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Ethical, Legal and Social Competency of Using Information among Science Post-Graduate Students in Universities of Karnataka State, India: A Study

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Abstract

The present study examined the ethical, legal, and social competency of using information among Science post-graduate students studying in the final year of selected twelve universities in Karnataka State, India — Akkamahadevi Women's University, Bangalore University, Central University of Karnataka, Davanagere University, Gulbarga University, Karnataka University, Kuvempu University, Mangalore University, Mysore University, Rani Chennamma University, Tumkur University, and Vijayanagara Sri Krishnadevaraya University. A survey questionnaire, designed using the ACRL Information Literacy Competency Standards for Higher Education — particularly Standard Five, which addresses the ethical, legal, and social dimensions of information use — was distributed to 1,320 students, yielding 1,208 valid responses (91.5% response rate), comprising 544 male students (45.0%) and 664 female students (55.0%). Findings reveal significant gaps in students' competency: only 49.0% correctly identified the meaning of plagiarism; fewer than half could accurately recognize the legal concepts of intellectual property (45.4%) and fair use (43.4%); and less than 60% correctly matched real-world scenarios to their corresponding legal categories. In contrast, students demonstrated comparatively stronger awareness that library-purchased databases are licensed for restricted use (93.0%), that not all web information is free (88.0%), and of email netiquette (67.3%). The study proposes targeted interventions to strengthen library-led information literacy programs on plagiarism, copyright, intellectual property, and fair use — competencies essential for ethical engagement with information in academia and beyond.

Keywords: Information literacy; ethical use of information; legal issues; social issues; plagiarism; ACRL Standard Five; postgraduate students; Karnataka

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1. Introduction

Information literacy is widely recognized as a critical competency of the twenty-first century, encompassing the ability to recognize an information need and to locate, evaluate, and use information effectively, ethically, and legally. In the contemporary information environment — characterized by the proliferation of digital content, online databases, open-access repositories, and user-generated content — academic users must navigate not only the technical aspects of finding and retrieving information but also the legal, social, and ethical dimensions that govern its creation, dissemination, and use. Among the ethical and legal questions confronting today's students, issues surrounding plagiarism, copyright, intellectual property, censorship, freedom of information, right to privacy, freedom of speech, and fair use have become especially significant in academic discourse. These questions sit at the intersection of traditional scholarship and emerging digital practice, where the ease of copying, downloading, and repurposing digital content has blurred the lines between legitimate use and intellectual theft (Kumar & Kumar, 2024). The Association of College and Research Libraries, in its *Information Literacy Competency Standards for Higher Education*, recognized this concern explicitly through Standard Five, which prescribes that an information-literate student "understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally" (Committee, 2011). Despite the recognized importance of Standard Five, instructional librarians face considerable difficulties in incorporating ethical and legal issues into their teaching — often due to time limitations, restrictive faculty assignment guidelines, or competing priorities in user-education sessions. Research on the information literacy competencies of postgraduate students has consistently found that while learners demonstrate moderate strength in identifying information needs and locating resources, significant gaps remain in their ability to use information ethically and legally and to acknowledge consulted sources appropriately (Borude, 2026; Swapna & Biradar, 2017). Studies in the Indian context have further revealed a widespread lack of awareness regarding

plagiarism and its consequences, persistent misconceptions about what constitutes plagiarism, and the need for periodic awareness drives by apex bodies such as the University Grants Commission (Kumar & Kumar, 2024; Patil & Ganganahalli, 2024; Pradhan & Kumar, 2023). Postgraduate science students in particular occupy a unique position in this discourse. They are expected to generate, consume, and disseminate substantial quantities of research evidence in the course of their dissertation and thesis work, which renders them highly vulnerable to issues of copyright infringement, inadequate acknowledgement of sources, and the misuse of licensed databases (Awasthi et al., 2024; Patil & Ganganahalli, 2024). The higher education landscape in Karnataka has evolved significantly over the past decades, positioning the state as a preeminent knowledge hub that fuels India's broader socio-economic development. Karnataka's higher education landscape — comprising universities that host thousands of postgraduate learners — thus provides a compelling context for investigating how well these competencies are developed during postgraduate study. The present study is situated at the intersection of these concerns and aims to generate empirical evidence that can inform curriculum designers, faculty members, and library professionals seeking to strengthen the ethical, legal, and social dimensions of information literacy instruction.

2. Review of Literature

2.1 Information Literacy: Concept and Significance

Information literacy has evolved considerably since its formal articulation in the 1970s. It is now understood not merely as a set of library-use skills but as a broader competency that empowers individuals to engage effectively with the entire information lifecycle (Bhakte, 2024). The ACRL *Information Literacy Competency Standards for Higher Education* operationalize this concept through five interrelated standards, with Standard Five explicitly addressing the economic, legal, and social dimensions of information use — holding that the information literate student understands these issues and accesses and uses information ethically and legally (ALA, 2001). As Carlson and colleagues have argued, data ethics and intellectual property issues are integral to a well-rounded information literacy programme, particularly in academic research environments where the boundaries between personal, institutional, and public use of information are increasingly porous (Carlson & Johnston, 2015). In the Indian higher education context, Thanuskodi (2019) noted that information literacy among LIS professionals is a precondition for designing effective IL programmes for end users (Thanuskodi, 2019). Karisiddappa and Rajgoli (2008) documented the varied practices of IL programmes across institutions in Bangalore and called for systematic integration of IL into the academic curriculum (Karisiddappa & Rajgoli, 2008). Awasthi and Gulati (2025), in their study of institutions of national importance, observed that library orientation sessions are the most impactful method of IL delivery but rarely address the ethical-legal dimensions in depth (Awasthi & Gulati, 2025).

2.2 Ethical Use and Plagiarism Awareness

The question of plagiarism has attracted considerable attention in recent scholarship, particularly in India, where repeated incidents of plagiarism have prompted policy interventions by apex regulatory bodies. Awasthi, Kumar, and Tripathi (2024) reported that 31.1% of research students in India did not recognise content similarity as plagiarism, and that misconceptions about unintentional versus intentional plagiarism persist (Awasthi et al., 2024). Krishna Kumar and Kumar (2024) documented a general lack of awareness regarding plagiarism among post-graduate students, recommending periodic awareness drives by the UGC and individual universities (Kumar & Kumar, 2024). Pradhan and Kumar (2023) found the widespread incidence of plagiarism among Indian doctoral students and formulated a remedial action plan that included establishing research ethics committees, training workshops, developing academic writing skills, and providing free access to anti-plagiarism software (Pradhan & Kumar, 2023). Raj and colleagues (2022) reported that 63% of undergraduate medical students at a South Indian institution demonstrated poor knowledge of plagiarism — a finding that points to the vulnerability of medical and science learners to inadvertent ethical lapses (Raj et al., 2022). Patil and Ganganahalli (2024) found that while 97.7% of postgraduate medical students were aware of plagiarism, only 70.9% were familiar with the institution's plagiarism policy, suggesting a gap between general awareness and actionable knowledge (Patil & Ganganahalli, 2024).

2.3 Copyright, Intellectual Property, and Fair Use Awareness

Beyond plagiarism, students' awareness of copyright, fair use, and intellectual property is a growing concern. Ahmadi and Sonkar (2015) examined doctoral students and reported inadequate awareness of copyright, fair use, and anti-plagiarism software, underlining the need for institutional interventions (Ahmadi & Sonkar, 2015). Geçer and Topal (2019) similarly observed that postgraduate students' knowledge of copyrights, license agreements, and fair use was only moderate, with the lowest awareness for open source software and copyleft issues (Geçer & Topal, 2019). Mohamad and colleagues (2023) found that postgraduate students in Malaysia exhibited varied attitudes when confronted with copyrighted images, with some avoiding such images and others using them with or without acknowledgment (Mohamad et al., 2023).

2.4 Information Literacy Competency of Science Post-Graduate Students

Studies specifically targeting science post-graduate students in India have been relatively limited but valuable. Swapna and Biradar (2017) assessed information literacy among science PG students of Kuvempu and Davanagere universities in Karnataka and found that, while the majority (92.5%) were skilled in defining and revising information needs, only 45.7% of students were able to use information ethically and legally, and just 36.2% could acknowledge and document consulted sources properly (Swapna & Biradar, 2017). Borude (2026), in a study of second-year Botany post-graduate students, observed moderate awareness in identifying information needs but significant gaps in citation practices, peer review, and ethical use of information (Borude, 2026). Chinthagunta and Rao (2023), in a study at Acharya Nagarjuna University, likewise reported that postgraduate students and research scholars face challenges in accessing required information and using electronic resources effectively.

2.5 Library Instruction and the Role of University Libraries

University libraries in India are increasingly recognized as institutional hubs where information literacy — including its ethical-legal dimensions — must be cultivated. Awasthi and Gulati (2025) observed that no credit-based system is awarded for IL participation in Indian higher education institutions, recommending that add-on credits be incorporated (Awasthi & Gulati, 2025). Sohail and Sharma (2023) found that while Indian higher education students possessed basic literacy skills, they struggled with advanced research competencies including finding, evaluating, and synthesizing information (Sohail & Sharma, 2023). Munavalli and Kumbar (2017) similarly reported that information literacy assessment among science undergraduates revealed the need for structured and continuous IL programmes through collaborative efforts of librarians and faculty (Munavalli & Kumbar, 2017).

2.6 Summary of Literature Gap

While the literature underscores the importance of ethical, legal, and social competencies in information use, there is a paucity of large-scale, multi-institutional empirical studies examining these competencies among science post-graduate students in the Indian university context. The present study addresses this gap by systematically surveying science PG students across selected twelve universities of Karnataka State, using ACRL Standard Five as a theoretical and operational framework.

3. Objectives of the Study

The primary objective of the present study is to assess the ethical, legal, and social competency of using information among science post-graduate students in the universities of Karnataka State, India. The specific objectives are as follows:

- To examine students' understanding of the various legal concepts relating to the use of information — including freedom of speech, copyright, censorship, right to privacy, freedom of information, intellectual property, and fair use.
- To assess students' ability to identify real-world issues that falls under each of these legal concepts.

- To evaluate students' understanding of the concept of plagiarism and their ability to distinguish actions that constitutes or do not constitute plagiarism.
- To determine students' awareness of economic and access-related issues — specifically, that not all information on the web is free and that library-purchased databases are licensed for restricted use.
- To assess students' understanding of accepted practices for participating in electronic discussions (netiquette) and
- To provide evidence-based recommendations for strengthening IL programs in university libraries in the ethical-legal-social domain.

4. Scope and Methodology

4.1 Scope of the Study: The study is delimited to science post-graduate students studying in the final year of twelve universities in Karnataka State, India through the regular mode of study. The institutional scope covers: Akkamahadevi Women's University, Bangalore University, Central University of Karnataka, Davanagere University, Gulbarga University, Karnataka University, Kuvempu University, Mangalore University, University of Mysore, Rani Chennamma University, Tumkur University, and Vijayanagara Sri Krishnadevaraya University.

4.2 Research Design: The researcher adopted the **survey method** as the research design. As a quantitative-exploratory strategy, the survey method is well suited to studies seeking to collect information from a large number of respondents across multiple institutions in a systematic and comparable manner (Corrall et al., 2013; Kennan et al., 2014). A structured questionnaire was designed and used as the data-collection instrument.

4.3 Instrument Design*:* The questionnaire was designed using the *ACRL Information Literacy Competency Standards for Higher Education* — a benchmark framework in the assessment of information literacy skills among higher education learners (Carlson et al., 2011; Lampert, 2006). Standard Five, which prescribes that an information-literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally, served as the analytical anchor for the present study (ACRL, Committee, 2011).On the basis of this standard, eight dependent variables were identified, and one question was formulated for each variable to assess students' competency along the ethical-legal-social dimension. The correct/right options are indicated in boldface. The questionnaire was pilot-tested and refined prior to distribution.

4.4 Population and Sample: The total population of science post-graduate students across the twelve universities comprised 7,225 students. From this, 1,320 students were selected as respondents using a stratified sampling approach. Of the 1,320 questionnaires distributed, 1,208 students responded, yielding a response rate of **91.5%** .The 91.5% response rate substantially exceeds the 50% threshold typically considered acceptable for survey-based analysis (Milburn & Brown, 2003), strengthening the external validity of the findings.

5. Data Analysis and Interpretation

The collected data were tabulated, classified, and analysed using descriptive statistics. Responses to each variable were expressed as frequencies and percentages.

5.1 Variable One: Understanding Various Legal Concepts Relating to Information Use

The first variable examined respondents' understanding of seven legal concepts that govern the use of information: censorship, right to privacy, freedom of speech, copyright, and freedom of information, intellectual property, and fair use. Respondents were given short descriptions of each concept and asked to identify the corresponding term. The data presented in the Table 1 indicate that Freedom of Information (71.5%) was the most widely understood concept, followed by Right to Privacy (60.9%), Copyright (58.6%), Censorship (55.3%), and Freedom of Speech (54.6%). Notably, fewer than half of respondents correctly identified Intellectual Property (45.4%) and Fair Use (43.4%) — two concepts central to academic writing and scholarly publishing. This finding echoes the broader Indian and international literature on postgraduate students' limited awareness of copyright nuances (Ahmadi & Sonkar, 2015; Geçer & Topal, 2019).

Table 1: Understanding Legal Concepts Relating to Information Use

Question No. 1 Identify the Correct Description of the given Legal Concepts Relating to Information Use?.	Censor-ship	Right to privacy	Freedom of Speech	Copy-right	Freedom of Information	Intellectual Property	Fair use
A. "A human right which may restrains actions that threatens the privacy of individuals"	75 (6.2%)	**736 (60.9%)**	42 (3.5%)	77 (6.4%)	88 (7.3%)	79 (6.5%)	111 (9.2%)
B. "Suppression of speech, public communication or other information which may be considered objectionable, harmful, sensitive, politically incorrect or inconvenient as determined by governments, media outlets, authorities or other such entities	**668 (55.3%)**	104 (8.6%)	126 (10.4%)	46 (3.8%)	88 (7.3%)	74 (6.1%)	102 (8.4%)
C. An inherent human right to voice one's opinion publicly without fear of censorship or punishment	48 (4.0%)	63 (5.2%)	**660 (54.6%)**	59 (4.9%)	215 (17.8%)	67 (5.5%)	96 (7.9%)
D.A legal right given to a creator of an original work for its use and distribution, usually for a limited time. (e.g. the photographer of a photograph or the author of a book)	69 (5.7%)	98 (8.1%)	49 (4.1%)	**708 (58.6%)**	84 (7.0%)	167 (13.8%)	33 (2.7%)
E. An exclusive legal right given to persons over the creation of their minds such as an invention, literary and artistic works; and symbols, names and images.	56 (4.6%)	66 (5.5%)	89 (7.4%)	275 (22.8%)	88 (7.3%)	**548 (45.4%)**	86 (7.1%)
F. A right of every citizen to secure access to information under the control of public authorities, consistent with public interest, in order to promote openness, transparency and accountability in administration and in relation to matters connected therewith or incidental thereto.	26 (2.2%)	22 (1.8%)	93 (7.7%)	104 (8.6%)	**864 (71.5)**	40 (3.3%)	59 (4.9%)
G. A doctrine that permits limited *use* of copyrighted material without acquiring permission from the rights holders	84 (7.0%)	113 (9.4%)	99 (8.2%)	137 (11.3%)	105 (8.7%)	146 (12.1%)	**524 (43.4%)**

5.2 Variable Two: Identifying Issues Relating to Legal Concepts

In this variable, respondents were presented with six real-world scenarios and asked to identify the legal concept under which each scenario fell. Respondents were strongest in identifying **Right to Privacy scenarios (58.6%)**, **Censorship scenarios (53.6%)**, and **Copyright scenarios (50.9%)** — concepts most heavily publicized in everyday discourse. Issues requiring finer discrimination — such as Freedom of Information (42.4%), Fair Use (41.6%), and Freedom of Speech (39.6%) — were correctly identified by less than half. This aligns with Selemani, Chawinga, and Dube (2018), noted that postgraduate students often lack the conceptual precision needed to differentiate between closely related legal categories.

Table 2: Identification of Real-World Legal Issues

Question No. 2 Identify the correct legal concept for the given issues?	*Options*					
	A. Freedom of speech N=1208	B. Copyright N=1208	C. Censorship N=1208	D. Right to Privacy N=1208	E. Freedom of Information N=1208	F. Fair use N=1208
A. The issues like disclosing your family life details, use of your emails, disclosing of your bank details etc to others people in an unauthorized way	126 (10.4%)	103 (8.5%)	62 (5.1%)	**708 (58.6%)**	188 (15.6%)	21 (1.8%)
B. Making five copies an article (protected by Law) downloaded from internet and sell to your classmates	10 (0.8%)	**615 (50.9%)**	99 (8.2%)	188 (15.6%)	193 (16.0%)	103 (8.5%)
C.A government's attempt to control the material broadcasted on the Internet	51 (4.2%)	116 (9.6%)	**647 (53.6%)**	164 (13.6%)	139 (11.5%)	91 (7.5%)
D. Restricting to express your opinion on a topic in your scientific paper	**478 (39.6%)**	207 (17.1%)	64 (5.3%)	175 (14.5%)	121 (10.0%)	163 (13.5%)
E. Restricting you to access the environmental information available on the government website	144 (11.9%)	117 (9.7%)	135 (11.2%)	138 (11.4%)	**512 (42.4%)**	162 (13.4%)
F. Making two copies of a scientific paper downloaded from internet, giving one to your friend and one to your professor, who might want to use it for her research.	68 (5.7%)	253 (20.9%)	21 (1.7%)	188 (15.6%)	175 (14.5%)	**503 (41.6%)**

5.3 Variable Three: Understanding the Concept of Plagiarism

A concerning finding was that less than half of respondents (49.0%) could correctly identify the meaning of plagiarism. The remaining 51.0% selected one of three incorrect definitions, with 27.8% opting for "developing a handbook on copyright laws" and 20.2% mistakenly equating plagiarism with proper quotation practice. This finding parallels the results of Awasthi, Kumar, and Tripathi (2024), who found that 31.1% of research students in India did not recognise content similarity as plagiarism, and Krishna Kumar and Kumar (2024), who reported a general lack of awareness among post-graduate students.

Table 3: Understanding the Concept of Plagiarism

Question No. 3Identify the meaning of the concept of plagiarism.	Total Responses N=1208
A. Quoting someone else's work and giving that person credit	244 (20.2%)
B. Writing a short story with a group of classmates	36 (3.0%)
C. The use of another's original words or ideas as though	**592**

they were your own	**(49.0%)**
D. Developing a handbook on copyright laws	336 (27.8%)

5.4 Variable Four: Identification of Plagiarism vs. Non-Plagiarism Actions

The most clearly identifiable plagiarism behaviour was claiming another's work as one's own (63.6%), while the more ambiguous actions — such as copying a diagram with a reference underneath (correctly identified as not plagiarism by only 54.3% and including a generally known fact without reference (correctly identified as plagiarism by only 52.9% — were poorly distinguished. Overall, less than 60% of respondents in any row could correctly classify the action, suggesting high uncertainty about the boundaries of acceptable academic practice.

Table 4: Identification of Plagiarism vs. Non-Plagiarism Actions

Question No. 4 Identify the following actions as Plagiarism Vs. Non-Plagiarism	Total responses N=1208	
	Plagiarism Actions	Non-plagiarism Actions
(a) Copy and paste a paragraph of text from a web site without enclosing it in quotation marks and referencing the source	**597 (49.4%)**	611 (50.6%)
(b) Use the ideas of another author without providing a reference, even if you write them in your own words	**603 (49.9%)**	605 (50.1%)
(c) Claim work produced by another student as your own	**768 (63.6%)**	440 (36.4%)
(d) Copy a diagram or data table from a web site, providing a reference for the source underneath	552 (45.7%)	**656 (54.3%)**
(e) Submit all or part of one essay for two separate assignments	**485 (40.1%)**	723 (59.9%)
(f) Copy words from a book into your own work, but place quotation marks around them and provide a citation	585 (48.4%)	**623 (51.6%)**
(g) Include a fact or saying in your assignment which is generally known without providing a reference	639 (52.9%)	**569 (47.1%)**

5.5 Variable Five: Awareness of the Economic Dimension of Web Information

The fifth variable assessed respondents' awareness of the economic dimension of web-based information — specifically, their recognition that access to accurate and authoritative information on the internet is a mixture of free and paid provision. A large majority (88.0%) of respondents correctly recognised that not all information on the web is freely accessible, with 1,063 out of 1,208 respondents identifying the statement as true. The remaining 145 respondents (12.0%) marked the statement as false, indicating either an assumption that all web information is freely available or unfamiliarity with subscription-based and pay-per-view models of information provision. The strong performance on this variable suggests that respondents are broadly conscious that the web operates as a mixed-access environment, in which authoritative content is distributed through both open and toll-gated channels — a reality well documented in the scholarly communication literature, where paying even a small per-view price can effectively close the door to research for those without institutional access (Willinsky, 2006). Nevertheless, the 12.0% who answered incorrectly point to a residual gap in economic literacy about web information that may warrant attention in information literacy instruction.

Table 5: Awareness of the Economic Dimension of Web Information

Question No. 5 Indicate the correctness of the given Statement? Statement A. "Some accurate and authoritative information on the internet is freely available and some is provided only to people or institutions paying for access to it."	Total Responses N=1208
A. True	**1063 (88.0%)**
B. False	145 (12.0%)

5.6 Variable Six: Library Subscription Arrangement for Electronic Resources

The majority (71.9%) correctly identified that licensed or purchased research databases were available on the library website, and 60.3% recognized that the library also provides a curated list of freely accessible web resources. Only a small minority (6.5%) erroneously attributed course registration information as typical content of the library website. This awareness reflects growing familiarity with library digital infrastructure — a competency noted as central to postgraduate research training (Chinthagunta & Rao, 2023).

Table 6: Awareness of Library-Subscribed Resources

Question No.6 Identify the Information sources commonly available on a University library's Website.	Total Responses N=1208
A. Course registration information	78 (6.5%)
B. Licensed or purchased research databases	**868 (71.9%)**
C. Research Guides	**452 (37.4%)**
D. List of selected freely available resources on the Web	**729 (60.3%)**

5.7 Variable Seven: Awareness of Database Licensing Restrictions

An overwhelming **93.0%** of respondents correctly understood that purchased databases are licensed for restricted institutional use. This high awareness is the most encouraging finding in the study, suggesting that despite gaps in legal-concept literacy, students grasp the practical licensing realities of their immediate institutional environment.

Table 7: Awareness of Database Licensing Restrictions

Question No. 7 Identify the correctness of the given Statement Statement "A University Library must restrict access to the databases they purchase because the databases are licensed for use only by their teachers, staff and students"	Total Responses N=1208
A. True	**1123 (93.0%)**
B. False	85 (7.0%)

5.8 Variable Eight: Netiquette in Electronic Communication

The eighth variable examined respondents' understanding of a fundamental convention of email netiquette — specifically, the practice that is commonly perceived as shouting at the recipient. The data from the Table 8 depicts a clear majority (67.3%) with correct awareness of accepted practice in electronic communication. This level of awareness is a positive indicator of respondents' email etiquette, particularly in light of the competency gaps observed in the preceding variables. Nevertheless, nearly one-third of respondents (32.7%) either selected an incorrect option or remained uncertain, which points to a segment of the population for whom electronic communication conventions have not been fully internalised. Given that email remains a primary channel of formal and academic correspondence, this gap carries practical implications: misinterpretation of tone in digital messages can affect the clarity and professionalism of communication. Strengthening orientation on basic netiquette norms — capitalisation, punctuation, and formatting conventions — could therefore form a useful component of digital literacy initiatives aimed at closing this residual gap.

Table 8: Understanding of Email Netiquette

Question No.8 When sending a message via E-mail, which of the following practice is commonly seen as shouting at the recipient	Total Responses N=1208
A. Typing the message in a bold font	95 (7.7%)
B. Typing the message in italics	58 (4.8%)
C. Typing the message using many exclamation marks	242 (20.0%)
D. Typing the message in capital letters	**813 (67.3%)**

6. Recommendations

Based on the findings of the present study, the following recommendations are put forward for strengthening the ethical, legal, and social competencies of science post-graduate students in the universities of Karnataka State, India.

Strengthen Library Instruction on Plagiarism and Copyright*:* Given that less than half of respondents correctly identified the meaning of plagiarism or the legal concepts of intellectual property and fair use, a top priority is the redesign of library-led IL sessions to dedicate explicit, structured time to plagiarism, copyright, intellectual property, and fair use (Awasthi & Gulati, 2025; Borude, 2026). These sessions should move beyond orientation-level coverage and adopt deeper, scenario-based pedagogy that engages students with realistic academic situations.

Integrate IL Competencies into the Academic Curriculum: Following the recommendation of Awasthi and Gulati (Awasthi & Gulati, 2025), universities in Karnataka State should consider integrating information literacy — including its ethical-legal dimensions — as a credit-bearing component of post-graduate science curricula. Embedding IL within coursework ensures that all students systematically acquire these competencies rather than encountering them sporadically through library orientation.

Implement Periodic Awareness Drives on Plagiarism: The persistent gaps in plagiarism awareness call for periodic, structured awareness drives organised in collaboration between university libraries, academic offices, and apex regulatory bodies (Kumar & Kumar, 2024; Pradhan & Kumar, 2023). Awareness campaigns should clarify what constitutes plagiarism, the institutional and professional consequences of transgressions, and the correct use of citation management tools.

Establish Research Ethics Committees: Each university should establish or strengthen a Research Ethics Committee responsible for developing, communicating, and monitoring plagiarism and academic integrity policies at the post-graduate level (Patil & Ganganahalli, 2024; Pradhan & Kumar, 2023). Such committees can play a pivotal role in instilling a culture of integrity and align with the practices recommended by the UGC for higher education institutions in India.

Provide Free Access to Anti-Plagiarism Software: Anti-plagiarism software (e.g., Turnitin, iThenticate, or accessible open-source equivalents) should be made freely available to all post-graduate students to facilitate self-checking before submission (Awasthi et al., 2024; Pradhan & Kumar, 2023). Combined with training in the use of these tools, this would reduce inadvertent plagiarism caused by students' lack of awareness or skills.
Develop Academic Writing Skills Through Targeted Workshops: Universities should organise structured academic writing workshops for post-graduate students covering citation styles, paraphrasing, summarising, and the use of quotation marks (Pradhan & Kumar, 2023; R et al., 2024). Such training complements anti-plagiarism tools by addressing the underlying skill gaps that lead to plagiarism in the first place.

Foster Library–Faculty Collaboration: Joint library-faculty IL initiatives can embed ethical-legal instruction within discipline-specific coursework, ensuring that students receive contextualised and credible guidance (Awasthi & Gulati, 2025; Munavalli & Kumbar, 2017). Faculty ownership of these topics combined with librarian expertise in information access and use creates a more robust pedagogic synergy.

Build Capacity for Training-of-Trainers: Library professionals themselves require continuous skill development to deliver effective instruction on Standard Five content (Thanuskodi, 2019). Universities should invest in regular training-of-trainers programmes to ensure that librarians are equipped to address the ethical, legal, and social dimensions of information use with confidence and currency.

Develop Targeted IL Materials on Fair Use and Intellectual Property: Because intellectual property and fair use were the least understood legal concepts, libraries should develop dedicated IL materials — including handouts, brochures, and web-based resources — that explicitly address these concepts in plain language with concrete examples drawn from post-graduate scientific practice.

Conduct Follow-Up Studies: Longitudinal and comparative follow-up studies are needed to assess whether library-led and curricular interventions produce measurable improvement in students' ethical, legal, and social competencies over time (Sohail & Sharma, 2023). Such evidence would allow institutions to refine their interventions on the basis of demonstrated outcomes

7. Conclusion

The present study, drawing on responses from 1,208 science post-graduate students across the twelve universities of Karnataka State, provides a comprehensive empirical portrait of students' ethical, legal, and social competency in the use of information. Grounded in ACRL Standard Five, the study reveals a mixed but largely uneven competency profile — one that points to specific and actionable gaps in students' preparedness for ethical engagement with information in academia and beyond. The strongest competencies emerged in practical or contextual dimensions: 93.0% understood that purchased databases are licensed for restricted institutional use, 88.0% knew that not all authoritative web information is freely accessible, 71.9% were aware of licensed research databases on the university library website, and 67.3% demonstrated email netiquette awareness. In

contrast, students showed significant gaps in foundational legal concepts and ethical practices: only 49.0% correctly identified the meaning of plagiarism, 45.4% intellectual property, and 43.4% fair use. Fewer than 60% correctly matched six real-world scenarios to their legal categories, with freedom of speech (39.6%) and fair use (41.6%) least understood, and fewer than 60% in any row of the plagiarism-classification task could distinguish plagiarism from non-plagiarism — a concerning finding given the documented consequences of plagiarism, including retractions and institutional sanctions (Pradhan & Kumar, 2023). These results closely mirror prior scholarship: Swapna and Biradar (Swapna & Biradar, 2017) found that only 45.7% of science PG students could use information ethically and legally and 36.2% could acknowledge and document sources properly, while Borude (Borude, 2026) observed similar gaps in citation practice and ethical use. Pradhan and Kumar called for systematic curricular and institutional remediation of plagiarism awareness, and Krishna Kumar and Kumar (Kumar & Kumar, 2024) stressed periodic, sustained awareness drives. Consistent with this, the Indian regulatory ecosystem — particularly the UGC — has progressively recognized that academic integrity must be cultivated through policies, training, and accessible anti-plagiarism infrastructure (Awasthi et al., 2024).The study reaffirms that ethical, legal, and social competency is a core domain of information literacy, and that targeted library-led instruction, curriculum integration, and reinforced policy frameworks are essential to bridge the gaps surfaced here.

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