Noorhidawati, et al. (Eds.): ICOLIS 2016, Kuala Lumpur: LISU, FCSIT, 2016: pp 145-162

Seven Pillars of Information Literacy Skills: A Gender-Based Evaluation

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ABSTRACT
The study reports the information literacy skills of full-time hostelling Ph.D research scholars of Madurai Kamaraj University, Madurai, Tamilnadu, India. All the seven skills of information literacy as proposed in SCONUL model were tested with the respondents. The study aims to understand the awareness and knowledge of the respondents on various information literacy skills and their intention to have either a paper or a course on information literacy in Universities. The full time hostelling Ph.D scholars who have attended the users meet programme organized by the University Library, Madurai Kamaraj University, Madurai on 'Anti-Plagiarism Tools' in the Month of April, 2016 constitute the population for the present study. Out of 130 hostellers attended, 100 were selected using random sampling method. A well-structured 2 page questionnaire was used to collect data from the respondents. Female scholars are more skilled than male scholars in the pillar 'Identify'. While male scholars are strong in search techniques and use of controlled vocabularies, female scholars are good at defining search strategies. The male scholars are better in all the IL skills placed under the pillars 'Gather' and 'Evaluate' than the female scholars. The male scholars are strong in the a) use of statistical software and b) awareness of plagiarism. The female scholars are strong in referencing and use of bibliographical softwares. The male scholars are strong in analysing and presenting data, using appropriate publication media and in synthesizing and appraising information than their counterparts. The female scholars are strong in summarizing and reporting verbally and in writing than male scholars. 100% of respondents favoured the introduction of IL as a paper in Universities. The study will give an insight to the university authorities and library professionals on the information literacy skills of the scholars so as to plan fruit-bearing programmes, workshops, orientations or courses to improve their information literacy skills.

Keywords: information literacy, research scholars, SCONUL 7 pillars, evaluation, synthesis

INTRODUCTION

Literacy is a simple process of acquiring basic cognitive skills. Literacy is using these skills in ways that contribute to socio-economic development. Literacy is developing the capacity for social awareness and critical reflection as a basis for personal and social change.

Information Literacy is the set of skills and knowledge needed to be able to access technological resources and assess their accuracy, reliability, and credibility. Information Literacy is focused on content, analysis, searching and evaluation of information.

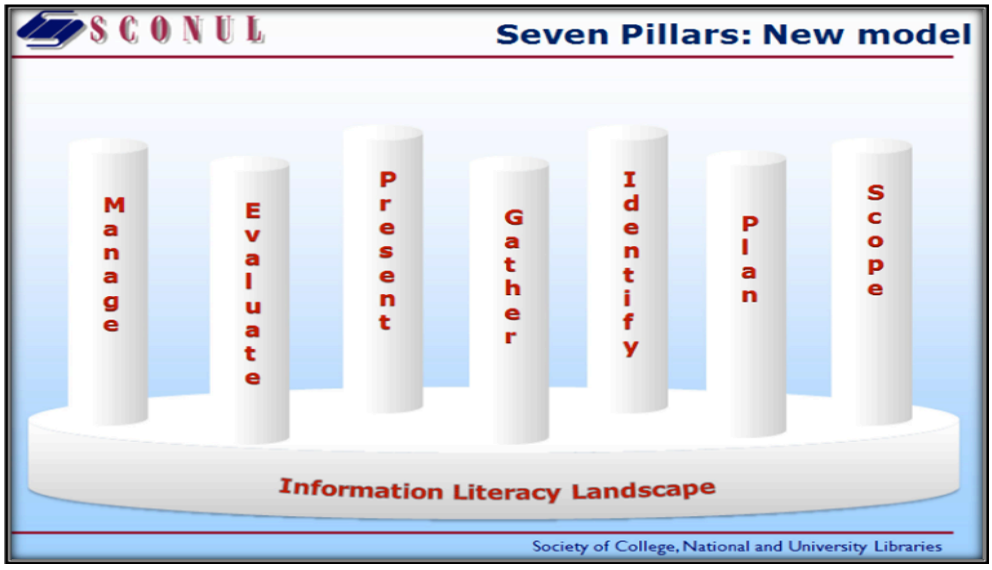
Information literacy is a set of abilities requiring individuals to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association, 1989).

SCONUL 7 Pillars Model of Information Literacy

The "seven pillars" model was introduced by the Society of College, National, and University Libraries, UK (SCONUL) in 1999. It was revised and published in 2011. It comprises of 7 IL Skills: Identify, Scope, Plan, Gather, Evaluate, Manage and Present. These seven pillars indicate seven sets of information literacy abilities and understandings.

Each pillar is further described by a series of statements relating to a set of skills/competencies and a set of attitudes/understandings. It is expected that as a person becomes more information literate they will demonstrate more of the attributes in each pillar and so move towards the top of the pillar.

Identify: Able to identify a personal need for information
Scope: Can assess current knowledge and identify gaps
Plan: Can construct strategies for locating information and data
Gather: Can locate and access the information and data they need
Evaluate: Can review the research process and compare and evaluate information and data
Manage: Can organize information professionally and ethically
Present: Can apply the knowledge gained; presenting the results of their research, synthesizing new and old information and data to create new knowledge and disseminating it in a variety of ways.



LITERATURE REVIEW

Awareness of Students

Majority of university students had information needs on their academic engagements *(Issar, Amusan, Olarongbe, Igwe & Oguntayo, 2015)*. The Undergraduate students at Sultan Qaboos University showed high rates of information literacy skills. Among the Big6 skills synthesis was ranked first, while the skill of location and access scored the lowest *(Al-Aufi and Al-Azri, 2013).* The students of universities were able to specify their information needs. A majority of the faculty and students rated their skills high in accessing information in print and electronic format. For evaluating information in print format most of the respondents rated their skills very high whereas in electronic format most of them rated their average skills *(Lata and Sharma, 2013).*

A majority of university students possess knowledge of MS-office, social networking sites and e-mail. Among six types of internet searching tools, search engines and wiki are the most common, while blogs, online bibliographic databases and subject gateways/portals are less frequent *(Kaur, Sarman and Rani, 2012).* The total mean score of university students and faculty members about attitudes towards a) 'information literacy' is 235.97 out of 336; b) 'nature and extent of information needed' is 39.12 out of 56; c) 'access to information' is 61.76 out of 88; d) 'evaluation of information' is 70.52 out of 100; e) 'information use' is 28.69 out of 40 and f) 'economic, legal, and social issues of information use' is 35.87 out of 52 *(Hassan and Nikam, 2012).*

The university bio-science students were able to know the need of information on a topic; to select different information finding tools to search information; to select suitable search terms and construct effective searches; to evaluate the Internet resources by using all important criteria such as reliability, validity, authority, accuracy, timeliness, etc. *(Biradar and Swapna, 2011).* Simple keyword search was used by a majority of university science students for searching and retrieving information from a database while few students used field search (title, URL etc.) technique *(Sasikala and Dhanraju 2011).*

One fifth of university students and scholars use e-books, e-journals and e-theses. Majority of them are aware of digital resources *(Sevukan and Brahma 2011).* A majority of the research scholars are able to identify, locate, collect, evaluate and use the required information *(Vasudevan, 2012).*

Problems

Many students of University of Ilorin, Nigeria considered difficulty in identifying their information needs *(Issar et al. 2015).* Majority of the respondents lack awareness regarding directories, encyclopaedias, subject journals etc. Nearly two-thirds of the total respondents are not able to use the Internet *(Kanfade 2014).* Students had limited skills in the area of information literacy, as it is not discussed extensively in their academic course curriculum *(Islam and Rahman 2014)*.

A majority of respondents have low knowledge of information literacy skills and showed high deficiency in identifying diverse information sources *(Julie and Christopher 2014)*. University Students understanding of search strategies, especially in the use of Boolean operator was seen to be very poor *(Ukpebor and Emojorho 2012*).

Variables causing difference in the Skills

Significant statistical differences were found in the information literacy skills of university students attributed to their specialization, gender, English fluency, and computer skills *(Al-Aufi and Al-Azri 2013)*. Satisfactory and significant differences exist between the information literacy competency of the first and second year university students along with the impact of various user education programmes *(Singh and Manoj 2013)*. Compared to research scholars in humanities and languages, the research scholars in science showed more awareness in information literacy skills *(Vasudevan 2012)*.

Suggestions

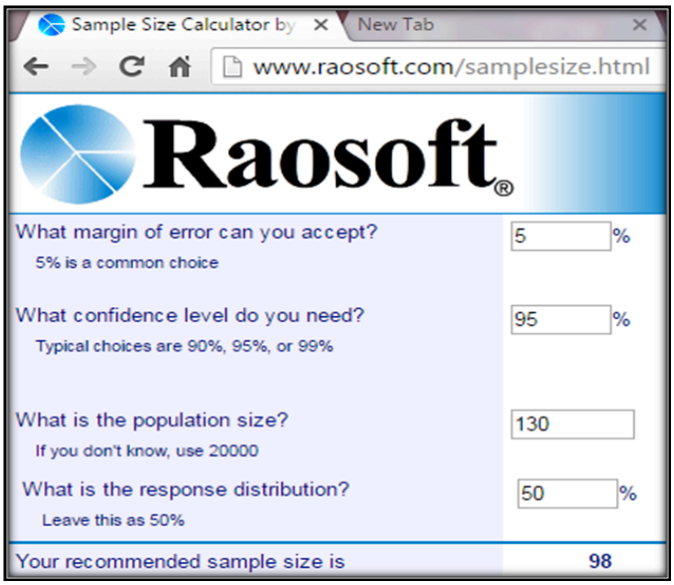
University authorities should consider the teaching of IL as a course to fresh students *(Issar et al. 2015).* University take steps to impart computer literacy and information literacy programmers to the students *(Kanfade 2014).* The incorporation of an information literacy program in the course curriculum is essential to make the students more information literate *(Islam and Rahman 2014)*. The information literacy skills should be integrated into the secondary and tertiary schools' curricula *(Julie and Christopher 2014).*

Research Gap

The researchers have found that though many studies were conducted to understand the information literacy skills of post graduate students, scholars and faculty member of various universities and higher education institutions, rarely any research was undertaken about the full time Ph.D Scholars staying in the university hostels. And also, no study was undertaken on the information literacy skills of the respondents using SCONUL seven pillar model. So, the researchers have decided to undertake the present study.

RESEARCH DESIGN

It is a descriptive cum-evaluative study. The full time Ph.D scholars who have attended the 'users meet programme' organized by the University Library on 'Anti-Plagiarism Tools' in the Month of April, 2016 constitute the population for the present study. 130 hostellers (65 male and 65 female) attended the programme. According to Raosoft sample size calculator www.raosoft.com/samplesize.html), the minimum recommended sample size for the population of 130 respondents is 98 at 95% confidence level with a margin of error of 5 %. So, 100 respondents selected using random sampling method. The researchers used stratified sampling to divide the sample into male and female.



A well structured 2 page questionnaire was designed to collect required data from the selected 100 respondents. The questions for IL Competency Assessment were taken from 'seven pillar model' enunciated by SCONUL with little modification and simplification made by the researchers. The questionnaires were distributed to 100 respondents during the tea break of the user meet programme held in the University Library, Madurai Kamaraj University, Madurai in April 2016. The same was collected back from them after the valedictory function.

The collected data was entered directly in SPSS Version 17. Tables, Custom and Cross tables were created using SPSS. Statistical tools necessary to test the hypotheses were also availed from SPSS. Statistical tools used in the study:

- Mean
- Standard Deviation
- Chi-Square Test
- Percentage Analysis

Objectives of the Study

- To measure the information literacy competencies of male and female research scholars in
    - Identifying the need for information
    - Assessing the current knowledge and identifying gaps
    - Constructing strategies for locating information
    - Locating and accessing information needed
    - Reviewing, comparing and evaluating information
    - Organizing information professionally and ethically
    - Applying, presenting, synthesizing and disseminating information
- To get respondents' views on introducing IL as a paper in university courses.

Hypothesis

H_o: There is no association between gender of the respondents and their information literacy skills (7 Pillars).

RESULTS

Gender Vs. Department-wise Distribution of Respondents

Table 1 shows that 47% of the Ph.D scholars belong to science departments, 23 % them belong to social science while 30% belong to language departments. Female research scholars are more in science (28) and language departments (17) while male research scholars are more in science departments (19), in this study.

Table 1: *Gender Vs. Department-wise Distribution of Respondents*

Gender	Department			Total
	Science	Social Science	Language	
Male	19	18	13	50
	40.4%	78.3%	43.3%	50.0%
Female	28	5	17	50
	59.6%	21.7%	56.7%	50.0%
Total	47	23	30	100
	100.0%	100.0%	100.0%	100.0%

Gender Vs. IL Pillar 1: Identify

Table 2 shows that almost half of both male and female scholars agree that they can identify a lack of knowledge, identify a search topic and use the background information. Around $1/4^{th}$ of both male and female scholars disagree that they can identify a lack of knowledge and can use the background information.

The skill 'Define Search Topic' is high among both male and female scholars (M=2.12, SD = .591). All the three skills – 'Define search topic' (M=2.14, SD = .606), 'Use background information' (M=2.08, SD = .724) and 'Identify lack of knowledge' (M=2.06, SD = .740) have the highest mean value score of Female scholars. Female scholars are more skilled (M=2.09) than male scholars (M=2.01) in the pillar 'Identify'.

The overall mean value of respondents' skills for the Identification of the need for information is 2.05. It clearly shows that the maximum number of respondents agree with the above skills. The chi-square analysis shows that there is no statistically

significant difference between male and female scholars in identifying the need for information as p-value is more than 0.05 in all the cases.

Table 2: *Gender Vs. IL Skill Set – IDENDIFY*

IL Skills		Gender					
		Male		Female		Total	
	Level	Count	%	Count	%	Count	%
I can identify a lack of knowledge in my subject area	DA	16	32.0%	12	24.0%	28	28.0%
	AG	25	50.0%	23	46.0%	48	48.0%
	SA	9	18.0%	15	30.0%	24	24.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can identify a search topic / question &define it using simple terms	DA	6	12.0%	6	12.0%	12	12.0%
	AG	33	66.0%	31	62.0%	64	64.0%
	SA	11	22.0%	13	26.0%	24	24.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can use the background information to underpin the search	DA	11	22.0%	11	22.0%	22	22.0%
	AG	25	50.0%	24	48.0%	49	49.0%
	SA	14	28.0%	15	30.0%	29	29.0%
	Total	50	100.0%	50	100.0%	100	100.0%

Note. DA = Disagree ; AG = Agree ; SA = Strongly Agree

IL Skills	*Male*		*Female*		*Total*		X^2	*p*
	M	SD	M	SD	M	SD		
Identify Search topic	2.10	.580	2.14	.606	2.12	.591	.229	.892
Use Background Information	2.06	.712	2.08	.724	2.07	.714	.055	.973
Identify lack of knowledge	1.86*	.700	2.06	.740	1.96	.724	2.155	.340
Mean of Mean	2.01		2.09		2.05			

Note. M = Mean; SD = Standard Deviation
Mean Calculation: Male – Lack of knowledge = (16X1 + 25X2 + 9X3)/50 = 1.86*

Gender Vs. IL Pillar 2: Assess

Table 3 shows that nearly half of the respondents agree that they can identify the types of information that will best meet the needs. Half of the female respondents agree that

they identify available search tools and half of the male respondents agree that they can identify different formats.

Table 3: *Gender Vs. IL Skill Set – ASSESS*

IL Skills	Level	Gender					
		Male		Female		Total	
		Count	%	Count	%	Count	%
I can identify which types of information will best meet the need	DA	8	16.0%	6	12.0%	14	14.0%
	AG	26	52.0%	24	48.0%	50	50.0%
	SA	16	32.0%	20	40.0%	36	36.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can Identify the available search tools	DA	12	24.0%	5	10.0%	17	17.0%
	AG	21	42.0%	29	58.0%	50	50.0%
	SA	17	34.0%	16	32.0%	33	33.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can identify different formats in which information may be provided	DA	11	22.0%	14	28.0%	25	25.0%
	AG	24	48.0%	18	36.0%	42	42.0%
	SA	15	30.0%	18	36.0%	33	33.0%
	Total	50	100.0%	50	100.0%	100	100.0%

IL Skills	Male		Female		Total		X^2	p
	M	SD	M	SD	M	SD		
Best information to meet my need	2.16	.681	2.28	.671	2.22	.675	.810	.667
Search tools	2.10	.763	2.22	.616	2.16	.692	4.193	.123
Different format	2.08	.724	2.08	.804	2.08	.761	1.490	.475
Mean of Mean	2.11		2.19		2.15			

Note. M = Mean; SD = Standard Deviation

Gender Vs. IL Pillar 3: Plan

Table 4 shows that only least number of respondents (say 5 to 14) disagree with all the three skills. More female scholars agree with first skill and third skill while more male respondents agree with the second skill.

While male scholars are strong in 'search techniques' (M=2.18, SD=.748) and 'use of controlled vocabularies' (M=2.12, SD=.689) , female scholars are good at 'defining

search strategies' (M=2.36, SD=.663). Female scholars are more skilled (M=2.19) than male scholars (M=2.14) in the pillar 'Plan'.

Table 4: *Gender Vs. IL Skill Set – PLAN*

IL Skills	Level	Gender					
		Male		Female		Total	
		Count	%	Count	%	Count	%
I can define a search strategy by using appropriate keywords and defining and setting limits	DA	5	10.0%	5	10.0%	10	10.0%
	AG	34	68.0%	22	44.0%	56	56.0%
	SA	11	22.0%	23	46.0%	34	34.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can select the most appropriate search tools	DA	10	20.0%	8	16.0%	18	18.0%
	AG	21	42.0%	28	56.0%	49	49.0%
	SA	19	38.0%	14	28.0%	33	33.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can identify controlled vocabularies to aid in searching if appropriate	DA	9	18.0%	14	28.0%	23	23.0%
	AG	26	52.0%	17	34.0%	43	43.0%
	SA	15	30.0%	19	38.0%	34	34.0%
	Total	50	100.0%	50	100.0%	100	100.0%

IL Skills	Male		Female		Total		X^2	p
	M	SD	M	SD	M	SD		
Search strategy Keywords	2.12	.558	2.36	.663	2.24	.622	6.807	.033
Search Techniques	2.18	.748	2.12	.659	2.15	.702	1.980	.372
Controlled vocabulary	2.12	.689	2.10	.814	2.11	.751	3.441	.179
Mean of Mean	2.14		2.19		2.17			

Note. M = Mean; SD = Standard Deviation

The overall mean value of respondents' skills for the construction of strategies for locating information is 2.17. It clearly shows that the maximum number of respondents agree with the above skills. The chi-square analysis shows that there is no statistically significant difference between male and female scholars in selecting search tools and using controlled vocabularies as p-value is more than 0.05 in all the cases. But there is a statistically significant difference between male and female scholars in defining search strategies using correct keywords.

Gender Vs. IL Pillar 4: Gather

Table 5: *Gender Vs. IL Skill Set – GATHER*

IL Skills	Level	Gender					
		Male		Female		Total	
		Count	%	Count	%	Count	%
I can access full text information (both print and digital)	DA	7	14.0%	15	30.0%	22	22.0%
	AG	24	48.0%	21	42.0%	45	45.0%
	SA	19	38.0%	14	28.0%	33	33.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can read and download online material &data	DA	4	8.0%	10	20.0%	14	14.0%
	AG	20	40.0%	18	36.0%	38	38.0%
	SA	26	52.0%	22	44.0%	48	48.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can keep up- to- date with new information	DA	7	14.0%	15	30.0%	22	22.0%
	AG	28	56.0%	22	44.0%	50	50.0%
	SA	15	30.0%	13	26.0%	28	28.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can engage with the community to share information	DA	11	22.0%	20	40.0%	31	31.0%
	AG	28	56.0%	15	30.0%	43	43.0%
	SA	11	22.0%	15	30.0%	26	26.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can find /use online, personal and printed help	DA	5	10.0%	10	20.0%	15	15.0%
	AG	27	54.0%	25	50.0%	52	52.0%
	SA	18	36.0%	15	30.0%	33	33.0%
	Total	50	100.0%	50	100.0%	100	100.0%

IL Skills	Male		Female		Total		X^2	p
	M	SD	M	SD	M	SD		
Download online materials	2.44	.644	2.24	.771	2.34	.714	3.010	.222
Personal help	2.26	.633	2.10	.707	2.18	.672	2.016	.365
Full text information	2.24	.687	1.98	.769	2.11	.737	3.867	.145
Up-to-date information	2.16	.650	1.96	.755	2.06	.708	3.772	.152
Share the information	2.00	.670	1.90	.839	1.95	.757	7.159	.028
Mean of Mean	2.22		2.04		2.13			

Note. M = Mean; SD = Standard Deviation

Table 5 shows that half of the males agree that they possess all skills while half of them strongly agree that they can download online materials. Around 30% of female scholars agree and strongly agree with all the above IL skills.

The male scholars (M=2.22) are strong in all the IL skills placed under the pillar 'Gather' than the female scholars (M=2.04).

The overall mean value of respondents' skills for the location and accessing of information is 2.13. It clearly shows that the maximum number of respondents agree with the above skills. The chi-square analysis shows that there is a statistically significant difference between male and female scholars in 'engaging with the community to share information' as p-value is less than 0.05. And there is no statistically significant difference between male and female scholars in other skills.

Gender Vs. IL Pillar 5: Evaluate

Table 6 discloses that half of the male and female scholars agree that they can distinguish difference information sources and read critically. One-third of male and female scholars strongly agree that they can assess the quality and credibility of information found.

The male scholars (M=2.18) are strong in all the IL skills placed under the pillar 'Evaluate' than the female scholars (M=2.10).

The overall mean value of respondents' skills for reviewing, comparing and evaluating information is 2.14. It clearly shows that the maximum number of respondents agree with the above skills. The chi-square analysis shows that there is no statistically significant difference between male and female scholars and their IL skills of 'Evaluate' pillar as p-value is more than 0.05.

Gender Vs. IL Pillar 6: Manage

Table 7 shows that one-fifth of the respondents disagree that they use bibliographical softwares like zotero, mendeley to manage information, they cite sources using specific reference styles and know the implications of plagiarism. But around 80 % of the respondents are quite familiar with statistical softwares like SPSS and Excel.

The male scholars are strong in the 'use of statistical software' (M=2.26, SD - .600) and 'awareness of plagiarism' (M=1.98, SD = .845). The female scholars are strong in 'referencing' (M=1.82, SD=.) and 'use bibliographical softwares' (M=1.84, SD=.817).

The overall mean value of respondents' skills for the organization of information professionally and ethically is 1.90. It clearly shows that a good number of respondents are not good at the aforesaid skills. The chi-square analysis shows that there is a statistically significant difference between male and female scholars in the 'use of

various statistical software' as the p-value is less than 0.05. And there is no statistically significant difference between male and female scholars in other skills.

Table 6: *Gender Vs. IL Skill Set – EVALUATE*

IL Skills	Level	Gender					
		Male		Female		Total	
		Count	%	Count	%	Count	%
I can distinguish between different information resources	DA	3	6.0%	7	14.0%	10	10.0%
	AG	28	56.0%	25	50.0%	53	53.0%
	SA	19	38.0%	18	36.0%	37	37.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can assess the quality, accuracy, relevanceand credibility of the information resources	DA	11	22.0%	14	28.0%	25	25.0%
	AG	22	44.0%	18	36.0%	40	40.0%
	SA	17	34.0%	18	36.0%	35	35.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can read critically, identifying key points and arguments	DA	9	18.0%	15	30.0%	24	24.0%
	AG	27	54.0%	20	40.0%	47	47.0%
	SA	14	28.0%	15	30.0%	29	29.0%
	Total	50	100.0%	50	100.0%	100	100.0%

IL Skills	Male		Female		Total		X^2	p
	M	SD	M	SD	M	SD		
Distinguish resources	2.32	.587	2.22	.679	2.27	.633	1.797	.407
Assess quality	2.12	.746	2.08	.804	2.10	.772	.789	.674
Read critically	2.10	.678	2.00	.782	2.05	.730	2.577	.276
Mean of Mean	2.18		2.10		2.14			

Note. M = Mean; SD = Standard Deviation

Table 7: *Gender Vs. IL Skill Set – MANAGE*

IL Skills	Level	Gender					
		Male		Female		Total	
		Count	%	Count	%	Count	%
I can use bibliographical software (Zotero, Mendelyetc) to manage information	DA	22	44.0%	21	42.0%	43	43.0%
	AG	22	44.0%	16	32.0%	38	38.0%
	SA	6	12.0%	13	26.0%	19	19.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can cite sources using referencing styles like APA, MLA, Chicagoetc.	DA	18	36.0%	20	40.0%	38	38.0%
	AG	26	52.0%	19	38.0%	45	45.0%
	SA	6	12.0%	11	22.0%	17	17.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I know what is plagiarism and its implications	DA	18	36.0%	23	46.0%	41	41.0%
	AG	15	30.0%	14	28.0%	29	29.0%
	SA	17	34.0%	13	26.0%	30	30.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can use appropriate statistical software to manage data (like SPSS, Excel, PSPP, SOFA Stat etc.)	DA	4	8.0%	14	28.0%	18	18.0%
	AG	29	58.0%	21	42.0%	50	50.0%
	SA	17	34.0%	15	30.0%	32	32.0%
	Total	50	100.0%	50	100.0%	100	100.0%

IL Skills	Male		Female		Total		X^2	p
	M	SD	M	SD	M	SD		
Statistical Software	2.26	.600	2.02	.769	2.14	.697	6.961	.031
Know Plagiarism	1.98	.845	1.80	.833	1.89	.840	1.178	.555
Reference Style	1.76	.657	1.82	.774	1.79	.715	2.665	.264
Bibliographical software	1.68	.683	1.84	.817	1.76	.754	3.550	.170
Mean of Mean	1.92		1.87		1.90			

Note. M = Mean; SD = Standard Deviation

Gender Vs. IL Pillar 7: Present

Table 8 shows that more than half of the male scholars are comfortable with 'Present' skills. Among those who disagree with the above skills, female scholars are more in number.

The male scholars are strong in 'analysing and presenting data appropriately' (M=2.18, SD=.596), in 'using appropriate publication media' (M=2.16, SD=.584) and in 'synthesizing and appraising new and complex information from different sources' (M=2.08, SD=1.94) than their counterparts. The female scholars are strong in 'summarizing documents and reporting verbally and in writing' (M=2.12, SD=.849) than male scholars.

Table 8: *Gender Vs. IL Skill Set – PRESENT*

IL Skills	Level	Gender					
		Male		Female		Total	
		No.	%	No.	%	No.	%
I can summarize documents and reports verbally and in writing	DA	6	12.0%	15	30.0%	21	21.0%
	AG	33	66.0%	14	28.0%	47	47.0%
	SA	11	22.0%	21	42.0%	32	32.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can analyze and present data appropriately	DA	5	10.0%	11	22.0%	16	16.0%
	AG	31	62.0%	24	48.0%	55	55.0%
	SA	14	28.0%	15	30.0%	29	29.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can synthesize and appraise new and complex information from different sources	DA	6	12.0%	13	26.0%	19	19.0%
	AG	34	68.0%	27	54.0%	61	61.0%
	SA	10	20.0%	10	20.0%	20	20.0%
	Total	50	100.0%	50	100.0%	100	100.0%
I can select appropriate publications outlets in which to publish	DA	5	10.0%	13	26.0%	18	18.0%
	AG	32	64.0%	22	44.0%	54	54.0%
	SA	13	26.0%	15	30.0%	28	28.0%
	Total	50	100.0%	50	100.0%	100	100.0%

Table 8: *Gender Vs. IL Skill Set – PRESENT (Continued)*

IL Skills	Male		Female		Total		X^2	p
	M	SD	M	SD	M	SD		
Analyse data	2.18	.596	2.08	.724	2.13	.661	3.175	.204
Report verbally	2.10	.580	2.12	.849	2.11	.723	14.663	.001
Appropriate publications	2.16	.584	2.04	.755	2.10	.674	5.550	.062
Synthesis and Appraise information	2.08	.566	1.94	.682	2.01	.628	3.382	.184
Mean of Mean	2.13		2.05		2.09			

Note. M = Mean; SD = Standard Deviation

The overall mean value of respondents' skills for the application, presentation, synthesis and dissemination of information is 2.09. It clearly shows that maximum number of respondents agree with above skills. The chi-square analysis shows that there is a statistically significant difference between male and female scholars in 'reporting verbally and in writing' as the p-value is less than 0.05. And there is no statistically significant difference between male and female scholars in other skills.

Gender Vs. Information literacy programme and course

Table 9 shows that all the respondents, 100% need information literacy programmes and 100% vote for the introduction of Information Literacy as a paper in University Courses.

Table 9: *Gender Vs. IL Programme and IL Course*

Gender	Information Literacy Programme	Information Literacy Paper	Total
	Yes	Yes	
Male	50	50	50
	50.0%	50.0%	50.0%
Female	50	50	50
	50.0%	50.0%	50.0%
Total	100	100	100
	100.0%	100.0%	100.0%

DISCUSSION

The female Ph.D research scholars are stronger than male research scholars in defining search topic; using background information; identifying lack of knowledge; identifying search tools; defining search strategies; using referencing system; using bibliographical softwares; summarizing documents; reporting verbally and reporting in writing.

The male Ph.D research scholars are stronger than female research scholars in search techniques; use of controlled vocabularies; downloading online materials; keeping themselves updated; sharing information with community; differentiating various information sources; assessing quality, accuracy, relevancy and credibility of information resources; using statistical software; anti-plagiarism awareness; analysing and presenting data appropriately; using appropriate publication media and synthesizing and appraising new and complex information.

Both male and female scholars are skilled in certain information literacy skills. But male research scholars are skilled in more sets of information literacy skills than by female research scholars. While female scholars are stronger in identifying, searching and referencing, male scholars are stronger in evaluation, accessing, statistical applications and synthesis. The library professionals / university authorities should keep these results in mind before planning for forthcoming information literacy classes.

SUGGESTIONS

- The university may conduct information literacy programmes for the Ph.D research scholars in their entry level.
- Frequent workshops, seminars, conferences and webinars may be conducted by university departments to educate their scholars on various information skills.
- The university library may conduct user orientation programmes for the scholars in periodical interviews.
- The lacuna in the information literacy skills of the full-time Ph.D scholars may be made alright with sufficient IL programmes.
- Special hands-on workshops may be organized on the use of free and open sources bibliographical softwares like Zotero and Mendeley.
- Exclusive interactive sessions may be organized with the help of external experts on the serious issues related to plagiarism.
- The university library should conduct some special programmes on the necessity of using referencing styles like APA, MLA and Chicago.
- Information literacy club / Information literacy chair / IL cell may be established in the University.
- The university should introduce IL as a paper (with sufficient credits) in all the PG Courses.

CONCLUSION

The scholars should develop their information literacy skills to survive and succeed in this information proliferated, information polluted and information heaped society. The ability to identify, locate, access, evaluate, use and acknowledge variety of information sources – both print and digital- play the major role in the research works of any scholar. The information literate scholars will be able to bring out creative, innovative, useful and productive output beneficial to the society. So, the university and faculty members of all the departments should take all the necessary steps to create and maintain an information literate campus throughout.

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