

# **Information Literacy Competency: A Study of Bioscience Students of Kuvempu University**

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## **Abstract**

*Information Literacy (IL) is an essential requirement for students in higher education institutions. Information Literacy Competency Standards for Higher Education was produced and developed by Association of College and Research Library (ACRL) of United States in 2000. It consists of five standards and twenty two performance indicators. Present study focuses on IL competency among the Bioscience students of Kuvempu University. This paper highlights some of the important facets of IL such as student's ability in determining and accessing the needed information, ability to identify, select and evaluate information sources and ability to summarise, synthesis and validate information sources. Further to know student is ability in understanding economic, legal, social and ethical use of information.*

**Key words:** Information Literacy, ACRL, Bioscience Students, Kuvempu University

## **1. Introduction**

In the present knowledge era, there has been a sea change in higher education. Universities are providing education in the fast developing intensive subjects such as biotechnology, microbiology, polymer science, etc. These subjects were the simple concepts two decades back, are now the subjects of higher learning. The changes taking place all over the world are being driven by the technologies such as Biotechnology, information technology, food technology, gene technology, etc. The technological innovations that are taking place have changed the life style of the people and for that matter the whole society. Presently we are in Nano Technology era. everything is imagine to be minute with the advent of integrated chips (IC's), information and communication technology and its tools. It creates a revolution in all spheres of knowledge. At the same time changes also takes place in our teaching methods and curriculum. In older days students and academicians were depended on printed source, but with the changes they are using electronic resources and databases along with Web resources. The structure and format of these sources are different from printed source. There are different methods to retrieve the needed information from these sources. So there is an urgent need to prepare our students as information literates. Information literate student effectively accesses, organizes, synthesis and applies information from variety of sources and formats in a variety of contexts. Information literacy requires an ongoing involvement in learning and in evaluating information so that lifelong learning is possible.

## **2. Information Literacy: Meaning and Definition**

The concept of information literacy was first introduced in 1974 by Paul Zurkowski,<sup>2</sup> President of the US Information Industry Association, in a proposal submitted to the National Commission on Libraries

and Information Science(NCLIS).Now-a-days the term 'Information literacy' has become a buzzword and being used by several authors in different ways as:

- ◆ Infoliteracy
- ◆ Information handling skills
- ◆ Informacy
- ◆ Information problem solving skills
- ◆ Information empowerment
- ◆ Information fluency
- ◆ Information competence
- ◆ Information mediacy
- ◆ Information literacy and skills
- ◆ Information mastery

Some of the important definitions of information literacy are as follows

In 1976 Burchinal<sup>3</sup> defined the concept of information literacy as a set of skills and linked information literacy with:

- ◆ Skills that include locating and using information
- ◆ The use of information for problem solving and decision-making
- ◆ Efficient and effective information location and utilization.

In 2000, the Association of College and Research Libraries(ACRL)<sup>4</sup>, Information Literacy Competency Standards for Higher Education defines information literacy as "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.

In 2005, Chartered Institute of Library and Information Professionals (CILIP)<sup>5</sup> defined the term as information literacy is knowing when and why you need information, where to find it and how to evaluate, use and communicate it in an ethical manner.

### **3. Information Literate Student**

In 2000, the Association of College and Research Libraries (ACRL), Information Literacy Competency Standards for Higher Education states that an information literate student is one who:

- ◆ Determines the nature and extent of information needed.
- ◆ Accesses needed information effectively and efficiently.
- ◆ Evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.

- ◆ Individually, or as a member of a group, uses information effectively to accomplish a specific purpose.
- ◆ Understands many of the economic, legal and social issues surrounding the use of information and accesses and uses information ethically and legally.

#### **4. About Kuvempu University**

Kuvempu University is the youngest affiliating universities in Karnataka State came into existence on 29th June 1987. It is located at Jnana Sahyadri Campus, Shankaraghatta, Shimoga District enjoying the bounties of nature providing an ideal atmosphere for higher education. It has more than 35 postgraduate departments in the campus offering higher education in various disciplines. In its campus, there is a Bioscience block consists of several Biological Science departments namely Biotechnology, Bio-informatics, Microbiology, Applied Botany, Applied Zoology, Environmental Science and Department of Water Management. The scope of the study is restricted to the second year postgraduate students studying in these subjects.

#### **5. Need and Limitation of the Study**

The concept of information literacy has a great significance in today's knowledge environment. Research in this area in Asian countries such as India is still in its preliminary stages. The present study is an attempt to know the information literacy competence of the Bioscience students of Kuvempu University, Shankaraghatta, Karnataka state. The parameters of the study were:

- ◆ Data collection is confined to Bioscience students of Kuvempu Universtiy, Shankaraghatta, Karnataka.
- ◆ Data is collected using a questionnaire from the Bioscience students of Kuvempu Universtiy, Shankaraghatta, Karnataka.
- ◆ The study is mainly qualitative
- ◆ Data analysis and interpretation are entirely based on the feedback received from the respondents.

#### **6. Methodology**

For collecting necessary data for the study survey method has been used. For this purpose a well structured questionnaire was prepared on the basis of the IL competency standards for higher education developed by ACRL. The questionnaire was distributed to 160 students studying in second year from various departments in Bioscience block of Kuvempu University. Out of which 147 students responded to the questionnaire. The data collected is tabulated and analysed.

#### **7. Objectives of the Study**

- a. To know the Information Literacy Competence among the Bioscience Students of Kuvempu University.
- b. To know the students ability to define and articulate the need for information on a topic, i.e., by consulting relevant information provider and exploring appropriate information source

- c. To find out the students ability to access and search the needed information effectively and efficiently
- d. To know the students skills to evaluate information and its sources critically and incorporates selected information into his or her knowledge base and value system.
- e. To know the students ability to use information effectively to accomplish a specific purpose.
- f. To find out the students ability to access and use information tehically and legally.

## **8. Review of Literature**

Developing lifelong learners is central mission of higher education institutions. Information literacy competency extends learning beyond formal classroom settings and provides practice with self directed investigations. In this regard quite a good number of researches have been conducted on information literacy skills in both western and in Indian point of view. Mac-Donald et al. (2000)<sup>6</sup>, Nieuwenhuysen (2000)<sup>7</sup> and Semans<sup>8</sup> conducted different studies on information literacy competencies in University of Rhode Island, Brussels and Virginia Tech University. Researcher describes a draft plan for building an incremental, multi-year information literacy program at the University of Rhode Island. Study also explains the student's perception level of information literacy and insights for librarians. Where as Julien and Boon (2002)<sup>9</sup> examines the information literacy instruction in Canadian academic libraries. Parker (2003)<sup>10</sup> focus on online information literacy course called MOSAIC (Making Sense of Information in the Connected Age), and recommends that information literacy is considered at a strategic level in the higher education sector

Further study conducted by Homann (2003)<sup>11</sup>, Nicholas Joint (2003)<sup>12</sup>, Gregory and Nixon (2003)<sup>13</sup> shed light on new task of teaching information literacy and evaluation of information literacy. Study describes the various initiatives taken by German Librarians to broaden educational work in the field of information literacy. Sinikara and Jarvelainen (2003)<sup>14</sup> examines and outlines the information literacy development in Finland. Similarly, Skov and Skaerbak (2003)<sup>15</sup> conducted a study on teaching information literacy in Danish Institutions of Higher Education

In case if India study conducted by Nyamboga (2004)<sup>16</sup>, Kemparaju (2004)<sup>17</sup>, Ramakrishnegowda (2004)<sup>18</sup> and Sugathri Devi (2005)<sup>19</sup>, Sudhir Kumar (2004)<sup>20</sup>, Biradar (2010)<sup>21</sup> explains the information skills and information literacy in Indian University Libraries. Examines how Indian University Libraries are providing information skills and information literacy program for their users. Another major study conducted by Karisiddappa and Rajgoli (2005)<sup>22</sup> highlight the need for information literacy activities in the changing higher education environment in India

## **9. Data Analysis and Interpretation**

Information literacy competency standards for higher education is an information literacy standard in higher education produced and developed by ACRL. It list standards, performance indicators and outcomes, which states the information literacy competencies among the University students must have during their education. On the basis of this IL Standard the researcher developed some skill

sets and used some variables to test the information literacy competence among the Bioscience students of Kuvempu University.

**Table 1. Demographic information**

Sl. No.	Name of the Department	No. of Male students	No. of female students	Total
1	Applied botany	7	15	22
2	Applied Zoology	4	15	19
3	Bio-Informatics	10	15	25
4	Biotechnology	17	21	38
5	Environmental Science	3	7	10
6	Microbiology	10	28	38
7	Water management	5	3	8
<b>8</b>	<b>Total</b>	<b>56</b>	<b>104</b>	<b>160</b>

The demographic data shows that Bioscience block of Kuvempu University consists of seven PG departments in which total 160 students are studying in second year and out of which 147 students responded to our study.

**Table 2: Skill One-Ability to determine the nature and extent of information needed**

Response	Respondents n=147	Percentage
Yes	129	87.75
No	18	12.25
<b>Total</b>	<b>147</b>	<b>100</b>

In the present competitive and complex information world it is very important to define and articulate the need of information on topic and have the ability to locate the needed information by consulting appropriate information provider and exploring appropriate information source. Table 2 reveals that 87.75% of students are able to know the need of information on a topic and consulted library staff for locating the information on it in the library and using subject encyclopedias for knowing background information on it.

**Table 3: Skill Two-Ability to access needed information effectively and efficiently**

Variables	Response n=147		Percentage	
	Yes	No	Yes	No
Selection of finding tools	92	55	62.59	37.41
Selecting search terms and constructing search	88	59	59.86	40.14
Evaluating and revise search	72	75	48.98	51.02
Retrieving information sources	70	77	47.62	52.38

The above table shows that 62.59% of students are able to select different information finding tools to search information for example selecting OPAC (Online Public Access Catalogue) to access collections of the library, using research database to locate good articles on a topic and using search engines to search free or fee based information sources on the web. 59.86% of students are able to select suitable search terms and construct effective searches such as author search, key word search, title, subject etc. using Boolean logic and truncation. 48.98% of students are able to evaluate and revise the prior search strategy to found needed information on a topic whereas 47.62% them are able to retrieve information sources by using appropriate and various alternative ways.

**Table 4: Skill Three-Ability to identify, select and evaluate information sources**

Variables	Response n=147		Percentage	
	Yes	No	Yes	No
Identification and selection of primary sources	127	20	86.39	13.61
Selection of databases	83	64	56.46	43.54
Evaluation of internet sources	79	68	53.74	46.26

From the above table it is clear that 86.39% of students are able to identify and select primary source of information i.e. journals and use them for accessing scholarly information on their academic topics. Further 56.46% of students are able to select appropriate database to find articles on their interested subject topics whereas 53.47% of them have capability to evaluate Internet resources by using all important criteria's such as reliability, validity, authority, accuracy, timeliness etc.

**Table 5: Skill Four-Ability to summarise, synthesize and validation of information gathered**

Variables	Response n=147		Percentage	
	Yes	No	Yes	No
Skills to summarise the main ideas	88	60	59.86	40.14
Skills to synthesize the main ideas to construct new concepts	61	86	41.49	58.50
Ability to validates understanding and interpretation of information	46	101	31.29	68.71

Data shows that among total respondents 59.86% of students are able to identify and summarise the main ideas from the article given to them in the questionnaire. Further 41.49% students are capable of synthesizing the main ideas to create new concepts and hypothesis from the given book passage in the questionnaire. To validate understanding and interpretation of information on their academic topics 31.29% of students selected appropriate methods i.e. by consulting subject teacher opinion or by participating in class room discussion, etc (table 5).

**Table 6: Skill Five- Ability to use information effectively to accomplish a specific purpose**

Variables	Response n=147		Percentage	
	Yes	No	Yes	No
Planning of information product or performance	93	54	63.26	36.73
Development of information product or performance	128	19	87.07	12.93
Communication of information product or performance effectively	79	68	53.74	46.26

Data indicated in the table 6 highlights that 87.07% of students were able to develop information product or performance i.e they opinion that a log of activities is required to be recorded and maintain before and after searching and locating needed information for a topic in a database. Whereas 63.26% of students are able to properly plan and to create a Power Point presentation (i.e information product or performance) by following proper guidelines such as avoiding lengthy sentences, using visual and auditory aids, colour of the text, etc. 53.74% of them are able to communicate information product i.e their laboratory experimental results effectively by using various technological applications, proper formats and styles.

**Table 7: Skill Six-Ability to understand economic, legal, social and ethical use of information**

Variables	Response n=147		Percentage	
	Yes	No	Yes	No
Right to privacy	28	119	19.04	80.95
Censorship	77	70	52.38	47.61
Fair use of information	63.	84	42.85	57.14
Intellectual property rights	79	68	53.74	46.25

In today's technological environment it is very essential that students should have basic knowledge about the issues relating to economic, legal social and ethical use of information. Table 7 Shows that 53.74% of respondents are known about intellectual property rights, 52.38 % about censorship and 42.85 % of respondents are able to make fair use of information and meager percent of respondents (19.04%) understand the concept of right to privacy issue.

**Table 8: Skill Seven-Ability to follow the laws and institutional policies related to the access and use of information resources**

Variables	Response n=147		Percentage	
	Yes	No	Yes	No
Legal use of images	57	90	38.75	61.22
Knowledge of plagiarism	62	85	42.17	57.82
Use of approved passwords and ID	73	74	49.65	50.34
Understanding of institutional policies	84	63	57.14	42.85

To access and use of information resources in ethical and legal manner an information literate student must have some skills suggested by ACRL. To test this competence among the students questions related to these variables has been discussed in the table 8. Data reveals that 57.14% of students understand the institutional policies while accessing information sources. Further 49.65% of students have the knowledge of using approved password and user ID for downloading electronic information sources. Whereas 42.17% of students know about the concept of plagiarism and its effect and 38.75% of them make use of images which are available online for legal use for their project and assignment purpose.

**Table 9: Skill Eight- Knowledge of acknowledging the use of information sources**

Variables	Response n=147		Percentage	
	Yes	No	Yes	No
Knowledge of different documentation styles	53	94	36.05	63.94
Identification of citation elements for information source in different formats	132	15	89.79	10.20
Correct and consistent use of citation style	61	86	41.49	58.50

Table 9 highlights the respondent's knowledge in acknowledging the referred information sources on a topic. Majority of (89.79%) respondents are able to identify the citation elements for book documents and for journals. Whereas 41.49% of respondents have skill in correct and consistent use of citation style. 36.05% of respondents are known about the different documentation styles, namely APA, MLA etc.,

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