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Information Literacy Competency Levels of Social Science Researchers: A Diagnostic Study

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The present study is a diagnosis of Information Literacy Competency (ILC) levels of social science researchers. The data was empirically collected from 520 researchers and analyzed using differential and inferential statistical techniques. The Information Literacy (IL) competent researchers were maximum 79.6% in 'Information Use Ethics', followed by 77.7% in 'Information Need', 76.2% in 'Information Use', 66.9% in 'Information Evaluation' and 53.8% in 'Information Access'. The study has identified IL deficiencies on different parameters and suggests necessary improvements in the current practices for further enhancement of ILC among researchers.

Introduction

In the networked digital information landscape, researchers access vast amounts of information that are often unsupported, unfiltered, and unreliable. The authenticity, validity and reliability of this abundant information are often of questionable quality. Researchers face a conundrum in filtering out irrelevant and unreliable information. Information gathering also becomes a challenging and arduous task. An appropriate level of competency in information handling skills is foundational to the research and professional success of students¹. An ability to find and use information contributes to students' academic success, as they feel confident in their skills for locating resources for coursework and research². Information literacy (IL), as a critical thinking or research skills, has become crucial in academics and research work³. As a multidimensional concept, IL nurtures learning and helps to assess the veracity of information⁴. It evolved as a vital "set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information"⁵ (p.2). It provides essential proficiency for success in academics and lifelong learning skills which helps to promote life, career, and innovation skills⁶. It is an imperative "set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning"⁷ (p. 3). It is crucial and requisite competency among our millennial age "Google generation" students having "easy access to an exponential growth of questionable quality online information"⁸ (p. 335).

IL has become a ubiquitous topic⁹ and the articulated goal of IL instruction is to help students develop critical, analytical, and reflective modes of thinking for lifelong learning¹⁰. "It is important for education majors to have the ability to search, collect and process information and approach it critically and systematically as well as the skills to use the design tools for media information and the capacity to access, search and use Internet-based services, especially in the context of their future activities and opportunities for continuous professional qualification"¹¹ (p. 204). Competency along with confidence in the ever-changing information landscape is a principal consideration in IL as it helps students to become independent learners. IL has been widely recognized as a critical college learning outcome for decades¹². Periodic assessment of students' learning outcome has become an essential component of IL activities.

Information Literacy Assessment

Assessment has become the focus of activities in all areas of higher education. Authorities no longer assume but demand students' learning evidence and proof to apply skills in practical situations. "There has been a shift in emphasis from inputs and outputs ... to users and outcomes"¹³ (p. 2). The prevalence of these conversations is not surprising, given the pressing and well-documented need for libraries to demonstrate their impact on student success in response to growing calls for accountability and increasingly competitive budgetary climates in higher education¹⁴. The most effective means of achieving this goal is through the application and reporting of quality assessment practices. The ACRL report also calls upon academic librarians to assess their practice, particularly in terms of student success, to articulate explicitly the value they add to their institutions¹⁵.

The role of education has largely been to assess and then remediate for student areas of need, weaknesses, deficits, and so on¹⁶. In imparting IL instruction to students, whether formally or informally, there is a need to conduct an assessment. IL Assessment is any method, technique, or process used to evaluate the impact or success of IL instruction at the class, programmatic, or institutional level¹⁷. An in-depth diagnosis of information literacy competency (ILC) shows the learners where they have improved as well as the areas they need to strive for further improvement. It allows instructors to gauge the success of teaching and determine the efficacy of the methods used. It also demonstrates the value and need of IL programs to all other stakeholders like administrators, parents and learners themselves. Hence, despite all odds, instruction librarians exhibit a clear dedication to assessment as an essential part of their professional practice and employ a wide variety of methods to assess learning outcomes, sometimes to great success¹⁸. Assessment closely linked to teaching and learning is found most useful¹⁹. It helps to develop IL programs based on understanding the obstacles faced by students when interacting with information²⁰.

Review of Literature

The "outcomes-based assessments have come to the forefront of higher education"²¹ (p. 442) in the digital information landscape. In recent past, plenty of IL assessment studies have been conducted on different variables and with different purposes. Pinkley and Hoffmann²² outlined the evolution of the IL assessment process at California State University Library. The authors attempted to find the value of the library in translating the IL assessment findings in actionable results and improve library IL services. Walters et al.²³ evaluated students' IL capabilities through their comments on library instruction sessions, test performance and written coursework. The study highlighted the importance of evidence-based measures by concluding that instruction and assessment are closely linked. Koler-Povh and Turk²⁴ study focused on citation practices in the thesis and publications from the thesis. On an average, authors found post-reform students citing more references as compared to pre-reform students. Through surveys and interviews, Squibb and Zanzucch²⁵ explored the research competencies of upper-division students. The study was focused on propensities, threats, and progress of the respondents. It concluded that a foundation of information handling skills is suitably inculcated through library instructions and research competency of students increase as they learn. Al-Qallaf²⁶ study found master degree students able to articulate information need, having reasonable knowledge of the website's reliability and a general understanding of plagiarism. However, 44.46% of students failed to identify concepts of their information need, formulate strategies for search, comprehend the scope and purpose, and establish the quality of information source. Onyanha²⁷ concluded that IL is dynamic and spread across many disciplines. The study recommended a collaborative and interdisciplinary approach for effective IL delivery in the diverse and complex information and learning environment.

Research is fundamentally about information—finding, understanding, generating, discussing, influencing, contradicting, contextualizing, disproving and communicating it; the ability to do so is generally referred to as IL skills²⁸. Researchers increasingly require navigating an overwhelming amount

of complex information, as well as misinformation. The huge “collection of information is strategically important to a scholar’s research work and, by nature, requires complete interaction with the information”²⁹ (p. 299). Libraries attached to universities and other institutions of higher education regularly conduct a variety of IL programs and activities to promote and assess ILC of researchers. However, the ILC levels of researchers in social science from India have never been diagnosed and reported. This study is an endeavor in this direction.

Objective

- To assess researchers’ ILC in respect of information need, access, evaluation, use and use ethics.

Hypothesis

- The ILC levels of researchers from different universities concerning need, access, evaluation, use and use ethics of information are not different.

Scope and Sampling Technique

The present paper is a segment of an extensive IL assessment study conducted on different variables. The study population consisted of 3443 full-time researchers enrolled for Ph.D. in the Departments of Economics, Geography, History, Law, Political Science and Sociology at Indira Gandhi National Open University (IGNOU), Jamia Millia Islamia (JMI), Jawaharlal Nehru University (JNU), and University of Delhi (DU). The study is confined to the researchers enrolled during 2015-2017. The representative sample was drawn on a 95% confidence level and 4% confidence intervals. The online sample size calculator of Creative Research System³⁰ was used to find out the accurate sample size of 511. The sampling was stratified by subject, gender and institution, and 960 researchers were selected for distribution of questionnaire. A total of 520 questionnaires, complete in all respect, were received and used for study, which is higher than 511.

Methodology

A variety of methods have been employed for IL assessment studies including surveys, multiple-choice tests, performance measures, rubrics, authentic assessment, focus groups, classroom assessment technique, and standardized tests³¹. Walsh³² analyzed the existing literature to find out the validity and reliability of methods and tools developed and used to measure ILC. The author found the use of multiple-choice questions as most commonly used by over one-third of studies. DaCosta³³ identified a group of competencies based on guidelines and standards of the American Library Association (ALA), CILIP and SCONUL to assess IL skills of students. The competencies included recognizing information need, identification of information source, formulation of search strategies, information evaluation and creating new knowledge. Dubicki³⁴ assessed IL skill levels of students using five ACRL standards for identification, access, evaluation, use and use ethics of information. Saunders³⁵ also identified baseline IL competencies including location, access and evaluation of information to explore the attitude differences between disciplines. However, Dawes³⁶ framed questions in generic terms to encourage the use of common language in IL assessment study.

For the present study, five ILC parameters have been identified reviewing the available standards, guidelines and frameworks to frame the questionnaire. The parameters identified were: Information Need, Information Access, Information Evaluation, Information Use and Information Use Ethics. A set of 50 multiple-choice questions was developed—10 questions on each parameter, and posed to the respondents to empirically test their competency levels. The responses were manually evaluated and two marks were assigned to each correct answer. The test score of each respondent was again manually tabulated on each of the five parameters selected. The data thus collected was further processed and analyzed using various tools of descriptive and inferential statistics. The descriptive statistics included frequency distribution,

percentage, bar graph, etc and was aided by computing mean, standard deviation and range. Inferential statistics consisted of various tools like One-way ANOVA, F-ratio and Post-Hoc test using Least Significant Difference (LSD). The competency levels of respondents were determined on the basis of test score using the self-explanatory Performance and Competency Scale³⁷ given in Table 1.

Table 1: Performance and Competency Scale

% of Marks	Grade	Performance Grading	Competency Level
91 and above	'O'	Outstanding	Outstanding
81 to 90	'E'	Excellent	Excellent
71 to 80	'A'	Very Good	Very Good
61 to 70	'B'	Good	Good
51 to 60	'C'	Fair	Baseline
41 to 50	'D'	Below Average	Minimal
Below 40	'F'	Failed/Not Responded	Very Low

Profile of the Respondents

The distribution of the 520 respondents from each university is given in Figure 1.

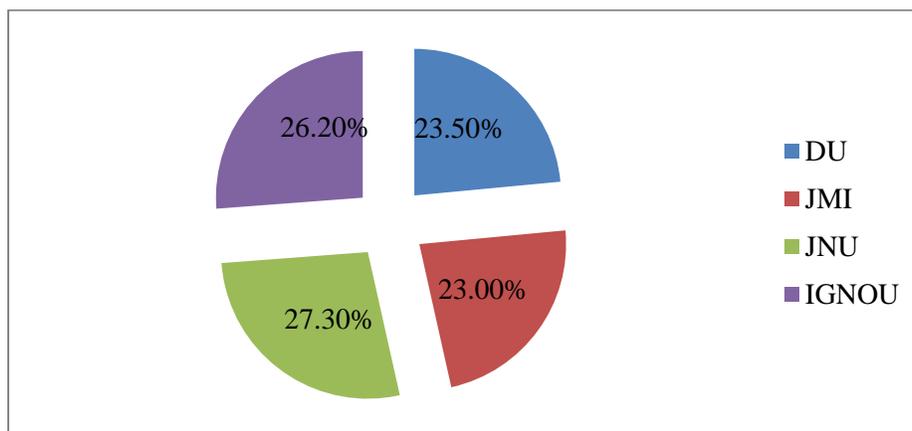


Figure 1: Profile of the Respondents

Results

The data collected was analyzed and inferences were drawn. The researchers were found struggling with “relevant basic competencies include searching for and finding resources, understanding resources, evaluating them in terms of scholarship and suitability to the question and referencing”³⁸ (p. 698). The detailed description of test results are provided on each parameter selected.

Information Need

The details of test scores on queries related to determination and articulation of ‘*information need*’ are presented in Figure 2. On the competency scale 77.7% of the respondents (consisting of 20.8% ‘Outstanding’, 24.6% ‘Excellent’, 16.2% ‘Very Good’ and 16.2% ‘Good’) were found competent to determine the extent and articulate ‘*information need*’. It included a maximum of 23.1% of respondents from JNU closely followed by 22.3% from IGNOU, 17.3% from JMI and 15.0% from DU. The rest 22.3% of the respondents (consisting of 10.8% ‘Baseline’, 7.7% ‘Minimal’ and 3.8% ‘Very Low’) lacked competency in similar skills. It included a maximum of 8.5% of respondents from DU followed by 5.8% from JMI, 4.2% from JNU and 3.8% from IGNOU.

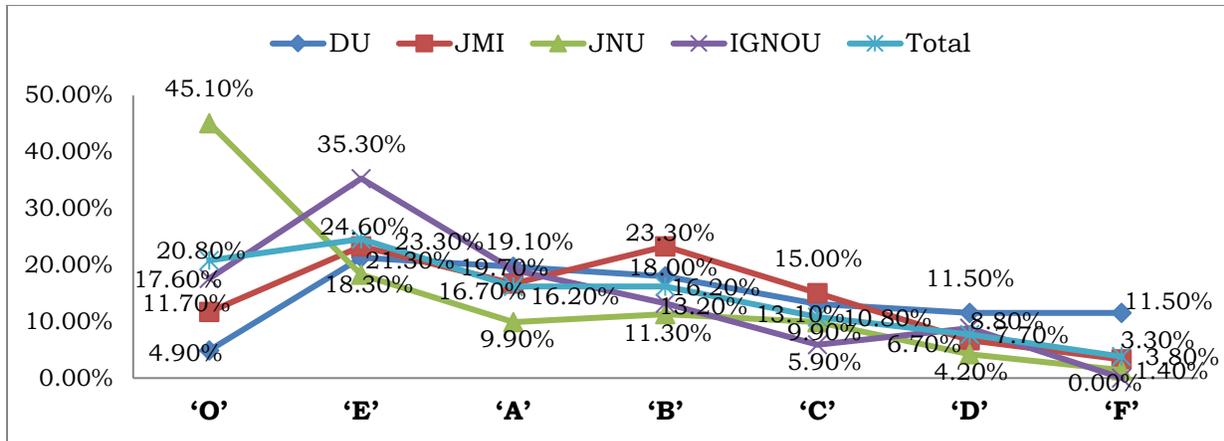


Figure 2: Performance Assessment on Information Need

The responses reflect different mean scores for test scores of researchers from each university under study. The researchers from JNU had the highest mean score of 17.18, followed by IGNOU with a mean score of 16.38, JMI with a mean score of 15.20 and DU with the lowest mean score of 13.93. The overall mean score is 15.75. The mean score and mean plot suggest that researchers at JNU possessed the highest ILC to identify and articulate 'information need'. The F ratio: $F(3, 516) = 22.853, p = 0.000$ indicates that there were significant differences in ILC levels of researchers of the different universities. Further, Post Hoc analysis using LSD also shows that differences were statistically significant at 0.05 level. Hence, the hypothesis stands rejected.

Information Access

The respondents' test performance scores for queries related to 'information access' are given in Figure 3. The performance of researchers from all the universities was found to be poor. There were only 1.5% 'Outstanding', 8.5% 'Excellent', 17.7% 'Very Good' and 26.2% 'Good' performers. Overall 53.8% of respondents were found IL competent in using multiple online search tools and formulate specific search queries to access needed information effectively and efficiently. It included a maximum of 21.9% of respondents from JNU followed by 18.1% from IGNOU and 6.9% from both DU and JMI. As many as 46.2% of the respondents (consisting of 18.1% 'Baseline', 13.5% 'Minimal' and 14.6% 'Very Low') were found incompetent in similar IL skills. It included a maximum of 16.5% of respondents from DU followed by 16.2% from JMI, 8.1% respondents from IGNOU and 5.4% from JNU.

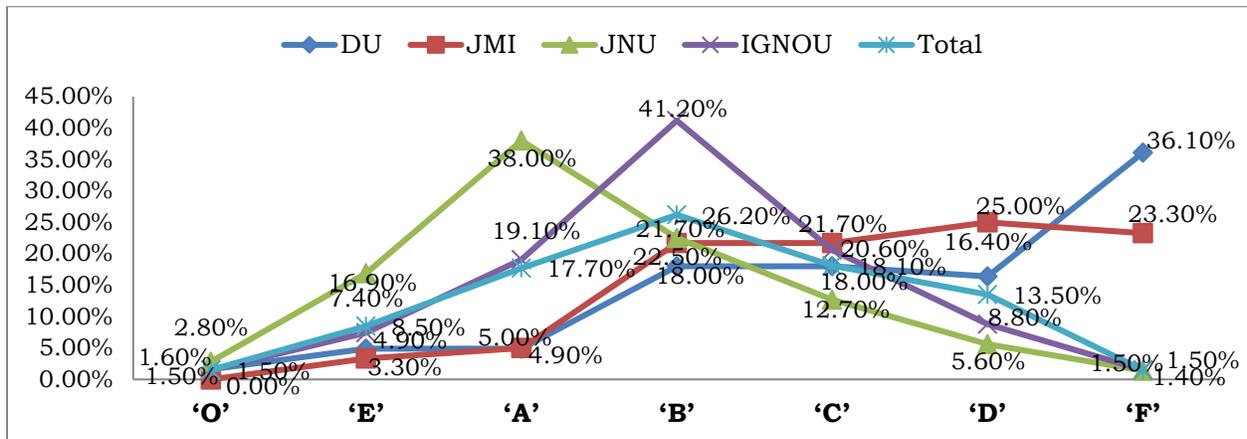


Figure 3: Performance Assessment on Information Access

Statistically, researchers from JNU had the highest mean score of 15.04, followed by IGNOU with a mean score of 13.91, JMI with a mean score of 11.20 and DU with the lowest mean score of 10.69. The overall mean score is 12.84. The mean score and mean plot suggest that researchers at JNU possessed a higher ILC in 'information access' compared to researchers from other universities. The One-way ANOVA results: $F(3, 516) = 65.030, p = 0.000$ and Post Hoc analysis using LSD indicate that differences in ILC levels of researchers of the different universities were statistically significant at 0.05 level, except between DU and JMI. Hence, the hypothesis is rejected.

Information Evaluation

Figure 4 depicts the details of test scores for queries related to the evaluation of information and its sources in terms of reliability and authenticity. The total of 8.1% 'Outstanding', 18.8% 'Excellent', 18.1% 'Very Good' and 21.9% 'Good' test performers constituted 66.9% of the respondents competent in evaluating information and its sources critically for its reliability and authenticity. It included a maximum of 23.8% of respondents from JNU followed by 21.5% from IGNOU, 11.9% from JMI and 9.6% from DU. The rest 33.1% of the respondents (consisting of 13.8% 'Baseline', 8.5% 'Minimal' and 10.8% 'Very Low') lacked competency in 'information evaluation'. It included a maximum of 13.8% of respondents from DU followed by 11.2% from JMI, 4.6% from IGNOU and 3.5% from JNU.

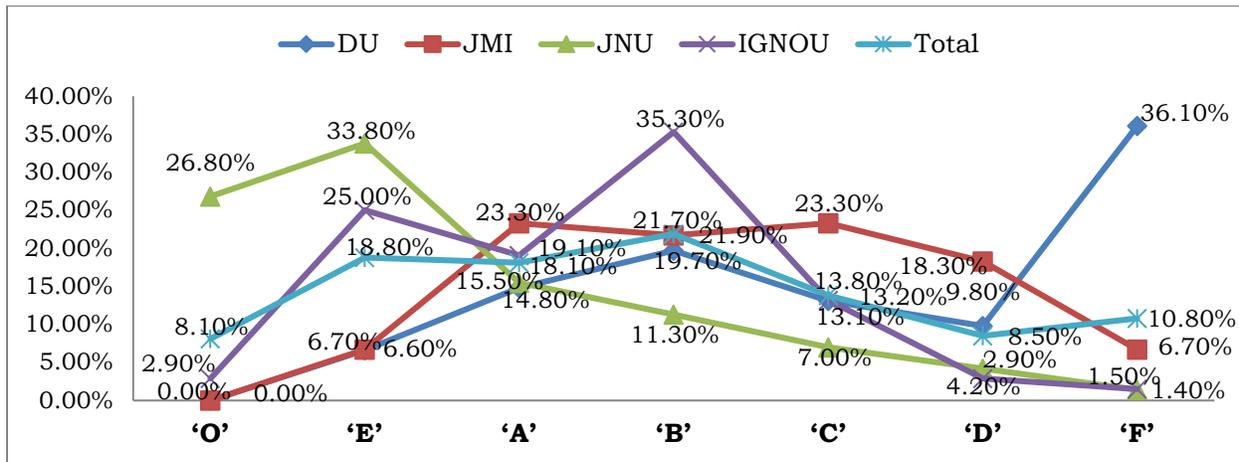


Figure 4: Performance Assessment on Information Evaluation

Researchers from JNU had the highest mean score of 16.87, followed by IGNOU with a mean score of 15.09, JMI with a mean score of 13.13 and DU with the lowest mean score of 11.11. The overall mean score is 14.19. The mean score and mean plot suggest that researchers from JNU possessed the highest ILC in 'information evaluation'. The F ratio: $F(3, 516) = 79.295, p = 0.000$ and results of Post Hoc analysis using LSD indicate that differences in ILC in 'information evaluation' was statistically significant at 0.05 level. Hence, the hypothesis is rejected.

Information Use

The details of test scores on information analysis and use are presented in Figure 5. Overall 76.2% respondents (including 20.4% 'Outstanding', 28.5% 'Excellent', 15.8% 'Very Good' and 11.5% 'Good') were found competent in using information effectively to accomplish a specific purpose. It included a maximum of 26.5% of respondents from JNU followed by 23.5% from IGNOU, 15.0% from JMI and 11.2% from DU. The rest 23.8% of respondents (consisting of 10.8% 'Baseline', 6.5% 'Minimal' and 6.5% 'Very Low') were missing competency in 'information use' skills. It included a maximum of 12.3% of respondents from DU followed by 8.1% from JMI, 2.7% from IGNOU and 0.8% from JNU.

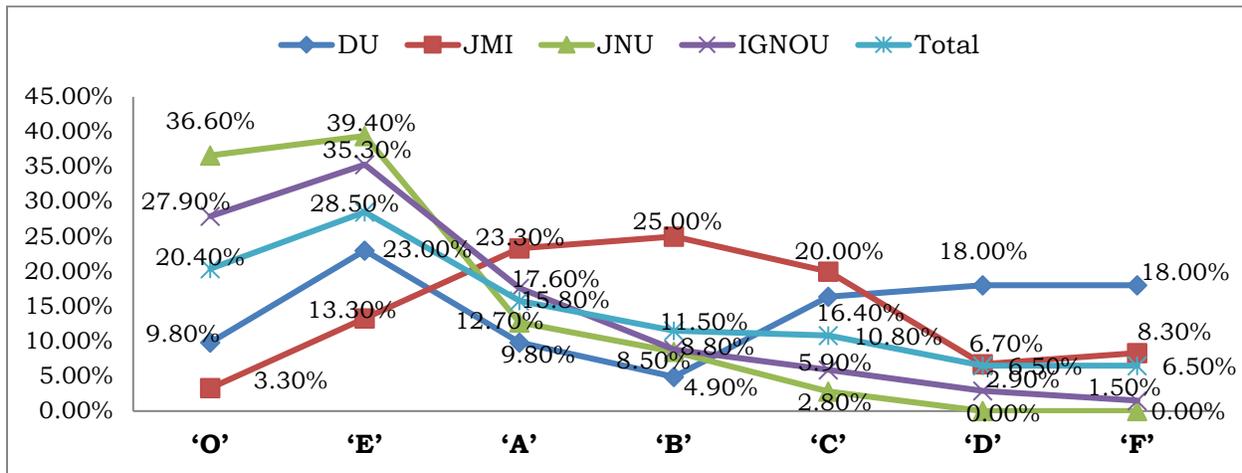


Figure 5: Performance Assessment on Information Use

Researchers from JNU had the highest mean score of 17.97, followed by IGNOU with a mean score of 17.06, JMI with a mean score of 13.93 and DU with the lowest mean score of 13.15. The overall mean score is 15.67. The mean score and mean plot suggest that researchers at JNU possessed the highest ILC in 'information use' followed by the researchers at IGNOU, JMI and DU. The One-way ANOVA results: $F(3, 516) = 61.163$, $p = 0.000$ and Post Hoc analysis using LSD indicate statistically significant differences at 0.05 level, except between DU and JMI. Hence, the hypothesis is rejected.

Information Use Ethics

The test scores for queries related to 'information use ethics' are presented in Figure 6. The maximum of 79.6% of the respondents (consisting of 6.2% 'Outstanding', 28.5% 'Excellent', 26.9% 'Very Good' and 18.1% 'Good') were found competent in ethical use of information. It included a maximum of 24.2% respondents from JNU followed by 22.3% from IGNOU, 17.3% from JMI and 15.8% from DU. The rest 20.4% of the respondents (consisting of 10.4% 'Baseline', 3.8% 'Minimal' and 6.2% 'Very Low') lacked similar competency. It included a maximum of 7.7% of respondents from DU followed by 5.8% of respondents from JMI, 3.8% from IGNOU and 3.1% from JNU.

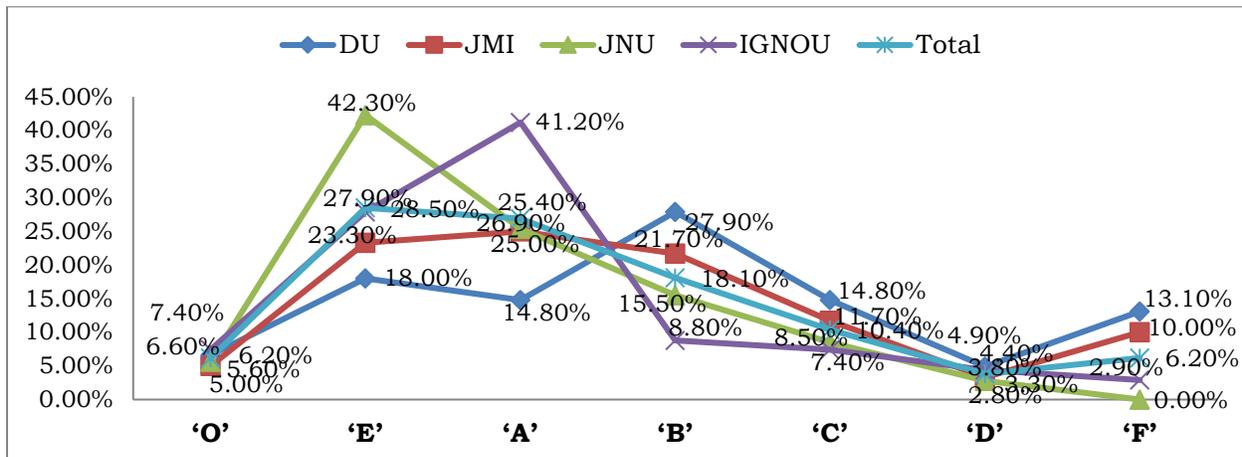


Figure 6: Performance Assessment on Information Use Ethics

Researchers from JNU had the highest mean score of 16.25, followed by IGNOU with a mean score of 15.88, JMI with a mean score of 14.73 and DU with the lowest mean score of 13.87. The overall mean score is 15.25. The mean score and mean plot suggest that researchers at JNU possessed the highest ILC in 'information use ethics'. The One-way ANOVA results: $F(3, 516) = 15.591, p = 0.000$ and Post Hoc analysis using LSD indicate that there were significant differences at the 0.05 level. Hence, the hypothesis stands rejected.

Information Literacy Competency Mapping

Figure 7 depicts the ILC levels of researchers on each parameter. It clearly indicates university wise fragment of researchers competent and incompetent on each parameter. The maximum of 85.3% of researchers from IGNOU were IL competent in information need. However, there were maximum IL competent researchers from JNU on rest of the parameters: 80.3% in information access, 87.3% in information evaluation, 97.2% in information use, 88.7% in information use ethics. The test performance of researchers from DU was poorest as they constituted maximum IL incompetent researchers on each parameter.

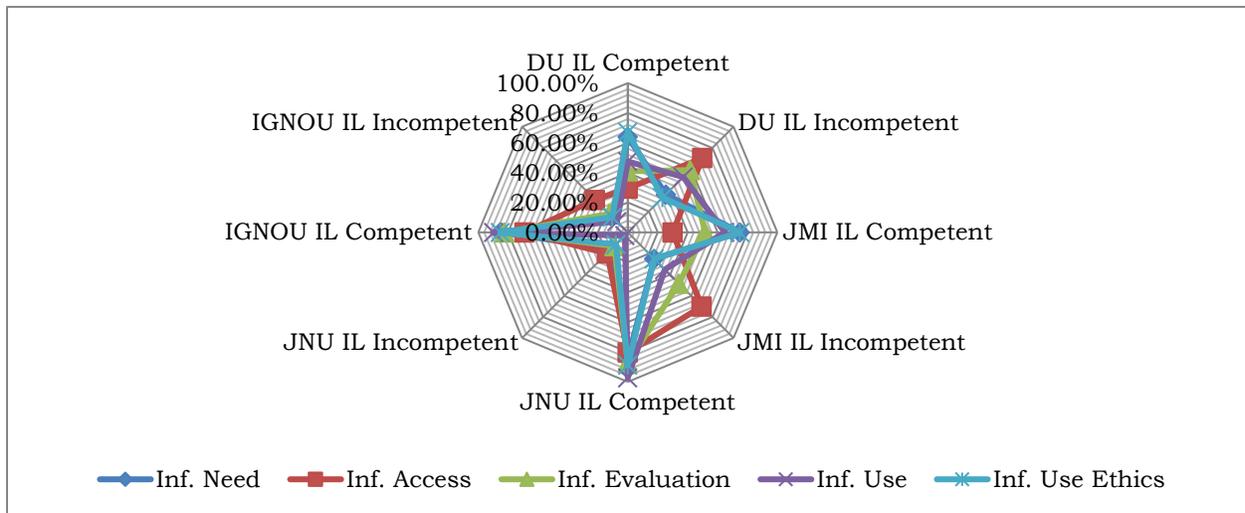


Figure 7: Institutional Mapping of ILC

Findings & Discussion

- Researchers from JNU displayed a higher level of competency on all five IL parameters compared to researchers from other universities under study.
- The maximum of 79.6% IL competent researchers in 'information use ethics' consisted of 24.2% respondents from JNU, 22.3% from IGNOU, 17.3% from JMI and 15.8% from DU. The total 77.7% of researchers competent in 'information need' included 23.1% of respondents from JNU, 22.3% from IGNOU, 17.3% from JMI and 15.0% from DU. The maximum of 26.5% of researchers from JNU followed by 23.5% from IGNOU, 15.0% from JMI and 11.2% from DU constituted 76.2% of researchers competent in 'information use'. The total 66.9% of researchers competent in 'information evaluation' consisted of 23.8% of researchers from JNU, 21.5% from IGNOU, 11.9% from JMI and 9.6% from DU. The minimum of 53.8% of researchers were competent in 'information access' including 21.9% from JNU, 18.1% from IGNOU and 6.9% from both DU and JMI.
- Similarly, the maximum of 46.2% of researchers IL incompetent in 'information access' included 16.5% from DU, 16.2% from JMI, 8.1% from IGNOU and 5.4% from JNU. The total 33.1% of

researchers incompetent in *'information evaluation'* consisted of 13.8% from DU, 11.2% from JMI, 4.6% from IGNOU and 3.5% from JNU. The maximum of 12.3% of respondents from DU followed by 8.1% from JMI, 2.7% from IGNOU and 0.8% from JNU constituted 23.8% of researchers incompetent in *'information use'*. The total 22.3% of researchers incompetent in *'information need'* included 8.5% from DU, 5.8% from JMI, 4.2% from JNU and 3.8% from IGNOU. The minimum of 20.4% IL incompetent researchers in *'information use ethics'* consisted of 7.7% from DU, 5.8% from JMI, 3.8% from IGNOU and 3.1% from JNU.

- The researchers from JMI and DU had lower mean scores than the overall mean score in each of the five IL parameters. This shows that competency levels of researchers from JMI and DU is comparatively poor. The researchers from DU constituted maximum IL incompetent researchers on each parameter.
- The differences in ILC levels of researchers of the different universities were statistically significant at 0.05 level on all parameters, except between DU and JMI in *'information access'* and *'information use'*.

The findings indicate the ILC levels of researchers on different parameters. The competency level of researchers was found higher in identifying information needs compared to information access. It is in consonance with the findings of Hsieh et al.³⁹. The maximum of 46.2% of researchers were deficient in identifying diverse sources of information, in use of advanced search strategy and were mostly unfamiliar with the effective use of Boolean connectors as many of them used odd combinations of connectors. Competency in *'information access'* is vital for researchers. The advanced search strategies are associated with better grades in all fields of study⁴⁰. Information access and evaluation are an "investigative processes that enable a person to find, retrieve and make judgments about the relevance, integrity and usefulness of computer-based information"⁴¹ (p. 17). Many users find an evaluation of bias or untrustworthy information quite exigent⁴². More than 33% of researchers were weak in *'information evaluation'* skills and failed to apply evaluation yardsticks like relevance, accuracy, currency, authority and purpose. This finding is in tune with the findings of many previous studies⁴³. In a recent study, the performance of students was found poorest in the evaluation of information out of four IL parameters selected⁴⁴. "Information search and use hold a key to knowledge building process in higher learning"⁴⁵ (p. 2089). However, a total of 23.8 % of researchers were found incompetent in effective use of information for the planning and creation of a particular information product or performance. The finding is consistent with the study of Malanga⁴⁶ which reported high deficiency among students in using the retrieved information for a specific purpose. Such deficiencies hamper the process of learning and research. From all the five study parameters, a maximum of 79.6% of researchers was identified competent in *'information use ethics'*. Thus, it is evident that 20.4% of researchers were missing competency in similar skills. The situation is alarming. The finding is consistent with the findings of many previous studies which revealed that students do not understand legal and ethical use of information and fail to properly acknowledge the sources used⁴⁷.

Multiple reasons have been identified for the poor ILC levels of researchers. There were limited IL programs and activities for researchers mostly in one-shot session. The IL programs and activities partially follow standard and guidelines and IL content was missing from Ph. D. course work under University Grants Commissions (UGC) regulations. The lack of designated IL cell/unit has made it no body's responsibility. Shortage of trained staff and lack of time, shortage of infrastructure and space, lack of awareness among students, lack of support from faculty and administration have also contributed in the ILC deficiency of researchers. For inculcating and enhancing the ILC among researchers, a lot is still to be done.

Implications

The present study has also identified reasons and challenges for the IL inefficiencies of researchers. Diekema⁴⁸ also indentified similar challenges in promoting IL: curriculum integration, teacher

collaboration, scheduling, student assessment and staffing. It shows greater implications for IL course content, ways and means of IL instructions, the relationship among different stakeholders and other related dimensions. On priority, universities should develop a designated IL cell/unit under library with qualified staff and proper infrastructure. IL content must appropriately be incorporated in the mandatory Ph.D. course work. The majority of students entering higher education do not possess required competency in IL skills to meet the demands in higher education⁴⁹. It is essential to inculcate higher level of IL skills in such students. However, IL skills and competency cannot be developed overnight; it requires multiple activities and continuity in efforts. Universities may start a credit based IL course structured on specific standards and guidelines for UG and PG students. The IL course content requires revision to emphasize more in the areas of students' weakness in the light of findings. IL instruction should be integrated into teaching and learning processes to make them more effective⁵⁰. Multiple IL sessions proves better when compared to one-shot sessions. Students find it easy to retain learning of previous sessions and enhance their skills in formulating information search strategy and using it⁵¹. Similarly, the 'Flipped Classroom' model has been found suitable to deal with many issues of IL instructions. However, a study has reported contrary findings⁵².

Departments provide essential training and guidance to the researchers. However, they do not essentially include IL skills, if they do; it is limited only to lecture-style orientation or a single session on IL skills⁵³. The onus lies on academic libraries and librarians. Academic libraries are "partner in the educational mission of the institution to develop and support information-literate learners who can discover, access, and use information effectively for academic success, research, and lifelong learning."⁵⁴ IL instructions are a "fundamental professional practice in academic libraries and academic librarians are primary providers of information literacy instruction generally"⁵⁵ (p. 191). There is a "need for effective instructional practice on the part of librarians, as well the important role of course instructors in the attainment of IL competencies"⁵⁶ (p.9).

The collaborative relationship is significant in achieving success with IL instruction⁵⁷. It is considered as the best-practice⁵⁸ and necessary for incorporating IL into the higher education curriculum⁵⁹. It is also necessary "to redesign instruction sessions, assignments, courses, and even curricula; to connect information literacy with student success initiatives; to collaborate on pedagogical research and involve students themselves in that research; and to create wider conversations about student learning, the scholarship of teaching and learning, and the assessment of learning on local campuses and beyond"⁶⁰. For building a successful IL program, strong collaborative support from senior administrators is also significant for guidance and all initiatives⁶¹.

Discipline-specific IL approach is yet another important way to inculcate and enhance ILC. There are similarities and differences among disciplines concerning IL skills and abilities. It is visible in determining the extent of and articulating the need for information, identifying potential information sources, criteria for defining appropriate information retrieval systems, approaches to refine and narrow down the search results and critical evaluation of information sources. Sciences focus more on international sources, whereas social sciences and humanities focus on country, region, areas and language-specific sources. All disciplines address the issue of information evaluation but relate to different contexts⁶². IL awareness also differs in different disciplines. Pinto⁶³ found a higher level of IL awareness in health sciences, social and legal sciences and arts and humanities compared to science and technical disciplines. The ACRL Standards and ACRL Framework also emphasize discipline-specific IL instructions. It is important to situate IL in the disciplines so that students can develop discipline-specific information skills and behaviors⁶⁴. The contextual dependence of IL should appropriately be emphasized in IL instructions and it should be delivered based on the cultural and social background and different learning styles of the students⁶⁵. Nichols Hess⁶⁶ opined that "Academic library leaders have a vested interest in quality library instruction, but strategies to ensure this happens can vary across environments" (p. 331).

Conclusion

A higher level of competency in IL skills among the researchers is the need of the day. In the networked information landscape researchers have become more dependent on the information they find online for their research. They need to identify, locate, search, evaluate and synthesize information from various sources to meet their research needs. Many times it becomes a daunting task to understand the intricacies of what, where and how to identify and retrieve the required information precisely. Libraries need to take the onus and handle the requirements successfully despite multiple challenges of time, resources, staff, infrastructure, support and collaboration. The findings of the present study have identified the IL skill competency levels of researchers. The deficiencies are clear and demand an overhauling in the existing IL activities and programs with all-round support of all the stakeholders. IL skill competency must be a core goal of contemporary teaching, learning and research in universities and other institutions of education. Findings also suggest room for improvement in the preparation of librarians for their role. The one-shot IL sessions should be replaced with longer credit-bearing courses. IL should no more be seen as a generic skill applicable across disciplines, rather its growing contextual dependence should be emphasized. Collaborations among faculty, librarians and administration must be strengthened for positive changes in the future.

EndNotes

1. Kathryn Mercer, Kari D. Weaver, Rachel Figueiredo, and Caitlin Carter, "Critical appraisal: The key to unlocking information literacy in the STEM disciplines," *College & Research Libraries News* 81, no. 3 (2020): 145-148. doi:10.5860/crln.81.3.145.
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