

Role of College Libraries in Promoting Digital Literacy in Rural Areas of Nashik Division

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Abstract

The capability to effectively use digital resources has become essential for students in higher education, enabling them to locate, evaluate, create, and share information through digital platforms.

University libraries play a key role in promoting digital literacy by providing access to digital tools, internet services, and programs that enhance information skills. However, colleges located in rural areas face several challenges, including weak information and communication technology (ICT) infrastructure, limited internet connectivity, insufficient funding, and a shortage of trained library personnel. This review explores the role of college libraries in supporting digital literacy within the rural regions of Nashik Division in Maharashtra. It highlights how library services help bridge the digital divide and improve students' digital competencies. The study also identifies current shortcomings and recommends enhancements in ICT facilities, librarian training, financial support, and digital literacy initiatives to improve the quality of education in rural higher education institutions.

Keywords: College Libraries, Digital Literacy, ICT, Academic Libraries, Nashik Division, Information Literacy, Higher Education

1. Introduction

The quick development of Information and Communication Technology (ICT) has significantly changed higher education around the world. Digital tools have altered how information is made, kept, shared, and accessed. Today, students depend more on electronic resources such as online databases, digital libraries, e-books, e-journals, learning management systems, and web-based educational platforms for their studies. As a result, digital literacy has become a key skill for continuing learning, academic performance, research output, and career growth.

Digital literacy goes beyond just using computers or connecting to the internet. It involves understanding and applying the knowledge and abilities needed to find, assess, organize, create, and share information in a responsible and effective way using digital tools. Those with strong digital skills are better prepared to take part in the knowledge-based economy, adjust to new technologies, and make smart choices in both academic and work environments. Historically, college libraries have been places where knowledge is gained, information is shared, and academic help is provided.

Their role has expanded significantly in the current digital era. Electronic databases, institutional repositories, online catalogs, digital reference services, support for remote learning, plagiarism detection technologies, and a range of information literacy initiatives are all available through modern university

libraries. Librarians today serve as digital educators, technological assistants, and research advisers in addition to being the custodians of printed literature..

However, in rural areas, the use of digital library services is not the same everywhere. Many colleges still face problems like poor ICT facilities, weak internet connections, financial issues, a lack of trained library staff, and low digital awareness among students. These issues create a large gap between urban and rural institutions, making it hard for students in rural areas to get access to good educational resources.

The Nashik Division, which includes areas with many rural communities, has seen more use of digital programs in higher education. Even so, there are still differences in how digital library services are available and used. It is important to understand how college libraries support digital literacy in this area to improve the quality of education and ensure that all students have fair access to digital resources.

This review paper looks at existing research on the role of college libraries in promoting digital literacy, with a focus on rural colleges in the Nashik Division. It looks at current methods, identifies challenges, highlights successful efforts, and explores future chances for enhancing digital literacy through academic libraries.

2. Objectives of the Paper

1. Examine the concept and importance of digital literacy in higher education.
2. Review the evolving role of college libraries in promoting digital literacy.
3. Analyse ICT-based services offered by academic libraries.
4. Identify challenges faced by rural college libraries in Nashik Division.
5. Examine national and international studies related to digital literacy initiatives.
6. Identify research gaps in existing literature.
7. Suggest recommendations for strengthening digital literacy through college libraries

3. Research Methodology

A narrative review methodology is used in this review. Peer-reviewed journals, books, conference proceedings, government reports, UGC publications, IFLA guidelines, UNESCO reports, and databases like Scopus, Web of Science, Google Scholar, ERIC, and Library and Information Science Abstracts (LISA) were all examined for pertinent literature published between 2005 and 2026. Academic libraries, digital literacy, ICT applications, rural higher education, information literacy, and digital library projects in India and beyond were the main topics of the review.

To detect important patterns, recurrent themes, research gaps, and implications for rural college libraries, a thematic analysis of the chosen literature was conducted.

The capacity to use digital technology to efficiently find, assess, manage, generate, and convey information is known as digital literacy. It incorporates the communication, ethical, technological, and cognitive abilities required for effective engagement in the digital world.

The following are examples of modern digital literacy:

- Finding and retrieving information.
- A critical assessment of material found online.
- Information use that is ethical.
- Digital cooperation and communication.
- Knowledge of cyber security.

- Producing digital content.
- Academic databases are used.
- Data management for research.
- Digital citizenship.

Digital literacy is strongly linked to independent learning, research proficiency, creativity, and employability for college students. Through organized training and digital resource access, college libraries are crucial to the development of these competencies.

4. Literature Review

4.1 Introduction

Digital literacy has become an essential competency in higher education, enabling students to effectively access, evaluate, create, and communicate information using digital technologies. The rapid advancement of Information and Communication Technology (ICT), artificial intelligence (AI), cloud computing, and online learning platforms has significantly transformed teaching, learning, and research practices. As a result, higher education institutions are increasingly expected to develop students' digital competencies for academic success and lifelong learning.

Academic libraries have evolved from traditional repositories into digital learning centres that provide access to electronic resources, digital repositories, online databases, and information literacy programmes. Librarians now play an active role in promoting digital literacy by offering research support, digital reference services, and user education.

Despite these developments, rural higher education institutions continue to face challenges such as inadequate ICT infrastructure, limited internet connectivity, insufficient funding, and low digital awareness. These challenges widen the digital divide and restrict students' access to digital learning opportunities. Although several studies have examined digital literacy and academic libraries, limited empirical research has focused on rural college libraries in Maharashtra, particularly in the Nashik Division.

Therefore, this literature review critically examines national and international studies on digital literacy, academic libraries, and ICT applications to identify existing knowledge, highlight research gaps, and establish the theoretical foundation for the present study on the role of college libraries in promoting digital literacy in rural areas of the Nashik Division.

4.2 Evolution of Digital Literacy: A Critical Review of Foundational Studies

The concept of digital literacy has undergone substantial theoretical development since the 1990s. Initially associated with basic computer operation, it has gradually expanded to include information literacy, media literacy, digital communication, critical thinking, ethical information use, digital citizenship, and lifelong learning. The following studies illustrate this conceptual evolution.

Gilster (1997)

Paul Gilster is widely recognized as the pioneer of the concept of digital literacy. In *Digital Literacy*, he defined digital literacy as the ability to understand and use information presented through digital sources rather than merely operating digital technologies. Gilster argued that digital literacy involves critical evaluation, interpretation, and effective application of digital information.

A major strength of Gilster's work lies in shifting attention from technological skills to cognitive abilities. However, because his work was published during the early expansion of the Internet, it did not address emerging issues such as social media, mobile technologies, artificial intelligence, cyber security,

or digital ethics.

Nevertheless, Glister's conceptual framework remains the foundation upon which almost all subsequent digital literacy research has been developed.

Bruce (1997)

Bruce (1997) presented the Seven Faces of Information Literacy, highlighting the fact that literacy encompasses critical analysis, knowledge building, ethical information use, and lifelong learning in addition to the ability to find information. Her work emphasized learning processes and critical thinking over basic technological ability, which had a significant impact on later digital literacy frameworks even though it was largely focused on information literacy rather than digital literacy. Additionally, Bruce's framework reinterpreted academic libraries' function as educational establishments tasked with fostering students' critical thinking, autonomous learning, and information-handling abilities rather than merely acting as suppliers of information.

Bawden (2001)

Bawden (2001) critically reviewed existing concepts of literacy and proposed that **digital literacy is a multidimensional concept** that integrates several forms of literacy, including information literacy, computer literacy, media literacy, internet literacy, and communication literacy. He argued that digital literacy should not be viewed as an isolated technical skill but as a combination of complementary competencies required for effective participation in the digital environment. Unlike earlier researchers who primarily focused on technological proficiency, Bawden emphasized that successful engagement in the digital society requires the integration of technical, cognitive, and social abilities, making digital literacy a comprehensive skill essential for education, communication, and lifelong learning.

Rogers (2003)

Rogers (2003) proposed the **Diffusion of Innovations Theory**, one of the most influential frameworks for explaining the adoption of new technologies within organizations and educational institutions. According to Rogers, the successful implementation of technological innovations depends on five key characteristics: **relative advantage, compatibility, complexity, trial ability, and observability**. Although the theory does not specifically focus on digital literacy, it has been widely applied in Library and Information Science research to understand why some academic libraries readily adopt ICT and digital library services while others face resistance to technological change. In the context of rural college libraries, Rogers' framework provides a valuable basis for analysing differences in the adoption and implementation of ICT infrastructure and digital library services.

Eshet-Alkalai (2004)

Eshet-Alkalai (2004) proposed one of the most comprehensive multidimensional models of digital literacy by identifying five key dimensions: **photo-visual literacy, reproduction literacy, branching literacy, information literacy, and socio-emotional literacy**. This model marked a significant advancement over earlier definitions by recognizing that digital literacy extends beyond technical skills to include cognitive, psychological, and social competencies required for effective participation in digital environments. The study has been widely cited because it emphasizes that technological proficiency alone is insufficient; individuals must also possess critical thinking, information evaluation, communication, and socio-emotional skills to effectively navigate and engage in the digital world..

Martin (2006)

By putting out a European framework that defines digital literacy as the awareness, attitude, and capacity to successfully use digital technology for identifying, managing, integrating, evaluating,

generating, and communicating information, **Martin (2006)** extended previous definitions of the term. Martin stressed lifelong learning, flexibility, and development as crucial elements of digital literacy, in contrast to Glister's technology-focused viewpoint. By highlighting digital literacy as a crucial educational goal, his approach has had a substantial impact on European higher education policies and frameworks for digital competency. Because it sees digital literacy as a lifelong learning process that necessitates on-going institutional support through digital resources, information literacy programs, and user education activities, the concept is especially pertinent to academic libraries.

Ng (2012)

Ng (2012) proposed an integrated model of digital literacy comprising three interconnected dimensions: **technical literacy, cognitive literacy, and social-emotional literacy**. Based on empirical evidence from higher education, the study demonstrated that students' digital competence depends not only on their ability to use digital technologies but also on their capacity to critically evaluate online information, solve problems, and behave responsibly and ethically in digital environments. Ng challenged the common assumption that young people automatically possess advanced digital literacy simply because they are "digital natives," arguing that effective digital literacy requires structured education and continuous skill development. This framework highlights the important role of academic libraries and higher education institutions in fostering comprehensive digital competencies among students.

ACRL Framework (2016)

The **Association of College and Research Libraries (ACRL, 2016)** significantly transformed information literacy education through its *Framework for Information Literacy for Higher Education*. Rather than focusing solely on teaching students how to search library databases, the framework encourages academic libraries to develop learners' abilities to critically evaluate information, understand authority in scholarly communication, use information ethically, participate in knowledge creation, and develop lifelong research skills. This learner-centred approach redefined the role of academic librarians from custodians of information resources to educators and instructional partners in higher education. As a result, many universities worldwide have redesigned their information literacy programmes based on this framework to strengthen students' research competencies, critical thinking, and digital literacy.

UNESCO (2018)

Recognizing digital literacy as a crucial element of Sustainable Development Goal (SDG) 4, which seeks to guarantee inclusive and high-quality education for everyone, **UNESCO (2018)** created the Global Framework of Reference on Digital Literacy Skills. Information and data literacy, communication and teamwork, digital content production, safety and cyber security, problem-solving, and lifelong learning are the six main competency categories identified by the framework. In contrast to previous conceptual frameworks, UNESCO broadened the definition of digital literacy by associating it with economic development, social inclusion, employability, and national digital transformation. By offering a thorough manual for incorporating digital competencies into education and lifetime learning, the framework has had a substantial impact on higher education policies and digital literacy campaigns throughout developing nations, including India.

IFLA (2021)

The **International Federation of Library Associations and Institutions (IFLA, 2021)** emphasized that academic libraries are key partners in promoting equitable digital access and digital inclusion. According to IFLA, modern libraries should provide digital collections, open-access resources, research support services, information literacy programmes, digital preservation, research data management, and

digital citizenship education to meet the evolving needs of users. The report highlights that librarians should serve as educators, digital mentors, and research partners rather than merely custodians of printed materials. These recommendations are particularly significant for rural higher education institutions, where academic libraries often serve as the primary gateway to reliable digital information and play a crucial role in enhancing students' digital literacy and reducing the digital divide.

4.3 Theoretical Foundations of Digital Literacy and the Role of Academic Libraries

Theoretically, digital literacy now encompasses cognitive, social, pedagogical, and lifelong learning aspects in addition to the development of technological abilities. Numerous academics have put forth conceptual models that describe how people learn digital competences and how academic libraries, in particular, support this process. These theoretical underpinnings offer the conceptual framework for investigating how college libraries help students in rural higher education institutions become more digitally literate.

Belshaw (2014) – The Eight Elements of Digital Literacy

According to Belshaw (2014), there is no one uniform definition for digital literacy because it is a dynamic concept that changes as technology advances. In order to emphasize that digital literacy goes beyond technical abilities to include responsible engagement in digital society, he suggested the Eight Essential Elements of Digital Literacy: cultural, cognitive, constructive, communicative, confident, creative, critical, and civic. His all-encompassing framework emphasizes the value of critical thinking, digital citizenship, ethical information use, and online cooperation, making it extremely pertinent for university libraries creating all-encompassing digital literacy programs.

Jisc (2015) – Digital Capability Framework

The Digital Capability Framework was created by **Jisc (2015)** to assist universities in producing graduates who are proficient with technology. ICT competence, information, data, and media literacy, digital invention and innovation, digital communication and collaboration, digital learning and development, and digital identity and wellbeing are the six major capability categories identified by the framework. In contrast to previous approaches, Jisc makes a direct connection between digital literacy and professional growth, employability, and lifelong learning. The paradigm, which has been widely embraced by universities around Europe, shows how academic libraries can use complete institutional strategies to include digital literacy into teaching, learning, and student support services.

Ferrari (2013) – DIGCOMP Framework

One of the most important frameworks for evaluating digital competency was created by **Ferrari (2013)** and is called the European Digital Competence Framework (DIGCOMP). Information and data literacy, communication and teamwork, digital content production, safety, and problem-solving are its five main competency areas. In contrast to previous models, DIGCOMP offers quantifiable learning outcomes for every competency, allowing universities to create successful curriculum, evaluation techniques, and library-based digital literacy initiatives. Because it provides a viable method for evaluating and improving students' digital competencies, the framework is especially helpful for rural college libraries.

Spante et al. (2018)

In order to elucidate the notions of digital competence, digital literacy, and digital skills in higher education, **Spante et al. (2018)** carried out a thorough literature study. The study concluded that digital literacy should be regarded as a combination of technological competence, information literacy, critical thinking, communication, and problem-solving skills after finding significant discrepancy in the use of these categories. In order to increase the coherence of educational policy and research, the authors

stressed the necessity of standardized definitions. Their conclusions offer a solid basis for creating uniform digital literacy guidelines and educational initiatives in academic libraries.

Van Laar et al. (2017)

Van Laar et al. (2017) examined the digital competencies needed for success in the knowledge economy and divided them into two groups: contextual skills (creativity, critical thinking, problem-solving, ethical awareness, and lifelong learning) and core skills (ICT literacy, information management, communication, and collaboration). The study emphasized the requirement for higher-order cognitive and interpersonal competencies, concluding that technical skills alone are insufficient for academic and professional success. The results demonstrate the vital role academic libraries play in helping students improve their critical thinking, ethical awareness, and lifelong learning skills in addition to their technological proficiency.

4.4 Role of Academic Libraries in Promoting Digital Literacy

Modern academic libraries have transformed into technology-enabled learning centres that support teaching, research, scholarly communication, and lifelong learning. The following studies explain this transformation.

Corrall (2010)

According to **Corrall's (2010)** analysis of academic librarians' evolving professional identities, their roles have changed from being traditional information resource custodians to educators, research consultants, information specialists, and technology facilitators. The study underlined that in order to effectively assist teaching, learning, and research, librarians need ongoing professional development in ICT, instructional design, and digital pedagogy. The recognition of academic librarians as active educational partners who are essential in advancing digital literacy and improving student learning outcomes in higher education has been greatly aided by Corrall's work.

Julien and Genuis (2011)

Academic librarians are becoming more and more involved in classroom instruction, digital literacy workshops, research consultations, academic writing support, and database training, according to **Julien and Genuis' (2011)** analysis of librarians' experiences teaching information literacy in universities. The study did, however, note a number of difficulties, such as poor faculty collaboration, insufficient institutional recognition, time limits, and resource limitations. The authors came to the conclusion that in order to improve information literacy programs and students' learning and research outcomes, closer collaborations between academic departments and libraries are crucial.

Tenopir et al. (2020)

According to **Tenopir et al.'s (2020)** investigation into the growth of Research Data Services (RDS) in academic libraries, contemporary libraries are helping researchers more and more by managing research data, preserving data, creating metadata, sharing data, and promoting open science. These services promote efficient management of research data, increase research productivity, and improve researchers' digital competencies. The authors came to the conclusion that academic libraries now actively assist research, innovation, and scholarly communication in addition to their traditional function as information resource providers.

Breeding (2020)

Breeding (2020) looked at how technology is changing academic libraries and found new technologies like RFID technology, cloud-based library management systems, discovery services, institutional repositories, mobile library applications, artificial intelligence (AI), and digital preservation systems.

According to the study, competent librarians, sufficient institutional funding, and ongoing technological innovation are necessary for the successful use of these technologies. Breeding further projected that by boosting operational effectiveness, enriching user experiences, and extending access to digital materials, AI and cloud computing would play an increasingly important role in transforming academic library services.

Singh and Pinki (2021)

According to **Singh and Pinki's (2021)** analysis of academic libraries' roles during the COVID-19 pandemic, libraries quickly switched from traditional to digital service delivery by offering webinars, digital document delivery, online reference services, remote access to e-resources, virtual information literacy programs, and online research support. The study showed that in order to maintain continuity in teaching, learning, and research, digital literacy became crucial for students, instructors, and librarians. The authors came to the conclusion that by using creative digital service models, academic libraries were able to successfully maintain educational activities. However, they also pointed out that while rural colleges experienced major difficulties because of insufficient technology resources and poor internet connectivity, institutions with well-developed ICT infrastructure responded more successfully.

4.5 ICT Applications in Academic Libraries

Information and communication technology (ICT) integration in academic libraries has completely changed how library services are provided. Conventional libraries have transformed into digital information hubs that offer easy access to digital archives, online catalogues, institutional repositories, electronic resources, and virtual reference services. ICT has increased access to academic content regardless of location and enhanced the effectiveness of library operations. ICT-enabled library services are especially important for rural higher education institutions because they allow students to access global knowledge resources and overcome geographical limitations. The ICT applications in academic libraries and their impact on digital literacy are examined critically in the following research.

Tripathi and Jeevan (2011)

The development and interoperability of Institutional Repositories (IRs) in Indian universities were examined by **Tripathi and Jeevan (2011)**, who also emphasized the IRs' function in the preservation and distribution of scholarly outputs, including theses, dissertations, research articles, conference papers, and institutional publications. According to the study, institutional repositories boost citation impact, encourage open access, and increase research visibility. However, their effective use is hampered by issues like poor metadata standards, uneven software implementation, a lack of technical know-how, and low researcher awareness. The authors came to the conclusion that institutional repositories function as platforms for advancing digital scholarship in addition to being digital storage systems. Additionally, they proposed that institutional repositories provide rural college libraries with an affordable way to enhance access to scholarly materials and facilitate digital research activities.

Corrall (2010)

In his analysis of how ICT has affected academic librarians' professional development, **Corrall (2010)** highlighted how technological developments have given librarians more duties than just cataloguing and circulation services. According to the study, librarians are positioned as educators, technology facilitators, and research consultants due to their growing involvement in library automation, digital reference services, electronic resource management, virtual user education, research consultation, and online instructional support. Corrall further emphasized that in order for librarians to effectively support teaching, learning, and research, they must engage in ongoing professional development in ICT and

digital pedagogy. The report did point out that the successful deployment of digital library services is hampered by insufficient funding for ICT training. It came to the conclusion that without qualified librarians who can provide technology-based instructional and research support services, technological infrastructure alone cannot improve digital literacy.

Breeding (2020)

Breeding (2020) looked at how recent technological advancements are changing academic libraries and found that key drivers of contemporary library services include cloud-based Integrated Library Management Systems (ILMS), discovery services, artificial intelligence (AI), RFID, mobile library applications, cloud computing, and digital preservation systems. According to the report, these technologies have increased access to digital collections, improved user experiences, and increased operational efficiency. According to Breeding, technological innovation should be an ongoing process, necessitating that libraries update their digital infrastructure on a regular basis to accommodate changing user demands. However, the study offers little insight into the difficulties faced by rural academic libraries and primarily reflects experiences from technologically advanced institutions.

Pandita and Singh (2022)

Using a survey-based methodology, **Pandita and Singh (2022)** examined user satisfaction with digital library services in Indian higher education institutions. The survey assessed things including the usability of library websites, digital reference services, user training programs, online database quality, convenience of remote access, and accessibility of electronic resources. The results showed that students who frequently took part in digital literacy and library orientation programs expressed more satisfaction and used electronic resources more efficiently. The study also discovered that consumers' opinions of the quality of libraries were positively impacted by investments in ICT infrastructure. However, the efficient use of digital library services was still hampered by enduring issues in rural institutions, such as poor internet connectivity, inadequate computer equipment, and little awareness of digital resources.

Yadav and Sharma (2022)

According to Yadav and Sharma's (2022) analysis of the digital transformation of Indian college libraries, the use of digital repositories, mobile applications, library automation software, electronic resource management systems, virtual reference services, and online user education programs has grown. The study came to the conclusion that these technical developments have reinforced digital learning settings and greatly enhanced access to academic resources. Nonetheless, the authors noted significant differences in ICT infrastructure, funding, and technical preparedness between urban and rural universities. To improve digital library services and advance digital literacy in rural higher education institutions, they suggested more government financing, ongoing professional development for library employees, and strategic ICT planning.

4.6 Information Literacy and Digital Competence

In higher education, information literacy is now a key element of digital literacy. Information literacy stresses finding, recognizing, assessing, organizing, and using information responsibly, whereas digital literacy concentrates on participating effectively in digital contexts. Through user education programs, research support services, and structured instructional programs, academic libraries are essential to the development of these competences.

Association of College and Research Libraries (2016)

By going beyond conventional competency-based requirements, the Framework for Information Literacy for Higher Education, which was published by the Association of College and Research

Libraries (ACRL, 2016), signaled a paradigm shift in library training. The framework stresses conceptual understanding, critical thinking, ethical information use, and lifelong learning. It is based on six threshold concepts: Authority Is Constructed and Contextual, Information Creation as a Process, Information Has Value, Research as Inquiry, Scholarship as Conversation, and Searching as Strategic Exploration. Rather than only teaching students how to search databases, its most important contribution is the acknowledgement of academic libraries as educational partners that promote autonomous study, scientific inquiry, and digital literacy.

Bruce (1997)

One of the most important theoretical models explaining how students interact with information is **Bruce's (1997) Seven Faces of Information Literacy**. Information technology use, information sources, information processes, information control, knowledge production, knowledge extension, and wisdom are the seven elements of information literacy identified by the framework. Bruce stressed that more than just finding or consuming information, information literacy entails actively creating and applying knowledge. Her learner-centred approach continues to offer a solid basis for the development of digital literacy and lifelong learning abilities in higher education, and it has had a major impact on information literacy instruction in academic libraries across the globe.

Case and Given (2016)

Effective information retrieval requires a number of cognitive processes, including problem recognition, identification of information needs, source selection, information evaluation, information synthesis, and knowledge application, according to **Case and Given's (2016)** analysis of human information-seeking behaviour in educational and professional contexts. The authors underlined that students frequently struggle to find trustworthy and pertinent information in digital environments due to information overload. They came to the conclusion that academic libraries are essential for helping students develop effective information-seeking and digital literacy skills, critically assess digital material, and discern legitimate scholarly sources from dubious internet content.

Ng (2012)

Ng (2012) examined university students' digital literacy and questioned the widespread belief that young people automatically have advanced digital competencies because they are "digital natives." The study discovered that while students were adept at using social media and mobile technologies, many lacked fundamental academic skills like critically analysing online content, using scholarly databases efficiently, correctly citing academic sources, and applying ethical principles in digital environments. Ng came to the conclusion that rather than being taken for granted as a pre-existing skill, digital literacy should be methodically included into the curriculum of higher education. The study also highlighted how crucial academic libraries are to teaching digital literacy and helping students acquire critical research and academic abilities.

Saha (2019)

Saha (2019) examined programs like database searching workshops, OPAC training, electronic resource orientation, citation management instruction, plagiarism awareness programs, and research methodology workshops as part of her investigation into digital literacy initiatives carried out by academic libraries in India. According to the study, students who took part in these programs showed increased confidence in their ability to access, assess, and use electronic information resources. Saha came to the conclusion that on-going instruction in digital literacy improves academic integrity, research quality, and lifelong learning skills. However, the study also noted that many rural academic institutions run these programs

sporadically because of staffing shortages, poor ICT infrastructure, and a lack of institutional support, underscoring the necessity of ongoing funding for digital literacy programs.

4.7 Digital Divide and Rural Higher Education

Higher education has changed as a result of the quick development of information and communication technology (ICT), which has made digital learning materials, online courses, and research services more accessible. Nonetheless, there are still notable differences in ICT infrastructure, internet access, financial resources, and digital competences between urban and rural institutions, resulting in a persisting digital divide. By offering access to digital materials, technology-enabled services, and digital literacy programs, academic libraries are essential in closing this gap. The following studies look at how the digital divide affects higher education in rural areas and how academic libraries may support fair access to information and digital inclusion.

UNESCO (2018)

In order to promote digital literacy as a vital life skill and support Sustainable Development Goal 4 (Quality Education), UNESCO created the Global Framework of Reference on Digital Literacy Skills. The framework highlights the importance of digital literacy for social inclusion, employability, innovation, active citizenship, and lifelong learning. Information and Data Literacy, Communication and Collaboration, Digital Content Creation, Safety and Cyber security, Problem-Solving, and Career-Related Digital Competencies are the six basic sectors into which UNESCO divides digital competence. The framework also emphasizes how educational inequities, especially between urban and rural areas, are further exacerbated by unequal access to digital technology. As a result, academic libraries and other educational establishments are required to guarantee fair access to digital materials, ICT infrastructure, and instruction in digital literacy. Although UNESCO offers a thorough international policy framework for advancing digital literacy, its suggestions are general in nature and need to be contextually adjusted to suit the unique socioeconomic, educational, and infrastructure issues that developing nations like India confront.

IFLA (2021)

The **International Federation of Library Associations and Institutions (IFLA)** recognize libraries as key institutions for promoting digital inclusion and reducing information inequality. According to IFLA, academic libraries support digital literacy by providing free internet access, digital collections, information literacy instruction, open-access resources, and research support services. These services are especially beneficial for disadvantaged and rural communities by ensuring equitable access to reliable digital information. However, IFLA notes that many rural libraries face challenges such as inadequate ICT infrastructure, limited funding, and a shortage of trained librarians. The report recommends increased government investment and stronger policy support to enhance digital library services in rural educational institutions.

University Grants Commission (2020)

The **University Grants Commission (UGC)** has encouraged higher education institutions in India to modernize academic libraries through digital technologies. Its guidelines recommend library automation, electronic databases, institutional repositories, digital reference services, information literacy programmes, and remote access to scholarly resources. UGC emphasizes that digital libraries play a vital role in improving research quality and student learning outcomes. However, the implementation of these initiatives varies significantly, especially in rural colleges, due to financial limitations and inadequate

infrastructure. The study concludes that successful digital transformation requires not only policy initiatives but also adequate institutional support and sustained financial investment.

National Digital Library of India (NDLI) (2023)

The National Digital Library of India (NDLI), developed by IIT Kharagpur, is one of India's largest digital learning initiatives. It provides free access to books, journals, theses, audio-visual learning resources, competitive examination materials, and research publications. NDLI aims to ensure equitable access to quality educational resources for learners across the country, including those in rural areas. However, studies indicate that awareness and use of NDLI remain limited among students in rural colleges. Therefore, academic libraries play a crucial role in promoting NDLI through orientation programmes and digital literacy workshops.

Sengupta (2020)

Sengupta examined the application of ICT in Indian academic libraries and found that many universities have successfully implemented Integrated Library Management Systems (ILMS), OPAC services, electronic resource management, institutional repositories, RFID technology, and digital reference services. However, the study highlighted significant disparities between metropolitan universities and rural colleges due to poor internet connectivity, inadequate ICT infrastructure, limited funding, and insufficient staff training. It concluded that technological investment should be supported by continuous librarian training and user education to maximize the effectiveness of digital library services.

4.8 Digital Library Initiatives and Academic Libraries in India

India has witnessed considerable growth in national digital library initiatives during the last decade. Government agencies, universities, and academic institutions have invested significantly in digital infrastructure to improve access to scholarly information. Nevertheless, research indicates that the effectiveness of these initiatives largely depends upon institutional readiness, ICT infrastructure, librarian competencies, and students' digital literacy.

Asif and Singh (2020)

Asif and Singh examined the digital transformation of academic libraries and found that libraries increasingly offer cloud-based services, electronic resource management, institutional repositories, remote learning support, and virtual reference services. The study concluded that digital transformation has significantly improved library operations and research productivity. However, its successful implementation depends on adequate financial investment, skilled librarians, continuous technological innovation, and strong organizational readiness.

Pandita and Singh (2022)

Pandita and Singh investigated user satisfaction with digital library services in Indian higher education institutions. The study found that user satisfaction is influenced by the availability of electronic resources, internet speed, and ease of access, user training, technical support, and library website usability. Students who received regular digital literacy training made greater use of electronic databases and scholarly resources. The authors emphasized the need for continuous evaluation of user satisfaction to improve the quality and effectiveness of digital library services.

Yadav and Sharma (2022)

Yadav and Sharma examined the digital transformation of Indian college libraries and found that many institutions have adopted digital repositories, mobile library services, artificial intelligence applications, electronic journals, virtual reference services, and library automation. The study concluded that these technological advancements have significantly improved students' access to scholarly information.

However, rural colleges continue to face challenges due to inadequate funding, limited ICT infrastructure, and insufficient opportunities for professional development.

Singh and Pinki (2021)

Singh and Pinki examined the role of academic libraries during the COVID-19 pandemic and found that libraries maintained educational continuity through **online reference services, remote database access, virtual information literacy instruction, online user education, and electronic document delivery**. The study also highlighted the digital divide in rural higher education, where many students lacked reliable internet access, personal computers, digital skills, and access to electronic resources. The authors concluded that strengthening digital infrastructure should be a long-term priority for educational institutions.

Patil and Pradhan (2014)

Patil and Pradhan examined marketing practices in academic libraries to improve awareness and use of library resources. The study identified effective strategies such as **user orientation programmes, library exhibitions, social media communication, information literacy workshops, faculty collaboration, and digital awareness campaigns**. The authors found that these promotional activities significantly increase students' use of digital resources. They also emphasized that marketing digital library services is especially important in rural institutions, where awareness of available digital resources is relatively low.

4.9 Studies Related to Maharashtra and Nashik Division

Although digital literacy and academic libraries have been widely investigated at international and national levels, comparatively few studies have focused specifically on **rural higher education institutions in Maharashtra**, particularly in the **Nashik Division**. Existing research has primarily examined library automation, ICT adoption, digital repositories, and information literacy at broader institutional or state levels. Very limited empirical evidence exists regarding the effectiveness of college libraries in developing students' digital literacy within rural colleges. The following studies summarize the available literature relevant to Maharashtra, rural higher education, and regional academic libraries.

Maharashtra Knowledge Corporation Limited (MKCL) (2022)

MKCL has made a significant contribution to promoting digital literacy in Maharashtra through initiatives such as the **MS-CIT programme, Maharashtra Knowledge Mission, digital skill development courses, and online learning platforms**. The report highlights that digital competency is essential for employability, higher education, and lifelong learning. Despite these efforts, rural students continue to face challenges such as limited ICT infrastructure, poor internet connectivity, inadequate digital learning facilities, and insufficient institutional support. The report recommends stronger collaboration between educational institutions and libraries to enhance digital literacy among rural learners, although it provides limited discussion on the specific role of academic libraries.

University Grants Commission (2020)

The **University Grants Commission (UGC)** has issued guidelines to strengthen academic libraries in higher education through **library automation, institutional repositories, e-resource subscriptions, remote access facilities, information literacy programmes, and research support services**. The guidelines emphasize that academic libraries should function as digital learning centres that support research, innovation, and knowledge creation. However, implementation remains uneven, particularly in rural colleges, due to financial and infrastructural constraints. While the guidelines provide a strong policy framework, they offer limited evidence on their practical implementation in rural institutions.

Review of Regional Literature

A review of the literature on the **Nashik Division** reveals a significant lack of empirical research on digital literacy in rural college libraries. Most studies focus on **library automation, ICT implementation, digital repositories, information literacy, and higher education**, while very few examine students' digital literacy levels, library-based digital literacy programmes, librarians' digital competencies, the effectiveness of ICT services, or district-level comparisons among rural colleges. This lack of region-specific evidence highlights a clear research gap and provides a strong justification for the present doctoral study.

4.10 Critical Analysis of the Literature

The literature reviewed Studies demonstrates that digital literacy has evolved from a narrow technological concept into a multidimensional educational competency encompassing technical proficiency, information literacy, critical thinking, digital citizenship, ethical information use, communication, collaboration, creativity, and lifelong learning. Foundational scholars such as Gilster (1997), Eshet-Alkalai (2004), Martin (2006), and Ng (2012) established the theoretical foundations of digital literacy, while organizations including UNESCO (2018), IFLA (2021), ACRL (2016), Jisc (2015), and the European Commission developed comprehensive competency frameworks that have significantly influenced higher education policies worldwide.

The literature also demonstrates a fundamental transformation in the role of academic libraries. Contemporary libraries function as digital learning centres that provide access to electronic resources, institutional repositories, research data services, virtual reference assistance, information literacy instruction, plagiarism awareness programmes, and digital research support. Studies consistently indicate that librarian-led digital literacy initiatives improve students' research skills, academic performance, ethical information use, and confidence in accessing scholarly information.

Research focusing on ICT applications further reveals that technologies such as cloud computing, artificial intelligence, RFID systems, digital repositories, and mobile library services have significantly enhanced library operations and user experiences. Nevertheless, effective implementation depends upon adequate ICT infrastructure, skilled library professionals, institutional leadership, and continuous user education.

Indian studies similarly report substantial progress in digital library development through national initiatives such as the National Digital Library of India (NDLI), N-LIST, e-ShodhSindhu, Shodhganga, and SWAYAM. However, these benefits remain unevenly distributed because rural institutions continue to experience infrastructural deficiencies, financial constraints, inadequate professional development opportunities, and lower awareness of digital resources.

Collectively, the literature suggests that technological infrastructure alone cannot improve digital literacy. Successful digital transformation requires coordinated investment in infrastructure, human resources, institutional policy, librarian competencies, and user education. Academic libraries therefore remain central institutions for promoting equitable access to digital knowledge and supporting lifelong learning within higher education.

5. Research Gaps

Although the existing literature provides extensive theoretical and practical insights into digital literacy and academic libraries, several important gaps remain.

1. Limited Regional Research

Most studies have been conducted at international, national, or metropolitan university levels. Very few empirical investigations focus specifically on **rural college libraries in the Nashik Division of Maharashtra**.

2. Lack of Empirical Evidence

Existing studies frequently discuss digital literacy conceptually or descriptively but rarely measure the direct impact of library services on students' digital literacy competencies in rural colleges.

3. Limited Evaluation of Digital Literacy Programmes

Although many studies describe information literacy workshops and digital literacy initiatives, few systematically evaluate their effectiveness in improving students' digital competencies and academic performance.

4. Inadequate Assessment of Librarians' Digital Competencies

There is limited research examining the ICT competencies, professional development needs, instructional roles, and technological readiness of librarians working in rural college libraries.

5. Insufficient Comparative Research

Comparative analyses between rural and urban college libraries regarding ICT infrastructure, digital services, and digital literacy outcomes remain scarce.

6. Limited Research on Emerging Technologies

Very few studies investigate the implementation of Artificial Intelligence, cloud computing, research data management, mobile library applications, virtual reference services, and digital preservation within rural academic libraries.

7. Limited Policy Evaluation

The implementation and effectiveness of national initiatives such as **NDLI, N-LIST, e-ShodhSindhu, SWAYAM, and Shodhganga** have not been comprehensively evaluated within rural colleges of Maharashtra.

8. Need for Region-Specific Evidence

There is a clear absence of evidence-based recommendations specifically designed for rural higher education institutions in the Nashik Division. Region-specific research is essential to identify local challenges, understand students' digital literacy needs, evaluate existing library services, and formulate practical strategies for strengthening digital inclusion.

6. Discussion

According to the literature study, college libraries are essential for encouraging students' digital literacy, especially in rural higher education. The following is a summary of the review's main conclusions:

6.1 College Libraries' Function

By giving students access to e-resources, digital repositories, internet facilities, and information literacy programs that improve their digital competences, college libraries have developed into digital learning hubs.

6.2 ICT Infrastructure's Significance

Effective digital library services require a sufficient ICT infrastructure, which includes current computers, dependable internet, and digital library systems. Promoting digital literacy is challenging for rural universities with inadequate infrastructure.

6.3 Librarians' Function and User Awareness

Through user education, training programs, and research support, librarians contribute significantly to the development of digital literacy. However, low user awareness and librarians' limited digital competencies hinder the efficient use of digital resources.

6.4 Government Initiatives and the Digital Divide

One of the biggest issues facing rural higher education is still the digital gap. Digital resources are now more accessible thanks to government programs like NDLI, N-LIST, e-ShodhSindhu, SWAYAM, and Shodhganga, but their efficient use requires sufficient infrastructure, knowledge, and training.

6.5 Research Deficits and Prospects

There is little empirical study on rural college libraries in Nashik Division, according to the review. Future study should use comparative and longitudinal methods to assess the efficacy of ICT infrastructure, emerging technologies, digital literacy initiatives, and user happiness.

6.6 Implications for Policy

To improve digital learning and provide fair access to information in rural colleges, it is crucial to strengthen ICT infrastructure, increase financing, improve the professional capabilities of librarians, and include digital literacy into higher education programs.

The conversation demonstrates how important college libraries are for fostering digital literacy in rural higher education. The Nashik Division's digital library services will be strengthened and high-quality education will be enhanced by addressing infrastructure, financial and human resource issues through strategic planning and policy assistance.

7. Conclusion

The above research gaps provide the academic justification for the Ph.D. research entitled "**Role of College Libraries in Promoting Digital Literacy in Rural Areas of Nashik Division.**" This study seeks to generate empirical evidence on how rural college libraries contribute to students' digital literacy, identify institutional and technological challenges, evaluate the effectiveness of current library services, and recommend evidence-based strategies for enhancing digital inclusion and improving the quality of higher education in rural Maharashtra. This research is expected to contribute to Library and Information Science literature while also supporting policymakers, university administrators, and librarians in developing sustainable digital library practices.

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