participant was prompted to share who assisted for using digital resources. Most respondent 62.8% solving his problem through self-help guides, 34.5% support from staff when needed, 30.5% through workshop, 17% through one-to-one demonstration. (Table 10).

Table 10

Overall Assistance for using Digital Resources

Sr. No	Assistance	Overall Assistance for using digital resources	Percentage %
1	Through Self help guides	233	62.8
2	Support from staff when needed	128	34.5
3	Through workshop	113	30.5
4	One-to-one demonstration	74	20.2

7. FINDINGS

Based on the data analysis from the 371 respondents across four engineering colleges in Nagpur, the following key findings emerged:

- 1) Computer Literacy Skills:** A majority of students (61.2%) possess basic computer literacy skills, while only 7.3% demonstrate proficiency. This indicates a significant gap in advanced digital competencies among engineering students.
- 2) Usage Patterns:** Approximately 27.2% of students are aware of computers/laptops but do not use them, and 43.4% spend only 1-3 hours weekly on these devices, suggesting limited engagement with digital tools.
- 3) Place of Access:** Most students (52.3%) use computers/laptops at home, with only 15.5% utilizing college libraries, highlighting a reliance on personal resources over institutional facilities.
- 4) Awareness of Digital Resources:** Students are most aware of audio-video resources (58.5%) and images (56.6%), but less familiar with advanced tools like CD-ROM/DVD (28.6%) and LMS platforms (31.5%), indicating uneven awareness of academic digital resources.
- 5) Purpose of Use:** Digital resources are primarily used for upgrading knowledge (60.5%) and career development (59.8%), with lesser emphasis on subject-specific information (44.5%) or note preparation (42%).
- 6) Learning Methods:** Self-study is the dominant method (76.3%) for learning to use digital resources, with minimal reliance on formal courses (28.6%) or library staff guidance (21.3%).
- 7) Assistance:** Students predominantly rely on self-help guides (62.8%) for troubleshooting, with limited use of workshops (30.5%) or one-to-one demonstrations (20.2%), reflecting a lack of structured support systems.
- 8) Response Variation:** Response rates varied across colleges, with Guru Nanak Institute of Engineering & Technology showing the highest participation (83%) and Tulsiram Gaikwad Patil College the lowest (67%).

8. SUGGESTION

- 1) **Enhance Digital Literacy Training:** Engineering colleges should introduce mandatory digital literacy programs, focusing on intermediate to advanced skills, to bridge the proficiency gap and prepare students for technical demands.
- 2) **Increase Institutional Access:** Colleges should improve library infrastructure, including high-speed internet and updated digital resources, to reduce reliance on home-based access and encourage on-campus usage.
- 3) **Raise Awareness Campaigns:** Targeted orientation sessions should be conducted to familiarize students with lesser-known resources like LMS, e-journals, and open-access databases, particularly for undergraduate students.
- 4) **Structured Support Systems:** Libraries should offer regular workshops, one-to-one demonstrations, and dedicated staff assistance to supplement self-study and improve resource utilization.
- 5) **Curriculum Integration:** Digital tools should be embedded into the engineering curriculum to ensure consistent exposure and practical application, enhancing both awareness and usage.
- 6) **Address Accessibility Barriers:** Institutions should negotiate affordable subscriptions to premium databases (e.g., IEEE Xplore, ScienceDirect) or promote open-access alternatives to overcome financial constraints faced by students.
- 7) **Monitor Usage Trends:** Periodic surveys should be conducted to assess evolving needs and adjust digital resource offerings accordingly, ensuring alignment with student preferences and academic requirements.

9. CONCLUSION

This study shows the present level of digital resource awareness and use among Nagpur engineering students, highlighting both opportunities and difficulties. Students' reliance on fundamental skills, independent study, and personal resources highlights the need for institutional involvement, even though they show a modest level of awareness and use digital tools primarily for knowledge advancement and career growth. A digital divide within the educational environment is shown by the low level of structured assistance and the restricted use of academic databases and sophisticated digital tools. Engineering colleges can enable students to properly utilise digital resources, improving academic performance and research capacities, by filling these gaps with focused instruction, upgraded infrastructure, and proactive awareness campaigns. In light of Maharashtra's engineering education system, this study adds to the larger conversation on equality and digital literacy by providing educators and policymakers with useful information.

CONFLICT OF INTERESTS

None.

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REFERENCES

- Ankush, S. M., & Koditkar, S. S. (2024). Enhancing Access: A Case Study of ADYPSOE Central Library's Resources and Services. *KIM Journal of Business Research*, 25-33.
- Ashaver, D. D., Igyuve, S. M., & Afolabi, O. A. (2024). Awareness and utilisation of digital resources among postgraduate students in selected universities in North-Central, Nigeria. *Journal of Library Services and Technologies*, 6(1), 49-63.
- Asemi, A., & Riyahiniya, N. (2007). Awareness and use of digital resources in the libraries of Isfahan University of Medical Sciences, Iran. *The Electronic Library*, 25(3), 316-327.
- Baayel, P., & Asante, E. (2019). Students' awareness and use of electronic information resources: a study of Koforidua Technical University. *International Journal of Social Media and Interactive Learning Environments*, 6(2), 122-136.

- Bera, Swapan Kumar (2016). Digital Library and Services in the Modern Era. *International Journal of Library and Information Studies*, 6(4), 43-51.
- Bodnenko, D. M., Lokaziuk, O. V., Poryadchenko, L. A., & Proshkin, V. V. (2025). Harnessing online services for creating augmented reality enhanced comics in primary education. In *CEUR Workshop Proceedings* (pp. 226-239).
- Dhepe, Pratik (2024). Digital Technology and Trends in Libraries. *International Journal For Multidisciplinary Research*, 6(4), 1-5.
- Dhepe, Pratik (2024). The Use of Electronic Resources in Libraries. *International Journal of All Research Education and Scientific Methods (IJARESM)*, 12(8), 2623-2626.
- Edevi, S. P., Husnika, M., & Freka, M. (2025). Challenges and Opportunities for Public University Libraries in the Era of Information Technology in Attracting Users' Interest. *International Journal of Applied Research and Sustainable Sciences*, 3(1), 61-68.
- G.K., Sandesh Kumar & P., Dharani Kumar (2022). Use of Library Resources & Services by Students and Faculty Members of B.Ed. Colleges Affiliated to Kuvempu University. *Kelpro Bulletin*, 26(2), 105-117.
- Gupta, S., & Sharma, S.K. (2017). User's awareness and satisfaction towards the use of digital information resources and services amongst the students of IIT Guwahati. *International Journal of Information Dissemination and Technology*, 7, 54-62.
- Huang, R. (2025). Accelerating the Digital Transformation of Education to Promote High-Quality School Development. In *Leading Smart Education: Best Practices from Chinese Schools* (pp. 3-12). Singapore: Springer Nature Singapore.
- Jogan, S. N. (2015). Access, Awareness and Use of Electronic Resources by Post Graduate Students in Gulbarga University. *Online Submission*, 2(6), 1540-1547.
- Kaladhar, A., Naick, B. D., & Rao, K. S. (2018). Digital resources and services awareness, use and other aspects amongst the students of JNTUK-Kakinada: a study. *Library Philosophy and Practice*, 1-26.
- Khan, J. (2016). AWARENESS AND USE OF DIGITAL RESOURCES AND SERVICES IN THE IIT DELHI LIBRARY. *International Journal of Research*, 4, 64-71.
- Kiryakova, G., & Kozhuharova, D. (2024). The digital competences necessary for the successful pedagogical practice of teachers in the digital age. *Education Sciences*, 14(5), 507.
- Kiryakova, G., & Kozhuharova, D. (2024). The digital competences necessary for the successful pedagogical practice of teachers in the digital age. *Education Sciences*, 14(5), 507.
- Kotur, M., & Mulimani, M. (2022). Awareness and Use of Digital Resources and Services among Students of Government First Grade College Libraries of Dharwad District. *International Journal of Research in Library Science (IJRLS)*, 8(03), 135-144.
- Na, M., Lee, S. S. J., Md Noor, H., Fu, J. Q., & Ying, W. (2024). A pre-service art teacher digital literacy framework for digital literacy in pre-service art teacher education in China. *Asian Journal of University Education (AJUE)*, 20(2), 235-247.
- Nawaz, R., Naeem, S. B., & Ramzan, M. (2022). Relationship between Awareness and Use of Digital Information Resources among University Students of Southern Punjab. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/6907>.
- Nemati Anaraki, L., & Babalhavaeji, F. (2013). Investigating the awareness and ability of medical students in using electronic resources of the integrated digital library portal of Iran: A comparative study. *The electronic library*, 31(1), 70-83.
- Muneja, P. S. (2025). Marketing of electronic resources by universities and colleges in Tanzania. *Global Knowledge, Memory and Communication*, 74(1/2), 564-582.
- Oberländer, A. M., Karnebogen, P., Rövekamp, P., Röglinger, M., & Leidner, D. E. (2025). Understanding the influence of digital ecosystems on digital transformation: The OCO (orientation, cooperation, orchestration) theory. *Information Systems Journal*, 35(1), 368-413.
- Patil, M. S. S., & Jawanjal, R. K. (2024). Use of E-Resources by the Research Scholars of KTHM College: A Survey. *International Peer-Reviewed Journal of Library Science*, 4(2), 82-89.
- Patil, S. S. & Kuri, R. B. (2024). Use of Digital Resources by The Undergraduate Students: A Case Study of Colleges in Belagavi City, Karnataka. *Kelpro Bulletin*, 28(1), 86-102.
- Rydzewski, P. (2025). Digital Inequality and Sustainable Development. *Problemy Ekorozwoju*, 20(1), 96-108.
- Subramanya (2018). Usage of Electronic Resources at Selected Medical College Libraries in Bangalore: A Study. *International Journal of Library and Information Studies*, 8(4),

- Spaska, A., Kozub, H., Abylasynova, G., Kozub, V., & Koval, Y. (2025). Evaluation of innovative teaching methods using modern information technologies. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, 9(1), 422-440.
- Veena, G. (2016). Awareness and use of open access electronic information resources by university students: a study. *International Journal of Digital Library Services*, 6(1), 113-120.
- Vitalis, P. O., Aondover, E. M., Ogunbola, O., Onyejelem, T. E., & Ridwan, M. (2025). Accessing Digital Divide and Implications in Nigeria: The Media Dimension. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, 8(1), 1-12.