DESIDOC Journal of Library & Information Technology, Vol. 41, No. 4, July 2021, pp. 308-315, DOI : 10.14429/djlit.41.4.16405

Literature on Information Literacy: A Review

N.B. Nisha[#,*] and Rekha Rani Varghese[$]

[#]*Kerala Agricultural University, Vellanikkara, Thrissur - 680 656, India*
[$]*Pondicherry University, Puducherry - 605 014, India*
[*]*E-mail: nishanaren97@gmail.com*

ABSTRACT

The paper provides an overview of the research conducted on various aspects of Information Literacy. Many studies have been conducted in India and abroad on different facets of Information Literacy and pinpointed that information literacy is an essential skill in the era of information explosion. This paper provides an outline of the research done on Information literacy all over the world. By analysing 104 studies on information literacy, the present study indicates that Information Literacy is an essential skill in the current society. The importance of libraries in imparting information literacy is also mentioned in many studies. The literacy training has to be started at the school level, and it should be included in the curricula. The review shows that the only solution to reduce the digital divide gap among the information-rich and information-poor citizens is information literacy. Many initiatives have been started in India to bridge this gap. Many organisations and Associations like UNESCO, IFLA, American Library Associations, Society of Colleges, National and University Libraries (SCONUL) have framed different standards and Information Literacy models for various types of information users.

Keywords: Information literacy; Standards of information literacy; Computer literacy

1. INTRODUCTION

Information Literacy is a term coined by Zurkowski[1] first time in 1974, and according to him, "Information is not knowledge; it is concepts or ideas which enter a person's field of perception, are evaluated and assimilated reinforcing or changing the individual's concept of reality and/or ability to act. As beauty is in the eye of the beholder, so information is in the mind of the user." He proclaimed that "information literates are the people who are trained in the application of information sources to their work. They have learned techniques and skills for utilizing a wide range of information tools and primary sources in moulding information solutions to their problems. While literate in the sense that they can read and write, the individuals in the remaining portion of the population cannot mould information to their needs and realistically must be considered to be information illiterate." Later, several researchers explored and elaborated the notion of Information Literacy (Bruce[2], Pinto *et al.*[3], Lloyd[4], Julien and Barker[5], Fosmire[6]). This paper provides an analysis of the studies done on Information Literacy in India and abroad. The study's emphasis is on the assessment of Information Literacy Competency, various skills to be acquired by the students and researchers, and methods to enhance Information Literacy skills.

2. METHODOLOGY

Information was collected from all online databases including J-gate, Google Scholar, Ebsco Library Information Science & Technology Abstracts, Scopus, ProQuest Dissertation & Theses, and Shodganga. Conducted searches using the keywords "Information Literacy" "Information Literacy assessment", "Information Literacy Model" "Information Literacy Standards" etc. Also, selected additional literature from the citations of these papers was chosen including going through citation databases. However, the searches were restricted to publications in English. Broadly defined criteria have been used to ensure all aspects of information literacy were addressed. Hundred and four studies on information literacy have been reviewed in this paper.

3. LITERATURE REVIEW

To improve Information Literacy (IL), Goodsett[7] has stressed the need to include online tutorials and advanced teaching methods with online learning objects. Joe, and Lee[8] discussed the redesigning of a course "Information Literacy for College Research" at the University of Toledo, Ohio in 2020. Okeji *et al.*[9] conducted a study among the LIS students of 15 universities in Nigeria using a self-assessed questionnaire and found that the students have a moderate level of information literacy skills.

Torrell[10] discusses the need for "Critical Information Literacy (CIL) in higher education." Tonyan and Piper[11] examined the awareness of Summon discovery tools for research to find out the effectiveness and teaching characteristics of information literacy. Zhu *et al.*[12] analysed the personal, behavioural, and environmental factors affecting information

Received : 13 October 2020, Revised : 06 July 2021
Accepted : 08 July 2021, Online published : 02 August 2021

literacy based on Social Cognitive theory among students, parents, and teachers in China. Aharony and Gazit[13] identified a significant association between information literacy self-efficacy and personality traits. Das, Satapathy, and Acharya[14] analysed the need for collaboration among the librarian and faculty to develop information literacy to improve learning and teaching. Flierl *et al.*[15] discovered that academic performance and information literacy have a relationship. Koler-Povh and Turk[16] observed that the difference between the highest and lowest citation and publication parameters among the students is more negligible in the group of not attending the information literacy class. Tang[17] conducted a study in the Open University of Hong Kong to evaluate the first-year undergraduate student's IL skills and pointed out that information literacy should be included in their curriculum.

Aharony and Gur[18] analysed the relationship between information literacy with various independent variables like age, gender, computer expertise, internet searching skills, etc. Munavalli and Kumber[19] studied undergraduate student's information literacy skills in Navi Mumbai. Oluwaseye and Tunde[20] analysed the correlational research between IL skills and Web 2.0 among the students in Nigeria. The faculty perception of library services among the Queensborough Community College was studied by Ward and Kim[21] and found that science and mathematics faculty were least interested in sending their students for information literacy classes. Deepamala and Shivraj[22] conducted a study among the women faculty of engineering colleges to assess the IL skills and found that the internet, online sources, and social media are the preferred information resources for learning and sharing their knowledge. Galhotra and Galhotra[23] suggested the necessity of curriculum reform to develop educational strategies and learning resources to enhance the IL competency of students. Chauhan[24] suggested that UGC should direct the academic institutions to integrate the Information Literacy curriculum at the undergraduate and postgraduate levels. Wilson, Scalise, and Gochyyev[25] pointed out the implications of ICT literacy's "networked" view. Based on the Big6 IL model, Foo *et al*.[26] tested six aspects of literacy skills among secondary school students. The study of Lata and Sharma[27] revealed that a significant number of respondents overestimated their skills. The investigator recommended IL programmes to familiarise the respondents about information retrieval from both media print and non-print. The Information Literacy competency of research scholars in Punjab University was assessed by Mahajan and Kumar[28] and found that students lacked information literacy competency skills. Wijetunge and Manatunge[29] discussed the design and execution of the Information Literacy program for Law students based on Empowering 8 IL model. In a similar study, Sivakumar and Mary[30] studied the postgraduate student's Information Literacy competencies in the Arts and Science colleges in Kanyakumari, Tamil Nadu. Tuamsuk[31] stated that "Information Literacy is the ability to respond to one's own information needs and it is different for each individual who can be measured from the individual's approach and management of information requirement." According to Adeyomoye[32], Information Literacy should be added to all academic programs and intensify the library instruction programs and periodic training on access to e-resources for students. Belanger, Bliquez, and Mondal[33] created an Information Literacy assessment tool kit for faculty and librarian to integrate Information Literacy assessment tools into class assignments.

In 2012, Devi and Navalgund[34] analysed the misuse of technological change and the significance of ethics and intellectual honesty in academia. Hodgens, Sendall, and Evans[35] found that the postgraduate health promotion students are more confident and improved IL skills after completing the "PILOT online Information Literacy tutorial." Kaur, Sarman, and Rani[36] examined Information Literacy skills and information-seeking strategies of postgraduate and research scholars. "Riahinia37 studied the Information Literacy Competency (ILC)" of MA students. At Tarbiat Moallem University, Iran. Singh[38] describes the various initiatives in Information Literacy in India such as village knowledge centres, Tarahaat, Drishtee, Gyandoot, Warana Wired Village, Akshaya, INVITE, and swift Jyoti and analyse the role of libraries in India. Singh and Klingenberg[39] compared the Information Literacy teaching role of library professionals in India and Germany. According to Yadagiri and Thalluri [40], LIS Professionals have to initiate action against possible threats created by Information Explosion.

Asemi, Riahinia, and Beni[41] gave a practical method to identify Information Literacy levels towards fulfilling information needs. Baro[42] enunciated the state of library schools in Africa regarding Information Literacy education and found that only a few schools conducted Information Literacy as a course in their curricula, but it was included in their related studies. Deshmukh[43] analysed 3901 articles on Information Literacy published in 23 international languages covering from 1981 to 2010. Dunaway and Orblych[44] reported that formal valuation helps instructors know students' existing skills in a better manner and modify their content of instruction according to the needs of the students. According to Joshi[45], Information Literacy is a vital element of lifelong learning. Massis[46] pointed out the requirement of the Information Literacy education program in an augmented manner where librarians make collaborative efforts with faculty. Mackey and Jacobson[47] studied the concept of Information Literacy and opined that "Meta literacy provides the foundation for media literacy, digital literacy, ICT literacy and visual literacy. Nazari[48] also studied Information Literacy and opined that Information Literacy is a 'contextually constructed phenomenon which needs to be contextually researched to be adopted in different contexts and disciplines." Senthilkumaran[49] pointed out the value of Information Literacy Programmes also the role played by librarians in these programs.

Catalano[50] investigated the information literacy of graduate students using ACRL Information Literacy standards. Bewick and Corrall[51] postulated that Information Literacy instruction becomes a significant part of the duty of library professionals. Cordell and Fisher[52] showed that questions asked by clientele to determine the effectiveness of the Information Literacy course actually change their research behaviour. In a similar study conducted in England and the USA among the faculty of higher education institutes, Da Costa[53] discovered the perceptions of Information Literacy. Hadimani and Rajgoli[54] studied the undergraduate students of the College of Agriculture in

Karnataka state to find out their IL skills. The effectiveness of Information Literacy instruction in the curriculum of a general education course at Monmouth University, New Jersey, was studied by Hsieh and Holden [55]. Islam and Tsuji[56] analysed the strengths and weaknesses of "Information Science and Library Management graduates at the University of Dhaka" regarding their information literacy competencies. Koneru[57] describes "ADDIE (Analysis, Design, Development, Implementation, and Evaluation)," which enables them to plan and develop Information Literacy instructional services based on needs analysis. Pagell and Munoo[58] studied the trainers, trained by UNESCO for librarians on ICT skills at Wuhan, China, and described the steps in planning and executing an Information Literacy course to become a super searcher. Pinto, Cordon, and Diaz[59] studied the various terms' assessment, which helped shape the present concept of Information Literacy. Resnis, Gibson, Hartsell-Gundy, and Misco[60] investigated Information Literacy practices of students in Miami University, USA. A similar study was conducted by Sharma[61] that assessed the Information Literacy competencies of Punjab Agricultural University students and scholars. In another study, Stern and Kaur[62] indicated the role of librarians as information guides.

Gamage[63] explained the attempt to introduce mind mapping to an academic library's Information Literacy program. Mukhyadal, Sonwane, and Vaishnav[64] studied the growth of literature on Information Literacy and found that growth was prolonged till 2002, and there was a linear growth from 2005 onwards. It was found that the majority of the articles published were from in the UK over to USA. Oakleaf[65] described seven stages of the "Information Literacy Instruction Assessment Cycle (ILIAC)" and demonstrates that the ILIAC improves the instructional abilities of librarians and the Information Literacy skills of students. Singh[66] pointed out that the essence of information society and the spinal cord of lifelong learning and knowledge management comes from Information Literacy. The relationship between Information Literacy, generic research process, and scientific enquiry were studied by Shenton[67] in 2009. Thirion and Pochet[68] assessed the students' Information Literacy skills and suggested suitable IL programs. In a similar study, Verma[69] briefly accounts for information literates, Information Literacy in India, Online Information Literacy, and its advantages.

According to Amudhavalli[70], higher education institutions aim to mould lifelong learners. The meaning of Information Literacy was analysed by Babu[71] and mentioned that IL requires a new way of learning and teaching, which may be different from the existing cultural standards and expectations of students and educators. According to Eisenberg[72], "Information Literacy is a set of skills and knowledge that allows us to find, evaluate and use the information we need and discard that which is unnecessary." Karisiddappa and Rajgoli[73] surveyed to analyse the programs offered in IL by the Library and Information Centres of twenty-three higher learning and research centres in Bangalore city. Mokhtar and Majid[74] studied Information Literacy standards in various countries, analysed the situation, and made recommendations that included governmental involvement, equal emphasis on both ICT and IL competencies, synergistic cooperation and professional accreditation, continuous review and evaluation, and mutual consultations, which help to keep abreast of changes. According to Partridge *et al.*[75], the "Reflective Online Searching Skill (ROSS)" is an e-learning tool for improving the student's skills and knowledge in online searching.

Ramesha[76] opined that a different form of literacy is required to overcome the complexities of the existing information environment. Sharma[77] described the changes demanded by the information age in library user education and the librarians' role in the perspectives of Information Literacy. Singh[78] opined that information overload and ICT instability cause info-stress and techno-stress among the information seekers. Tronstad, Philips, Garcia, and Harlow[79] stated that earlier studies showed difficulty creating quality multiple-choice questions to test all "Information Literacy Competency Standards for the Higher education of ACRL." In a similar survey, Wijetunge[80] describes Empowering 8, a new Information Literacy model that integrates into the postgraduate diploma curricula in teacher librarianship conducted by the "National Institute of Library and Information Science", Sri Lanka.

For the development of assessment tools, course content, and exercises in curriculum design for graduate students, Emmett and Emde[81] introduced the "ACRL Information Literacy Competency Standards" application in higher education. Gross and Latham[82] stressed the importance of innovative strategies in Information Literacy education. Reed and Kindler[83] studied collaborative experiences and their effect on Information Literacy outcomes of students. Sonley *et al.*[84] revised the existing assessment method by introducing the portfolio method. This method was suitable for personal growth and critical reflection, which are the components of information skills. Information literacy of the incoming students of the University of Maryland, Baltimore country based on ACRL Information Literacy standards was assessed by Ferguson, Neely, and Sullivan[85]. Ghosh and Das[86] reveal that various new initiatives introduced in India to enhance Information Literacy skills at the school level, higher educational level, professional societies, etc., that intended to utilize knowledge resources optimally. Kanamadi and Vichare[87] described Information Literacy programs as a tool for connecting e-resources for social scientists. A strategic and collective approach for Information Literacy in an academic setting through a portal was described by Koneru[88]. According to Link and Marz[89], computer literacy helped the students as a teaching aid and self-study tool.

Mackey and Jacobson[90] opined that Information Literacy is a vital skill for today's multifaceted information era, fostering critical thinking in colleges, workplaces, and everyday life. Pawinun and Kemparaju[91] pointed out that a pre-requisite for Information Literacy is Information Technology Literacy. Virkus[92] delineated that Information Literacy initiatives started in schools in UK, Netherlands, and Spain, while in Scandinavia and Germany, academic libraries took the initiative. In 1999, Bruce[93] investigated experiences of Information Literacy amongst various types of professionals. Shapiro and Hughes[94] identified seven dimensions of literacy, such as "tool literacy, resource literacy, social-structural literacy, research literacy, publishing literacy, emerging technology literacy, and critical literacy." Behrens[95] examined the idea of Information Literacy

from 1974 to 1994 to accommodate the growing requirements for the active management of information and teach lifelong learning skills by the LIS professionals.

4. CONCLUSIONS

During the last few decades, the developments and application of computers and other related technologies have changed all nations' societies and work environments. Information communication technology has a crucial role in creating and disseminating knowledge in the present information age. To survive in a knowledge society, computer and Information literacy are essential. Many studies have been conducted in India and abroad on different facets of Information Literacy: IL skills (Dunn[96]), the impact of IL (Streatfield and Markless[97]), Information Literacy education (Dorner and Gorman[98], Baro[99]), Information Literacy Standards (Wen and Shih[100]), and pinpointed that information literacy is an essential skill in the era of information explosion. UNESCO[101], IFLA[102], American Library Associations[103], Society of Colleges, National and University Libraries[104] have framed the standards and models of Information Literacy for various levels of information users. These appropriate standards and models may be adopted to assess the Information Literacy competencies and introduce the Information Literacy programs to eliminate information illiteracy and evolve as a knowledge society. The literacy training has to be started at the school level, along with their curricula. Since academic performance and information literacy are related, there is an urgent necessity for redesigning the curriculum, develop new educational strategies and learning resources to improve the Information Literacy competencies of students and researchers in the country and at large in the world.

REFERENCES

1. Zurkowski, Paul G. The information service environment relationships and priorities., Related paper No.5. National commission on libraries and information science: National program on library and information services, Washington, D.C., 1974. 1-27. https://files.eric.ed.gov/fulltext/ED100391.pdf (Accessed on 7 April 2020)
2. Bruce, C.S. Information literacy: A framework for higher education. *Aust*. *Libr. J.*, 2013, **44**(3), 158-170. doi: 10.1080/00049670.1995.10755718.
3. Pinto, M.; Fernández, P.R.; Caballero M.D.; Sales,D; Guerrero, D. & Uribe, A. Scientific production on mobile information literacy in higher education: A bibliometric analysis (2006–2017). *Scientometrics*., 2019, **120,** 57–85. doi: 10.1007/ s11192-019-03115-x.
4. Lloyd, A. Framing information literacy as information practice: Site ontology and practice theory. *J. Doc.*, 2010, **66** (2), 245-258. doi: 10.1108/00220411011023643.
5. Julien, H. & Barker S. How high-school students find and evaluate scientific information: A basis for information literacy skills development. *Libr. Inf. Sci. Res.,* 2009, **31**(1),12-17. doi: 10.1016/j.lisr.2008.10.008.
6. Fosmire, M. Information literacy and engineering design: Developing an integrated conceptual model. *IFLA J.,* **38**(1) 47-52. doi: 10.1177/0340035211435071
7. Goodsett, M. Best practices for teaching and assessing critical thinking in information literacy online learning objects. *J. Acad. Libr*., 2020, **46**(5). doi: 10.1016/j.acalib.2020.102163.
8. Joe, Jennifer & Lee, Wade. Using understanding by design to create a university orientation class grounded in information literacy. *Innov. Educ. Teach. Int.,* 2020, **2**, https://digitalcommons.humboldt.edu/sotl_ip/vol2/iss1/6 (Accessed on 15 October.2020).
9. Okeji, C.C.; Ilika, O.M. & Baro, E.E. Assessment of information literacy skills: A survey of final year undergraduates of library and information science in Nigerian universities. *Glob. Knowl. Mem. Commun*., 2020, **69 (**6/7), 521-535. doi: 10.1108/GKMC-10-2019-0130.
10. Torrell, M. That was then, This is wow: A case for critical information literacy across the curriculum. *Commun. Inf. Lit..,* 2020, **14**(1), 118-133. https://pdxscholar.library.pdx.edu/comminfolit/vol14/iss1/9 (Accessed on 15 October 2020)
11. Tonyan, Joel & Piper, Christi. Discovery tools in the classroom: A usability study and implications for information literacy instruction*. J. Web Libr*., 2019, **13**(1), 1-19. doi: 10.1080/19322909.2018.1530161.
12. Zhu, S.; Yang, H H; MacLeod, Jason; Yu, L. & Wu, D. Investigating teenage students' information literacy in China: A social cognitive theory perspective. *Asia-Pac. Educ. Res*., 2019, **28,** 251–263. doi: 10.1007/s40299-019-00433-9.
13. Aharony, Noa & Gazit, Tali. Students information literacy self-efficacy: an exploratory study. *J. Libr. Inf. Sci.,* 2018, **52**(1), 224-236. doi: 10.1177/0961000618790312.
14. Das, K.C.; Satapathy, B.K. & Acharya, J. Information literacy: How do librarians and academics work in partnership to deliver effective learning programmes in higher education. *PEARL: A j. Libr. Inf. Sci.*, 2018, **12**(2),170-178. doi: 10.5958/0975-6922.2018.00021.9.
15. Flierl, M.; Bonem, E.; Maybee, C. & Fundator, R. Information literacy supporting student motivation and performance: Course-level analyses. *Libr. Inf. Sci. Res.,* 2018, **40**(1), 30-37. doi: 10.1016/j.lisr.2018.03.001.
16. Koler-Povh, T. & Turk, Z. Information literacy of doctoral students in engineering and the librarian's role. *J. Libr. Inf. Sci.,* 2018, **52**(1), 27-39. doi: 10.1177/2F0961000618767726.
17. Tang, W.K. Assessing information literacy skills of undergraduate freshmen. A case study from Hong Kong. *Int. J. Media Inf. Lit.,* 2018, **3** (1),11-17. doi: 10.13187/ijmil.2018.1.11
18. Aharony, N. & Gur, H. The relationship between personality, perceptual, cognitive and technological variables and students' level of information literacy. *J. Libr. Inf. Sci*.,2017, **51**(2), 527-544.

doi: 10.1177/0961000617742450.
19. Munavalli, S.B. & Kumber, B.D. Assessing information skills among the undergraduate science students of PCACS, Navi Mumbai: A pilot study. *Libr. Prog. (Int.).,* 2017, **37**(2), 142-153. doi: 10.5958/2320-317X.2017.00015.0.
20. Oluwaseye, A.J & Tunde, S.I. Influence of information literacy skills on use of web 2.0 technologies by students in two Monotechnics in Oyo State, Nigeria. *Libr. Philos. Pract..,* 2017, 1-46. http://digitalcommons.unl.edu/libphilprac/1613. (Accessed on 20 August 2020).
21. Ward, L. & Kim, M. Faculty perception of information literacy at Queensborough community college. *Commun. Jr. Coll. Libr.,* 2017, **23**, 13–27. doi. 10.1080/02763915.2018.1558899
22. Deepamala, M.A. & Shivraj, K.S. Information literacy skills among women faculty members in engineering colleges in Coimbatore, Tamil Nadu: A study. *Asian J. Res. Soc. Sci. Humanit.,* 2016, **6**(8), 1410-1422.
23. Galhotra, M.K. & Galhotra, A.M. The impact of information literacy in the academic education. *J. Libr. Inf. Technol.,* 2016, **12**(1), 33-46.
24. Chauhan, K. Information Literacy in Knowledge Society: an overview. *Int. J. Phys. Soc. Sci.*. 2015, **5**(7), 588-597.
25. Wilson, M.; Scalise, K. & Gochyyev, P. Rethinking ICT literacy: From computer skills to social network settings. *Think. Skills. Creat.,* 2015, **18**, 65-80. doi: 10.1016/j.tsc.2015.05.001.
26. Foo, S.; Majid, S.; Mokhtar, I.A.; Zhang, X., Chang, Y.K.; Luyt, B. & Theng, Y.L. Information literacy skills of secondary school students in Singapore. *Aslib J. Inf. Manage.,* 2014, **66**(1), 54-76. doi: 10.1108/AJIM-08-2012-0066
27. Lata, S. & Sharma, S. Information literacy skills of the faculty and students of Pandit Bhagvat Dayal Sharma University of Health Sciences (PBDSUHS), Rohtak. *Libr. Her.,* 2014, **52**(2), 109–120. doi: 10.5958/0976-2469.2014.00501.6.
28. Mahajan, P. & Kumar, A. Assessing information literacy competency in higher education: A study of Panjab University, Chandigarh. *SRELS J. Inf. Manage.,* 2014, **51**(6), 369-375.
29. Wijetunge, P. & Manatunge, K. Empowering 8 in practice: Information literacy programme for law undergraduates revisited. *Ann. Libr. Inf. Stud.,* 2014, **61**(March), 24 - 32.
30. Sivakumar, K.P. & Mary, A.L. Information literacy competencies among the post graduate students of arts and science colleges in Kanyakumari district. *Kelpro Bull.,* 2013, **17**(1), 55 - 64.
31. Tuamsuk, K. Information literacy instruction in Thai higher education. *Procedia. Soc. Behav. Sci.,* 2013, **73**, 145-150.
32. Adeyomoye, J.I. Inormation literacy competence among students in Nigerian private universities: A case study of Caleb University, Imota, Lagos, Nigeria. *Libr.Prog. (Int.),* 2012, **32**(2), 185 - 193.
33. Belanger, J.; Bliquez, R. & Mondal, S. Developing a collaborative faculty: Librarian information literacy assessment project. *Libr. Rev.,* 2012, **61**(2), 68 - 91.
34. Devi, S.G. & Navalgund, C.U. Plagiarism - A rising degree of plague questioning ethics, policies and technology. *SRELS J. Inf. Manage.,* 2012, **49**(1), 69 - 73.
35. Hodgens, C.; Sendall, M. C. & Evans, L. Post-graduate health promotion students assess their information literacy. *Ref. Serv. Rev.,* 2012, **40**(3), 408–422. doi: 10.1108/00907321211254670.
36. Kaur, A.; Sarman, & Rani, S. Information literacy among the students in the electronic environment: A case study of Guru Nanak Dev University. *SRELS J. Inf. Manage.,* 2012, **49**(1), 21 - 38.
37. Riahinia, N. Determining the information literacy competence (ILC) of MA students in Tarbiat Moallem University, Iran. *Libr. Her.,* 2012, **50**(1), 15 - 22.
38. Singh, S. Right to information and information literacy: An Indian perspective. *SRELS J. Inf. Manage.,* 2012, **49**(1), 5 - 19.
39. Singh, N. & Klingenberg, A. Information literacy in India and Germany: University libraries as activators of life-long learning. *DESIDOC J. Libr. Inf. Technol.,* 2012, **32**(3), 265 -276. doi: 10.14429/djlit.32.3.2385.
40. Yadagiri, S. & Thalluri, P.V.S. Information technology on surge: Information literacy on demand. *DESIDOC J. Libr. Inf. Technol,* 2012**, 32**(1), 64-69. doi: 10.14429/djlit.32.1.1408.
41. Asemi, A.; Riahinia, N. & Beni, A.A. Effect of information literacy (IL) group training on information seeking behaviour. *Libr. Her.,* 2011, **49**(4), 297 - 309.
42. Baro, E.E. A survey of information literacy education in library schools in Africa. *Libr. Rev.,* 2011, **60**(3), 202-217. doi: 1108/00242531111117263.
43. Deshmukh, P.P. An analytical study of literature on information literacy. *Libr. Her.,* 2011, **49**(4), 310 - 318.
44. Dunaway, M.K. & Orblych, M.T. Formative assessment: Transforming information literacy instruction. *Ref. Serv. Rev.,* 2011, **39**(1), 24-41. doi: 10.1108/00907321111108097.
45. Joshi, T. Prescriptive/Diagnostic assessment of information literacy competency of science, engineering and technology students of higher education institutions in Delhi. *Libr. Her.,* 2011, **49**(1), 70 - 77.
46. Massis, B.E. Information literacy instruction in the library: Now more than ever. *New Libr. World,* 2011, **112**(5/6), 274-277.
47. Mackey, T.P. & Jacobson, T.E. Reframing information literacy as a metaliterary. *Coll. Res. Libr.,* 2011, **72**(1), 62-78. doi: 10.5860/crl-76r1.
48. Nazari, M. A contextual model of information literacy. *J. Inf. Sci.,* 2011, **37**(4), 345-359. doi: 10.1177/0165551511403544.
49. Senthilkumaran, P. Information literacy programmes in India. *SRELS J. Inf. Manage.,* 2011, **48**(3), 357 - 363.
50. Catalano, A.J. Using ACRL standards to assess the information literacy of graduate students in an education program. *Evid. Based Info. Pract.,* 2010, **5**(4), 21–38. doi: 10.18438/B8V62B.
51. Bewick, L. & Corrall, S. Developing librarians as teachers: A study of their pedagogical knowledge. *J. Libr. Inf. Sci*.,

2010, **42**(2), 97-110.
doi: 10.1177/0961000610361419.

52. Cordell, R.M. & Fisher, L.F. Reference questions as an authentic assessment of information literacy. *Ref. Serv. Rev,* 2010, **38**(3), 474 - 481.
53. Da Costa, J.W. Is there an information literacy skills gap to be bridged? An examination of faculty perceptions and activities relating to information literacy in the United States and England. *Coll. Res. Libr.,* 2010, **71**(3), 203-221.
doi: 10.5860/0710203.
54. Hadimani, M.B. & Rajgoli, I.U. Assessing information literacy competence among the undergraduate students of college of agriculture, Raichur: A case study. *DESIDOC J. Libr. Inf. Technol*., 2010, **30**(2), 70-78.
doi: 10.14429/djlit.30.2.8.
55. Hsieh, M.L. & Holden, H.A. The effectiveness of a university's single: Session information literacy instruction. *Ref. Serv. Rev.,* 2010, **38**(3), 458 - 473.
doi: 10.1108/00907321011070937.
56. Islam, M.A. & Tsuji, K. Assessing information literacy competency of information science and library management graduate students of Dhaka University. *IFLA J.,* 2010, **36**(4), 300 - 316.
doi: 10.1177/0340035210388243.
57. Koneru, I. ADDIE: Designing web-enabled information literacy instructional modules. *DESIDOC J. Libr. Inf. Technol*., 2010, **30**(3), 23-34.
doi: 10.14429/djlit.30.3.388.
58. Pagell, R.A. & Munoo, R. Information literacy for the information literate: A model and case study from the Wuhan UNESCO training the trainers in information literacy program. *Int. Inf. Libr. Rev..,* 2010, **42,** 84-90.
doi: 10.1016/j.iilr.2010.04.001.
59. Pinto, M.; Cordon, J.A. & Diaz, R.G. Thirty years of information literacy (1977 - 2007) A terminological, conceptual and statistical analysis. *J. Libr. Inf. Sci.,* 2010, **42**(1), 3-19.
doi: 10.1177/0961000609345091.
60. Resnis, E.; Gibson, K.; Hartsell-Gundy, A. & Misco, M. Information literacy assessment: A case study at Miami University. *N. Libr. World,* 2010, **111**(7/8), 287 - 301.
61. Sharma, Y. Information literacy in Indian agricultural universities: A study of Punjab agricultural university. *Libr. Her.,* 2010, **48**(4), 347 - 357.
62. Stern, C. & Kaur, T. Developing theory based practical information literacy training for adult. *Int. Inf. Libr. Rev.,* 2010 **42**, 69-74.
doi: 10.1080/10572317.2010.10762847.
63. Gamage, R. Visualisation and mapping of information for literacy. In Emerging Trends and Technologies in libraries and information services, edited by S. Kataria; B. S. Nigam & R. Shukla. KBD Publications, New Delhi, 2009, 243-248.
64. Mukhyadal, B.G.; Sonwane, S. & Vaishnav, A.A. Information literacy: A scientometric study based on LISA. *In* Emerging trends and technologies in libraries and information services, edited by S. Kataria; B.S. Nigam & R. Shukla. KBD Publications, New Delhi, 2009, 259–264.
65. Oakleaf, M. The information literacy instruction assessment cycle: A guide for increasing student learning and improving librarian instructional skills. *J. Doc.,* 2009 **65**(4), 539-560.
doi: 10.1108/00220410910970249.
66. Singh, J. Information literacy: The lifeline of learning, understanding and knowledge management. *In* Emerging trends and technologies in libraries and information services, edited by S. Kataria; B.S. Nigam & R. Shukla. K B D Publications, New Delhi, 2009, 218–224.
67. Shenton, A.K. Information literacy and scholarly investigation: A British perspective. *IFLA J.,* 2009, **35**(3), 226-231.
doi: 10.1177/0340035209346219.
68. Thirion, P. & Pochet, B. Information literacy in students entering higher education in the French speaking community of Belgium: Lessons learned from an evaluation. *IFLA J.,* 2009, **35**(2), 152-170.
doi: 10.1177/0340035209105671.
69. Verma, N.C. Information literacy and lifelong learning. *In* Emerging trends and technologies in libraries and information services, edited by S. Kataria; B.S. Nigam & R. Shukla. KBD Publications, New Delhi, 2009, 265–268.
70. Amudhavalli, A. Information literacy and higher education competency standards. *DESIDOC J. Libr. Inf. Technol*., 2008, **28**(2), 48-55.
doi: 10.14429/djlit.28.2.167.
71. Babu, B.R. Information literacy - Competency standards and performance indicators: An overview. *DESIDOC J. Libr. Inf. Technol*., 2008, **28**(2), 56-65.
doi: 10.14429/djlit.28.2.168.
72. Eisenberg, M.B. Information literacy: Essential skills for the information age. *DESIDOC J. Libr. Inf. Technol*., 2008, **28**(2), 39-47.
doi: 10.14429/djlit.28.2.166.
73. Karisiddappa, C.R. & Rajgoli, I.U. In search of information literacy programmes and practices: Survey of selected institutions at Bangalore. *DESIDOC J. Libr. Inf. Technol*., 2008, **28**(2), 28-38.
doi: 10.14429/djlit.28.2.164.
74. Mokhtar, I.A. & Majid, S. Information literacy standards, guidelines and their implementation: An analysis. *DESIDOC J. Libr. Inf. Technol*., 2008, **28**(2), 5-12.
doi: 10.14429/djlit.28.2.160.
75. Partridge, H.; Edwards, S.; Baker, A. & McAllister, L. The reflective online search skills (ROSS) environment: Embedding information literacy into student learning through an online environment. *IFLA J.,* 2008, **34**(1), 55-71.
doi: 10.1177/0340035208088575
76. Ramesha. Information literacy - Need for an urgent action in India: A strategic approach. *DESIDOC J. Libr. Inf. Technol.,* 2008, **28**(2), 66-72.
doi: 10.14429/djlit.28.2.169.
77. Sharma, S. Information literacy and library education:

Exploring dimensions in librarian's role. *SRELS J. Inf. Manage.,* 2008, **45**(2), 169-180.
78. Singh, J. Sense-making: Information literacy for lifelong learning and knowledge management. *DESIDOC J. Libr. Inf. Technol.,* 2008, **28**(2), 13-17. doi: 10.14429/djlit.28.2.161.
79. Tronstad, B.; Philips, L.; Garcia, J. & Harlow, M.A. Assessing the TIP online information literacy tutorial. *Ref. Serv. Rev.,* 2008, **37**(1), 54 - 64. doi: 10.1108/00907320910934995.
80. Wijetunge, P. Improving information skills of the postgraduate students of NILIS university of Colombo: A case study. *DESIDOC J. Libr. Inf. Technol.,* 2008, **28**(2), 18-27. doi: 10.14429/djlit.28.2.162.
81. Emmett, A. & Emde, J. Assessing information literacy skills using the ACRL standard as a guide. *Ref. Serv. Rev.,* 2007, **35**(2), 210-229. doi: 10.1108/00907320710749146.
82. Gross, M. & Latham, D. Attaining information literacy: An investigation of the relationship between skill level, self-estimates of skill, and library anxiety. *Lib. Inf. Sci. Res.,* 2007, **29**, 332-353. doi: 10.1016/j.lisr.2007.04.012.
83. Reed, M. & Kinder, D. Collaboration between librarians and teaching faculty to teach information literacy at one Ontario university: experiences and outcomes. *J. Inf. Lit.,* 2007, **1**(3), 2-19.
84. Sonley, V.; Turner, D.; Myer, S. & Cotton, Y. Information literacy assessment by portfolio: A case study. *Ref. Serv. Rev.,* 2007, **35**(1), 41-70. doi: 10.1108/00907320710729355.
85. Ferguson, J.E.; Neely, T.Y. & Sullivan, K. A baseline information literacy assessment of biology students. *Ref. User Serv. Q.,* 2006, **46**(2), 61-71.
86. Ghosh, S.B. & Das, A.K. Information literacy initiatives in India with special reference to emerging knowledge economy. *In* International Conference on Information Literacy (ICIL 2006), 14-15 June 2006, Kuala Lumpur, Malaysia.
87. Kanamadi, S. & Vichare, V. Information literacy programmes for social scientists: A tool for harnessing e-resources. *SRELS J. Inf. Manage.,* 2006, **43**(3), 283–293.
88. Koneru, I. Strategic and collaborative approaches for fostering information literacy via an information portal. *DESIDOC J. Libr. Inf. Technol.,* 2006, **26**(6), 3-12. doi: 10.14429/djlit.26.6.3696.
89. Link, T.M. & Marz, R. Computer literacy and attitudes towards e-learning among first year medical students. *BMC Med. Educ.,* 2006, **6**(34). doi: 10.1186/1472-6920-6-34.
90. Mackey, T.P. & Jacobson, T.E. Integrating information literacy in lower and upper-level courses: Developing scalable models for higher education. *J. Gen. Educ.,* 2004, **53**(3/4), 201–224.
91. Pawinun, P. & Kemparaju, T.D. The information literacy program: A case of digital libraries. *SRELS J. Inf. Manage.,* 2004, **41**(1), 67-78.
92. Virkus, S. Information literacy in Europe: A literature. *Inf. Res.,* 2003, **8**(4).
93. Bruce, C.S. Workplace experiences of information literacy. *Int. J. Inf. Manage.,* 1999, **19**, 33-47. doi: 10.1016/S0268-4012(98)00045-0.
94. Shapiro, J.J. & Hughes, S.K. Information literacy as a liberal art. *Educom Rev.,* 1996, **31**(2). https://www.educause.edu/ir/library/html/erm/31231.html (Accessed on 12 August 2014).
95. Behrens, S.J. A conceptual analysis and historical overview of Information Literacy. *Coll. Res. Libr.,* 1994, **55**(4), 309-322. doi: 10.5860/crl_55_04_309.
96. Dunn K. Assessing information literacy skills in the California state university: A progress report. *J. Acad. Libr.*, 2002, **28**(1-2), 26-35. doi: 10.1016/S0099-1333(01)00281-6.
97. Streatfield, D. & Markless, S. Evaluating the impact of information literacy in higher education: Progress and prospects. *Libr*. 2008, **58**(2), 102-109. doi: 10.1515/libr.2008.012.
98. Dorner D.G. & Gorman G.E. Information literacy education in asian developing countries: Cultural factors affecting curriculum development and programme delivery. *IFLA J.,* 2006, **32**(4), 281-293. doi: 10.1177/0340035206074063.
99. Baro, E.E. A survey of information literacy education in library schools in Africa. *Libr. Rev.*, 2011, **60**(3), 202-217. doi: 10.1108/00242531111117263.
100. Wen, Jia Rong & Shih, Wen Ling. Exploring the information literacy competence standards for elementary and high school teachers. *Comput. Educ.,* 2008, **50**(3),787-806. doi: 10.1016/j.compedu.2006.08.011.
101. Catts, R. & Lau, J. Towards information literacy indicators. Paris, UNESCO. 2008. http://www.ifla.org/files/information-literacy/publications/towards-informationliteracy_2008-en.pdf (Accessed on 7 April 2020).
102. Lau, J. IFLA guidelines on information literacy for lifelong learning. 2006. http://www.ifla.org/files/assets/information-literacy/publications/ifla-guidelines-en.pdf. (Accessed on 2 July 2020)
103. Association of college and research libraries. Information literacy competency standards for higher education. 2000. https://alair.ala.org/bitstream/handle/11213/7668/ACRL%20Information%20Literacy%20Competency%20Standards%20for%20Higher%20Education.pdf?sequence=1&isAllowed=y (Accessed on 16 April 2020).
104. The Society of College, National and University Libraries. Information skills in higher education. 1999. https://www.sconul.ac.uk/sites/default/files/documents/Seven_pillars2.pdf. (Accessed on 6 October 2020).

CONTRIBUTORS

Dr N.B. Nisha is working as Assistant Librarian in Central Library, Kerala Agricultural University. She holds a PhD in Library and Information Science from the Pondicherry University. Her area of research interests include information literacy, digitisation, knowledge management, information retrieval and research ethics.

Her contributions in the current study are the data collection, data processing, review and summarising the literature, writing and editing of this paper.

Dr Rekha Rani Varghese is working as Assistant Professor and Head (i/c) of the Department of Library and Information Science in Pondicherry University.

In this study, she has guided and assisted in all areas of the research paper, mainly in drafting the paper.