

ASSESSING INFORMATION LITERACY COMPETENCY OF RESEARCH STUDENTS IN INDIA: A CASE STUDY

M. Bavakutty¹ and T. P. O. Nasirudheen²

¹Dept. of Library & Information Science,
Pondichery University, Pondichery – 605014, India

²Dept. of Library & Information Science,
Farook College, Calicut - 673632, India

e-mail: m.bavakutty@gmail.com; thareekanakam@gmail.com

ABSTRACT

The study presents the information literacy competency of the research scholars in the Kerala University, India. The study analyses the problems faced by the research scholars in formulation of research topic, identification and evaluation of information sources and designing the strategies of information retrieval. The study also attempts to determine the quality of information sources used by the research students and compare the information literacy competency of science and non-science students. The study implies that adequate measures have to be taken in higher educational and research institutions to equip the students with the information literacy skills even during their graduation/post-graduation period. The findings drive us to the urgency of information literacy programs to be taken up in our universities and research institutions not for one time, but rather on a continuous basis

KEYWORDS: Information literacy skills; User education programme; Research students; Science students; Non-science students

INTRODUCTION

The major role of librarian in rendering the effective documentary and information services has always been recognized as much important as the tools and techniques used in library organization, and information processing and retrieval. This role assumes more importance and requires more skills as the formats and numbers of these resources multiply, scholarly materials appear in more languages, bibliographical systems become more complicated and library and information communication technology grows increasingly sophisticated. The enlarged function of librarian as teacher in terms of providing assistance to students and teachers in teaching learning process and research work has only emphasized his full participation in the educational process. User education establishes the teaching function of librarian.

User education is a process or program through which the potential users of information are aware of the value of information and are motivated to use information resources. It is an instruction given to readers to help them make the best use of a library and should be a continuous process of education in which the various facets of communication are inextricably mixed (Tocatlian 1978). With the extensive application of computer, communication and networking technologies in information processing and retrieval a new term 'Information Literacy' being used to coincide with user education.

INFORMATION LITERACY

Information literacy is a set of abilities to recognize when information is needed and to locate, evaluate, effectively use and communicate information in its various formats. Information literacy is a new liberal art that extends from knowing how to use computers and access information to critical reflection on the nature of information itself, its technical

infrastructure, and its social, cultural and even philosophical context and impact (Hughes & Shapiro 1996).

Information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments, and to all levels of education. It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning. An information literate individual is able to “determine the extent of information needed, access the needed information effectively and efficiently, develop effective information search strategies, locate and retrieve information from appropriate resources, analyze and critically evaluate information and its sources, organize, synthesize, use and apply information, incorporate selected information into one’s knowledge base, use information effectively to accomplish a specific purpose, understand the economic, legal, and social issues surrounding the use of information and access and use information ethically and legally” (ACRL 2000).

Faculty members, researchers and students of the universities need to make efficient use of computer applications and be able to effectively find and assess information. They would need the skills to be able to: understand the basics of a desktop computer, access and follow the policies and procedures related to information technology services, create and use word-processed documents, create and use tables and spreadsheets, extract, import and present data, use electronic mail and use the Internet as a source of information. In some cases, they may also need the skills to be able to: undertake desktop publishing, Web author and publish, use university systems such as ESP, Maximo and Entire Connection, use statistical packages and databases (including Library databases), conduct advanced searches on the web and use bibliographical tools.

Information competence is the fusing or the integration of library literacy, computer literacy, media literacy, technological literacy, ethics, critical thinking, and communication skills. (Work Group on Information Competence 1995). An information user is to be competent in the identification, location, evaluation, effective and ethical use of information in a variety of formats must also develop the skills beyond the basic ones of reading and writing in other literacy: visual literacy, media literacy, computer literacy, digital literacy, network literacy and communication skills. Information literacy is an inclusive term through which other literacy can be achieved.

According to ACRL (2000), there are five standards and twenty-two performance indicators for assessing information literacy competency in higher education. The standards focus upon the needs of students in higher education at all levels. The standards also list a range of outcomes for assessing student progress toward information literacy. These outcomes serve as guidelines for faculty, librarians, and others in developing local methods for measuring student learning in the context of an institution’s unique mission. In addition to assessing all students’ basic information literacy skills, faculty and librarians should also work together to develop assessment instruments and strategies in the context of particular disciplines, as information literacy manifests itself in the specific understanding of the knowledge creation, scholarly activity and publication processes found in those disciplines.

METHODOLOGY

The present study aims at finding out the information literacy competency of the research scholars in the Kerala University, a premiere university in India. The study

analyses the problems faced by the research scholars in formulation of research topic, identification and evaluation of information sources and designing the strategies of information retrieval. The study also makes an attempt to determine the quality of information sources used by the research students and compare the information literacy competency of science and non-science students.

A questionnaire is designed and developed for collecting data to assess the information literacy competency of the research students of various departments and centers of the Kerala University on the basis of the assessment standards and performance indicators in relation to the promotion of research.

The questions are framed in relation to the nature and extent of the information needed by the research students, the effective and efficient access to the information, the critical evaluation of information and the sources, effective incorporation of the selected information into the existing knowledge system and the effective accomplishment of the specific purpose/mission of the research students.

The questionnaire was distributed to the fulltime research students working in various departments of Kerala University. The survey population consists of 513 research students from 39 research departments. Three hundred questionnaires were distributed, of which 267 questionnaires were returned. The sample includes 120 science researchers and 147 non-science researchers. The data has been tabulated, analyzed and response percentage for each question has been worked out and provided in the respective tables.

FINDINGS OF THE STUDY

The general information of research students were collected under four categories: gender, discipline, age and year of joining. Besides, the data were collected with regard to their information needs, information retrieval strategies and quality of information. The data were then analyzed and correlated with the categories of science and non-science research students.

Table 1: Gender Wise Analysis of the Research Scholars

Gender	Science	Non-science	Total
Male	71(47.02)	80(52.98%)	151(56.55%)
Female	49(42.24%)	67(57.76%)	116(43.45%)
Total	120(44.94%)	147(55.06%)	267(100%)

Table 2: Age Wise Analysis of the Research Scholars

Age	Science	Non-science	Total
<25	32(3.83%)	18(12.24%)	50(18.73%)
25-30	80(66.67%)	111(75.51%)	191(71.53%)
30-35	7(5.83%)	15(10.2%)	22(8.23%)
>35	1(.83%)	3(2.04%)	4(1.5%)
Total	120(100%)	147(100%)	267(100%)

Table 3: Year of Joining Wise Analysis of the Research Scholars

Year	Science	Non-science	Total
2003 - 04	16(13.33%)	12(8.16%)	28(10.49%)
2005 - 06	24(20%)	9(6.12%)	33(12.36%)
2007	49(40.83%)	33(22.45%)	72(26.97%)
2008	31(25.83%)	63(42.86%)	94(35.20%)
Total	120(100%)	147(100%)	267(100%)

Males dominated in both the categories of science and non-science research students (Table 1). But, the research students of non-science stream cutting across their gender are dominated over their counter partners of science stream (Table 2). The students aged between 25 and 30 are dominated in both the streams of science and non-science research followed by the students aged below 25 years old. A steady increase in the enrolment of students is generally visible in both the categories of science and non-science research (Table 3).

Nature and Extent of Information Needs

The nature and extent of information needs of research students were assessed by collecting and analyzing the data in response to the queries with regard to their methods of selecting research topic, familiarity with the subject of research topic, sources of recent information, format of information, ranking of information sources and frequency of internet resources.

While majority of science research students select their topic in consultation with their guide, only one-third of non-science students take the help of guide. A good number of non-science students select their research topic on their own by referring to the journals and recommendations of the previous studies. But the number of students selecting their research topic through Internet search is very meager in both the streams of science and non-science research. Table 4 presents these findings.

Table 4: Methods Used for Selection of the Research Topic

Methods	Science	Non-science	Total
With the help of Guide	80(66.66%)	33(22.44%)	113(42.32%)
By reading Journals	24(20%)	57(38.77%)	81(30.33%)
Through Internet searches	6(5%)	3(2.04%)	9(3.37%)
Recommendations given in previous studies	10(8.33%)	39(26.54%)	49(18.35%)
Others	0	15(10.3%)	15(5.62)
Total	120(100%)	147(100%)	267(100%)

The Internet is the most sought after source for the science research students to get familiar the subject of research. While more than half of the science students prefer journals next to internet, one quarter of them still prefer book as their first choice for getting familiar with the subject of research. Electronic database is only the fourth choice for the science students (Table 5).

Table 5: Sources Used for Getting Familiarity with the Subject by the Science Researchers

Sources	First preference	Second preference	Third preference	Fourth preference	Fifth preference
Journal	26(21.67%)	70(58.33%)	16(13.33%)	8(6.67%)	0(0%)
Book	30(25%)	10 (8.33%)	64(53.33%)	16(13.33%)	0(0%)
Encyclopedia	10(8.33%)	6(5%)	18(15%)	38(31.67%)	48(40%)
Database	14(11.67%)	2(1.67%)	14(11.67%)	26(21.67%)	64(53.33%)
Internet	40(33.33%)	32(26.67%)	8(6.67%)	32(26.67%)	8(6.67%)
Total	120(100%)	120(100%)	120(100%)	120(100%)	120(100%)

Books and journals are still the important sources for the non-science research students to get familiar with the subject of research topic. Electronic database and internet are not yet explored to the extent it deserves, but they still stand fourth and fifth in the order of preference respectively for the non-science research students to get familiar with the research subject. Cutting across the categories of science and non-science streams the research students seem to be not aware of the potential of encyclopedia as an important source for getting familiar with the subject of research topic (Table 6).

Table 6: Sources Used for Getting Familiarity with the Subject by the Non-Science Researchers

Sources	First preference	Second preference	Third preference	Fourth preference	Fifth preference
Journal	30(22.72%)	57(43.19%)	21(15.91%)	12(9.09%)	12(9.09%)
Book	57(43.19%)	36(27.27%)	24(18.18%)	12(9.09%)	3(2.27%)
Encyclopedia	0(0%)	3(2.27%)	12(9.09%)	15(11.36%)	72(54.55%)
Database	21(15.91%)	6(4.55%)	18(13.64%)	75(56.82%)	12(9.09%)
Internet	24(18.18%)	30(22.72%)	27(20.45%)	18(13.64%)	33(25%)
Others	-----	-----	30(22.73%)	----	----
Total	132 (100%)	132 (100%)	132(100%)	132(100%)	132 (100%)

Table 7: Sources Used for Current Information on Research Subjects

Sources	Science	Non-science	Total
Journal	11(9.17%)	39(26.53%)	50(18.72%)
Book	0	15(10.2%)	15(5.62%)
Encyclopedia	0	0	0
Dictionary	0	0	0
Internet	109(90.83%)	93(63.26%)	202(75.66%)
Total	120(100%)	147(100%)	267(100%)

Internet is the main source of current information which the research students of both science and non-science streams prefer first for getting the latest information on the topic of research. Journal is next to internet for both the categories for keeping abreast with the nascent information required for research. Table 7 presents these findings.

In the changing scenario of information sources, electronic database assumes a very important place among the formats used by the research students for current information search. But the print source is still relevant and not totally rejected by them. Majority of research students of both science and non-science streams seem to prefer both electronic and print media hand in hand for current information search (Table 8).

Table 8: Formats Used by the Research Students

Formats	Science	Non-science	Total
Electronic	16(13.33%)	21(14.28%)	37(13.86%)
Print	32(26.67%)	9(6.12%)	41(15.35%)
Both	72(60%)	117(79.6%)	189(70.79%)
Total	120(100%)	147(100%)	267(100%)

Table 9 depicts that electronic resources of e-journals, e-books and websites are the first preference of science students to cater to their information needs for pursuing research. Journal comes next to e-resources and more than half of the science research students consult journals for meeting their research needs. Books and reference sources are the least preference of science students for research purpose.

Table 9: Sources Used for Research by the Science Researchers

Sources	First preference	Second preference	Third preference	Fourth preference
Books	14(11.67%)	10(8.33%)	56(46.67%)	40(33.33%)
Journals	34(28.33%)	70(58.33%)	16(13.33%)	0(0%)
Internet resources	68(56.67%)	28(23.33%)	24(20%)	0(0%)
Reference sources	4(3.33%)	12(10%)	24(20%)	80(66.67%)

On the other hand, book is the most preferred source of non-science research students for catering to the information needs of their research. Journal comes next to books for this category of students. Internet and reference sources are the least sought after sources for them to pursue research (Table 10).

Table 10: Sources Used for Research by the Non-Science Researchers

Sources	First preference	Second preference	Third preference	Fourth preference
Books	60(40.82%)	30(20.4%)	30(20.4%)	27(18.37%)
Journals	15(10.2%)	75(51.02%)	42(28.57%)	15(10.2%)
Internet resources	30(20.4%)	33(22.45%)	54(36.73%)	30(20.4%)
Reference sources	42(28.57%)	9(6.12%)	21(14.28%)	90(61.22%)

Information retrieval strategies

The information retrieval strategies of research students were assessed by analyzing the data collected in response to queries with regard to gathering and organizing information, bibliographical search, online communication pattern, formatting the references, and search methods used in research.

Open access journals, e-journals and e-books are the most sought after internet resources of both the categories of research students and on-line catalogue comes next. Institutional repositories and document delivery service are the other two important e-resources that are not frequently consulted by the research students. Table 11 and 12 present these findings

Table 11: Frequency of use of Internet Resources by the Science Researchers

Usage	Open access journals	Institutional repositories	Document delivery service	E-journals/ E-books	On-Line catalogues
Frequently	96(80%)	6(5%)	8(6.67%)	80(66.67%)	24(20%)
Sometimes	20(16.67%)	85(70.83%)	64(53.33%)	40(33.33%)	16(13.33%)
Never	4(3.33%)	29(24.17%)	48(40%)	0(0%)	80(66.67%)

Table 12: Frequency of Use of Internet Resources by the Non-Science Researchers

Usage	Open access journals	Institutional repositories	Document delivery service	E-journals/ E-books	On-Line catalogues
Frequently	90(61.22%)	33(22.45%)	6(4.08%)	66(44.9%)	27(18.37%)
Sometimes	45(30.61%)	63(42.86%)	57(38.78%)	54(36.73%)	72(48.98%)
Never	12(8.16%)	51(34.69%)	84(57.14%)	27(18.37%)	48(32.65%)

Key-word search, phrase search, Boolean operators and truncation are the important methods generally adopted by information seekers while using search engines for the purpose of retrieving information on the Internet. But the research students of both science and non-science streams favoured mainly the use of key words while retrieving information (Table 13). The research students least use other three methods of search.

Table 13: Search Methods Used by the Research Students

Search methods	Science	Non-science	Total
Key words	96(80%)	123(83.67%)	219(82.02%)
Phrase search	16(13.33%)	9(6.12%)	25(9.36%)
Using Boolean operators	2(1.67%)	9(6.12%)	11(4.12%)
Truncation (+)	6(5%)	6(4.08%)	12(4.49%)

Bibliography is a value addition in the information retrieval search of research students. It enables to find documents in the field of their research and thus enhances their awareness of existing knowledge. The survey of information retrieval strategies confirms the fact that the bibliography is still an important tool for research students in the identification and location of relevant documents in the area of their interest and research. It is the frequently referred tool by research students to keep with

retrospective and current developments in their research field. Glossary, index and table of contents are the other tools but not frequently referred by the research students. Table 14 presents these findings.

Table 14: Sections of the Sources Used For Identification and Location of Relevant Documents

Sections of the sources	Science	Non-science	Total
Table of contents	6(5%)	27(18.37%)	33 (12.35%)
Bibliography/ references	94(78.33%)	111(75.51%)	205 (76.77 %)
Glossary	5(4.17%)	6(4.08%)	11(4.11%)
Index	15(12.5%)	3(2.04%)	18 (6.74%)

Print media and electronic resources available in libraries are the most frequently used sources for gathering information required for research input by both science and non-science research students. However, some research students only used the web search engines for retrieving information required for the research input (Table 15).

Table 15: Sources Used for Information Gathering

Sources	Science	Non-science	Total
Printed and electronic materials available through libraries	88(73.33%)	117(79.59%)	205(76.77%)
Materials find using web search engines	32 (26.67%)	30(20.41%)	62(23.22%)
Total	120 (44.94)	147 (55.05%)	267 (100%)

More of the non-science research students compared to science research students prepared notes on paper for organizing information (Table 16). On the other hand, nearly half the number of science research students prepared notes on paper as well as using computer for organizing the information they gathered for research input. A few non-science research students still use the conventional methods like writing in the cards to organize the information.

Table 16: Methods Used for Organizing Information

Methods	Science	Non-science	Total
Notes prepared on paper	59(49.17%)	98(66.67%)	157 (58.8%)
Notes Prepared using computer	61(50.83%)	37(25.17 %)	98(36.7%)
Others	0(0%)	12(8.16%)	12(4.49%)

While all the science research students are literate enough to use online communication system such as e-mail for their research purpose, some of the non-science students did not use the online communication system at all for access, retrieval and exchange of information for the purpose of research (Table 17).

Table 17: Use of Online Communication Systems

Response	Science	Non-science	Total
Yes	120(100%)	126(85.71%)	246(92.13%)
No	0(0%)	21(14.29%)	21(7.87%)

It may be noted that while a good number of science research students face problems in rendering bibliographical references and URL citations, the number of non-science students facing these problems comparatively is very less. About half of the research students (46%) do not find any specific problems in formatting references and / URL addresses (Table 18).

Table 18: Problems Faced by the Research Students in Formatting References

Problems	Science	Non-science	Total
Bibliographical references	48(40%)	37(25.17%)	85(31.84%)
URL citations	40(33.33%)	20(13.61%)	60(22.47%)
Nothing specific	32(26.67%)	90(61.22%)	122(45.69%)

The nature, specificity and currency of information vary according to document type. The location of a document depends on the identification of its type, which is made easy by interpreting the bibliographic reference of the document. The ability of research student to identify document type from a given citation is useful in assessing the relevance of the source for catering to his information needs. It is therefore important for a research student to be able to identify the document type corresponding to a citation. A majority of research students of both science and non-science streams are found to be able to easily identify journal articles through the citation, but a little more than a quarter of them failed to identify the journal articles through the citation (Table 19).

Table 19: Identification of Citations by the Research Students

Citation	Science	Non-science	Total
Book	20(16.67%)	12(8.16%)	32(11.99%)
Journal article	88(73.33%)	108(73.47%)	196(73.41%)
Chapter in an edited book	0(0%)	3(2.04%)	3(1.12%)
News paper article	0(0%)	0(0%)	0(0%)
Web page	0(0%)	0(0%)	0(0%)
Don't know	12(10%)	24(16.33%)	36(13.48%)

American Psychological Association (APA) style, Modern Language Association (MLA) style and Chicago style are the important writing styles of citation of research papers and journal articles. But a large majority of science research students and a little more than half of non-science research students are familiar with none of these citation styles (Table 20). If at all they are familiar with any such citation style, it is the MLA style only with which 30 percent of non-science students are familiar. It may be also noted that more than half the number of research students are not able to decide the right keywords of research papers and journal articles.

Table 20: Style Manuals Used by the Research Students

Style manuals	Science	Non-science	Total
MLA	0(0%)	45(30.61%)	45(16.86%)
APA	24(20%)	12(8.16%)	36(13.48%)
Chicago	8(6.67%)	9(6.12%)	17(6.37%)
Don't know	88(73.33%)	81(55.1%)	169(63.29%)

Quality of Information

The quality of research output depends on quality of information used for research input. Quality is considered as a relative indicator and is judged differently different persons. The quality of information the research students retrieved is assessed by collecting and analyzing the data obtained in response to the queries regarding the evaluation of quality of information from journals and internet. The quality is assessed on the basis of accuracy, authority, objectivity and currency and coverage. It is to be appreciated that a large majority of research students (90%) are concerned about the quality of information they retrieved.

While science research students consider authority as the most important quality (Table 21), accuracy is the first quality for non-science research students (Table 22). Currency and coverage are least considered by both the categories and objectivity and accessibility are considered to be in between them.

Table 21: Quality of Information: Perception of Science Researchers

Characteristics	First preference	Second preference	Third preference	Fourth preference	Fifth preference	Sixth preference
Accuracy	26(25%)	38(36.53%)	8(7.69%)	32(30.77%)	0(0%)	0(0%)
Authority	46(44.23%)	18(17.3%)	17(16.35%)	15(14.42%)	8(7.69%)	0(0%)
Objectivity	12(11.54%)	28(26.92%)	40(38.46%)	24(23.08%)	0(0%)	0(0%)
Currency	0(0%)	0(0%)	10(9.62%)	6(5.77%)	48(46.15%)	40(38.46%)
Coverage	0(0%)	8(7.69%)	6(5.77%)	2(1.92%)	40(38.46%)	48(46.15%)
Easy to access	20(19.23%)	12(11.53%)	23(22.12%)	25(24.03%)	8(7.69%)	16(15.38%)

Table 22: Quality of Information: Perception of Non-Science Researchers

Characteristics	First preference	Second preference	Third preference	Fourth preference
Date of publication	25(22.32%)	64(57.14%)	7(6.25%)	7(6.25%)
Responsibility	15(13.39%)	7(6.25%)	65(58.03%)	24(21.43%)
Authority	41(36.6%)	15(13.39%)	31(27.68%)	8(7.14%)
Accessibility	31(27.68%)	26(23.21%)	9(8.04%)	46(41.07%)

Internet has become the main source for research students to identify, locate and retrieve information. Since the information on a web site is not always evaluated or checked before it is posted, it is imperative that students be made aware of the need to critically evaluate it.

Authority is the most important characteristic for evaluating a website. More than one-third of research students of both science and non-science streams consider the authority as the first criteria for evaluating a website. While one-quarter of science research students consider accessibility of Internet site as important, the indication of responsibility is the first preference for one-quarter of non-science research students. Majority of science research students seem to be very particular about date of posting of information on the website, but the non-science research students are concerned with the indication of responsibility of site. Table 23 and 24 present these findings.

Table 23: Characteristics of Internet Quality: Perception of Science Researchers

Characteristics	First preference	Second preference	Third preference	Fourth preference	Fifth preference	Sixth preference
Accuracy	57(42.22%)	36(26.67%)	24(17.78%)	9(6.67%)	6(4.44%)	3(2.22%)
Authority	30(22.22%)	39(28.89%)	30(22.22%)	24(17.78%)	12(8.89%)	0(0%)
Objectivity	30(22.22%)	30(22.22%)	27(20%)	30(22.22%)	6(4.44%)	12(8.89%)
Currency	3(2.22%)	12(8.89%)	0(0%)	30(22.22%)	54(40%)	36(26.67%)
Coverage	0(0%)	3(2.22%)	18(13.33%)	3(2.22%)	42(31.11%)	69(51.11%)
Easy to access	15(11.11%)	15(11.11%)	36(26.67%)	39(28.89%)	15(11.11%)	15(11.11%)

Table 24: Characteristics of Internet Quality: Perception of Non-Science Researchers

Characteristics	First preference	Second preference	Third preference	Fourth preference
Date of publication	27(20.45%)	21(15.91%)	60(45.45%)	24(18.18%)
Responsibility	33(25%)	60(45.45%)	30(22.73%)	9(6.8%)
Authority	48(36.36%)	42(31.82%)	36(27.27%)	6(4.55%)
Accessibility	24(18.18%)	9(6.82%)	6(4.55%)	93(70.46%)

A scholarly journal contains theoretical discussion and research output on a specialized topic. The quality of information presented in journals directly effect the input and output of research as the scholarly journals are an important source of information for research as well as an important channel of distribution of research results which in turn is used for further research (Table 25 and 26)

Table 25: Quality of journals: Perception of the Science Researchers

Qualities	First preference	Second preference	Third preference	Fourth preference
Information written for layman	7(5.83%)	24(20%)	16(13.33%)	73(60.83%)
List of references	0(0%)	3(26.67%)	56(46.67%)	32(26.67%)
Research method	48(40%)	58(48.33%)	14(11.67%)	0(0%)
Evaluated by an editorial board	65(54.17%)	6(5%)	34(28.33%)	15(12.5%)

Table 26: Quality of journals: Perception of the Non-Science Researchers

Qualities	First preference	Second preference	Third preference	Fourth preference
Information written for layman	9(6.82%)	6(4.55%)	15(11.36%)	102(77.27%)
List of references	30(22.72%)	57(43.18%)	36(27.27%)	9(6.81%)
Research method	51(38.63%)	54(40.9%)	27(20.45%)	0(0%)
Evaluated by an editorial board	42(31.81%)	15(11.36%)	54(40.9%)	21(15.9%)

Evaluation of scholarly articles by an editorial board is the most important characteristic for assessing the quality of a journal by the science research students, but description of research methods is the important criteria of non-science research students for

evaluating the quality of scholarly journals. The science research students least consider the list of references given in journals for evaluating the quality of journals, but the non-science research students consider it to some extent. Writing style with a slant to laymen is also not considered by both the categories for evaluation of quality of scholarly journals.

DISCUSSION

The study revealed that the male students aged between 25 and 30 are dominated in research activities. Non-science has got a little edge over the science with respect to number of research students cutting across their gender. It may be due to more career opportunities for science students after graduation/post-graduation. However, a steady increase is visible in both science and non-science research. It is the practice of science students to select the topic of research in consultation with their guide, on the other hand a good number of non-science students select their research topic on their own by referring to the journals and recommendations of the previous studies.

The Internet is the most sought after source for the science research students to get familiar with the subject of research. Internet is the main source of current information followed by journals, which the research students of both science and non-science streams prefer for keeping abreast with the nascent information required for research. E-journals, e-books and websites are the electronic sources the science research students used to cater to their information needs for pursuing research.

Books and journals are still the important sources for the non-science research students to get familiar with the research topic. Book is the most preferred source of non-science research students for catering to the information needs of their research. Internet and reference sources are the least sought after sources for them to pursue research.

The print source is still relevant and not totally rejected by science research students. Majority of research students of both science and non-science streams seem to prefer both electronic and print media hand in hand for current information search. Journal comes next for both these categories. But electronic databases are not yet explored to the extent it deserves by both the categories of research students.

Open access journals, e-journals and e-books are the most sought after internet resources of both the categories of science research students. Research students of both science and non-science streams favoured the use of key words while retrieving information on Internet through search engines.

The bibliography is still an important tool for research students in the identification and location of relevant documents in the area of their interest and research. It is the frequently referred tool by research students to keep with retrospective and current developments in their research field. Print media and electronic resources available in libraries are the most frequently used sources for gathering information for research input. While two-third of non-science research students used notes on paper for organizing the information they collected, half the number of science research students used to prepare notes using computer for this purpose.

The research students are generally literate enough to use online communication system such as e-mail for their research purpose and for access, retrieval and exchange of

information for the purpose of research. A majority of research students of both science and non-science streams are found to be able to easily identify journal articles through the citation.

A good number of science research students face problems in formatting references and URL address, the number of non-science students facing these problems is comparatively very less. A large majority of science research students and a little more than half of non-science research students are familiar with none of the citation styles such as MLA, APA, and Chicago. It may be also noted that more than half the number of research students are not able to identify the right key-words of research papers and journal articles.

It is to be appreciated that a large majority of research students (90%) are concerned about the quality of information they retrieved. Generally, authority is the most important characteristic for evaluating a website, more than one-third of research students of both science and non-science streams consider the authority as the first criteria for evaluating a website. While authority is considered as the most important quality by science research students, accuracy is the first quality for non-science research students. The science research students consider evaluation of scholarly articles by an editorial board as the most important characteristic for assessing the quality of a journal, but description of research methods is the important criteria of non-science research students for evaluating the quality of scholarly journals.

CONCLUSION

The study vividly implies that adequate measures have to be taken in higher educational and research institutions to equip the students with the information literacy skills even during their graduation/post-graduation period. The findings drive us to the urgency of information literacy programs to be taken up in our universities and research institutions not for one time, but rather on a continuous basis.

Short term and long term orientation and training programs should be conducted for students, researchers and teachers to develop their Information literacy skills in search and retrieval strategies from not only internet and other online communication systems and electronic sources but also from traditional print sources like bibliography, journal etc. Whatever attempts made at developing the information literacy skills of research students will certainly go a long way in promoting the research activities and improve the quality of research. Universities and research institutions should set up training and research centres for promoting information literacy of user community.

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