INFORMATION LITERACY AND ITS EFFECTIVE FACTORS ON STUDENTS

(A Case Study of Osmania University in Hyderabad, A.P., INDIA)

By

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- INTRODUCTION

Literacy is the foundation of humans’ thought and knowledge. By the definition, literacy is the scope of needed capabilities for communicating with others through talking, reading, writing and using mathematics. Furthermore, it emerges by using various media and technologies and aims at improving daily life, promoting social participation, solving human's problems, and developing people’s personal and social capacities and society.

Undoubtedly, achieving developmental goals of a country entail educating its citizens to obtain literacy as they need. It may be simply expressed that fulfilling this need begins with designing a "national strategy for literacy growth" that is similar to the almost recent experience in the United States of America.

In recent decades, researchers have discovered and introduced more than 34 types of useful and modern literacies and information literacy has been considered as one of them. To mention but some of the useful and modern literacies are cultural, social, political, economic, media, critical, computer, Internet, workplace, family, military, health, environmental (ecological), filmography, legal, artistic, network and especially technology literacies; each of which has their own definitions, standards, and developmental methods.

Information literacy is a concept that has been created because of rapid changes and developments in information technologies. It refers to the skills an individual needs to communicate in an information society (Marais, 1992:75).

Information literacy was first used by Paul Zurkowski. In his proposal for the National Commission of Library and Information Science in the United States in 1974, Zurkowski explains the goals for achieving information literacy. Furthermore, he considers a literate person as someone trained in using information sources and being capable of solving his or her problems (Behren, 1994:309-310). In 1980s, the concept of technology is added to the definition of information literacy and at this time Information Industry Association (IIA) announced that information literacy is a kind of knowledge that helps an individual identify how and where to use information technology to achieve
information resources. In the same years, Demo introduced the new definition of information literacy as a skill or knowledge of useful access to information and its evaluation in the case of need. In his view, information literacy has a direct relationship with the way of thinking. What’s more, diligence, attention to details, and precision in acceptance of published ideas are the characteristics that help upgrade these skills (in Samiee, 2004:477-459).

- IMPORTANCE OF THE STUDY

Acquiring useful literacies and dealing with them are of the necessities of today’s world, especially in developing societies for achieving to a stable development. Almost all those who are in some ways advocates of development and reform, all around the world, have begun to make attempts toward education system because paying attention to the education and making attempts toward its goals can develop and coordinate this system with the world. Those educational approaches developed from the new age of communication and technology like maximalist view point on self-learning and meta cognition, and independent and process-oriented learning have led to gradual movement in redefining the basic concepts of education. Therefore, literacy, science, teaching, teacher, professor, student, content of lessons, school, universities, and etc. all are adopting new definitions. Nowadays, the emphasis of the educational system is not just on transferring knowledge but its role has been completely changed and its effectiveness can be rooted in adopting new roles consistent with the ideas and spirit of its time.

Information literacy competency, as one of the basics of today’s education system, can extend learning beyond formal classroom settings, provide practice with self-directed investigations for people who move into internships, first professional positions, and increase responsibilities in all walks of life. Since information literacy augments student's' competency in evaluating, managing, and using information, it is now considered by several regional and discipline-based accreditation associations as a key outcome for college students (ACRL, 2000) which makes them ready for entering to the age of knowledge. The consequences resulted from this entrance are considered in four
cultural, economic, social, and political aspects. Therefore, it is important to address the issue in countries like India with in regard to their position in the global system.

- **THE CONCEPT OF LITERACY**

The term ‘literacy’ has been evolved throughout history. It refers to all required skills for a person to play an appropriate role regarding the skills needed in the society. The simplest definition of literacy includes the ability to use language; that is, a literate person can read, write, and comprehend his or her native language (Bawden, 2001: 231). Reading, writing and being familiar with arithmetic are basic skills in literacy but nowadays other different skills are regarded as necessary skills for information literacy. It seems that it is obligatory to have skills for using information, for having a lively presence in the world of communications, and for using a media-based dynamic interaction with IT (Langford, 1998: 59-72). In the same vein, Kress (2003) believes that literacy is defined as a term which is being used when people want to communicate and use alphabet as recording and saving tools. Additionally, the term ‘numeracy’ is used when people want to communicate through the numbers.

- **THE CONCEPTS OF INFORMATION LITERACY**

Information literacy is a concept which is developed through the rapid changes in information technology and will be defined as the skills which a person needs for survival in an information society (Marais, 1992:75).

In fact 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 (ACRL, 200: 2)

- **INFORMATION LITERACY STANDARDS**

There are some well-known standards:

1. Information Literacy Standards for Student Learning published by the AASL.(American Association of School Librarians)

2. IL Standards published by IFLA.(International Federation of Library Associations and Institutions)
3. ISTE’s National Educational Technology Standards (NETS)

4. Information Literacy Competency Standards for Higher Education by ACRL. (Association of College and Research Libraries)

The ACRL standards are very popular and widely accepted and tested around the world, so this standard was used in this study.

- STATEMENT OF THE PROBLEM

The United Nations has announced the years 2003 to 2012 as the decade of literacy (Fathi, quoted from Fisher, 2003) while illiteracy is present in its absolute and traditional meaning— that is, learning— not the skill of reading and writing, in some villages and areas in India. UNESCO, in its latest report, announced that although the access of Indians’ people to education has been improved, the country still has the largest illiterate population in the world. According to the 2011 census, Indian literacy rate grew to 74.04% in 2011 from 12% at the end of British rule in 1947. Although this was greater than six fold improvement, the level is well below the world average literacy rate of 84%, and of all nations, India currently has the largest illiterate population.

Along with entrance of the societies into the informational digital environments, information literacy has also been increasingly proposed as a global priority. In the last few decades, many European and American developed countries have collected and documented the efforts related to information literacy through conferences, publications, new organizations, case studies, special programs, websites, national standards, and relevant evaluation indices.

Today, in many of these developed countries information literacy has been included in the curriculum of primary to higher education as one of the basic needs of a citizen in the 21st century (Nazari, 2004:97-114). Even though, by considering this new issue, many of developing countries, including India, have taken the first step. Although information literacy is related to information technology skills and is often intertwined with them, the scope of information literacy is wider than these capabilities.
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 (ACRL, 2002:2).

Literate people are those who have been trained how to learn. They know how to learn because they know how knowledge has organized and how they can find the needed information and use it in a way that others could learn it. Therefore, they are ready for lifelong learning because they can always find their needed information and use it for consciously decision making (Behren, 1994:315). Developing lifelong learners is central to the mission of higher education institutions. Therefore, information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments, and to all levels of education because it enables learners to master content and extent their investigations and explorations, become more self-directed, and assume greater control over their own learning.

The low rate of information literacy in India and its vital need in the age of precipitous technological changes and plurality of informational sources are considered as social issues to be proposed and examined. After providing a precise definition of literacy, the present study aims at introducing different types of useful and adequate literacies and their standards in general, and identifying students’ information literacy level based on their needs in today world, and the position of India in developmental programs, in particular. In addition to describing the current situation and investigating as well as assessing the concept of information literacy in India, this study may be an introduction to the strategic planning for achieving the objectives of national development programs in the higher education of the country.

- **OBJECTIVE OF THE STUDY**

According to the arguments in the introduction, the significance of the study, and the statement of the problem, the present study purports to achieve the following objectives:

1. Identifying students' information literacy level in three educational disciplines of human sciences, fundamental sciences, and engineering)
2. Identifying the level of students' information literacy level compared with the existing standards of ACRL.
3. Identifying the factors affecting students' information literacy level.

**- RESEARCH QUESTION**

Based on proposed objectives, the research questions will be as following:

1. How much is students' information literacy level in each of the three educational disciplines (human sciences, fundamental sciences, and engineering)?
2. How much is students' information literacy level in India according to each of ACRL standards?
3. What strategies and practical suggestions can be recommended to improve the students' information literacies?

**- RESEARCH HYPOTHESES**

Regarding the objectives of the present study and considering students' individual, family, sociological, and demographic features, hypotheses of this study have been developed in 4 main hypotheses and 30 sub-hypotheses which are introduced as following:

1. There is a relationship between individual factors and students' information literacy.
2. There is a relationship between educational factors and students' information literacy.
3. There is a relationship between socio-economic factors and students' information literacy.
4. There is a relationship between cultural factors and students' information literacy.

Several sub-hypotheses have been developed and evaluated for each of the proposed hypotheses; they are as follows:
The Sub-hypotheses of the First Main Hypothesis (Individual Factors)

1. There is a relationship between students' sex and their information literacy.
2. There is a relationship between students' age and their information literacy.
3. There is a relationship between students' level of education and their information literacy.
4. There is a relationship between students' field of study and their information literacy.
5. There is a relationship between students' marital status and their information literacy.
6. There is a relationship between students' education motivation and their information literacy.
7. There is a relationship between students' self-efficacy and their information literacy.
8. There is a relationship between students' creativity and their information literacy.
9. There is a relationship between students' personal experiences and their information literacy.
10. There is a relationship between students' learning style and their information literacy.
11. There is a relationship between students' transfer of skills and their information literacy.
12. There is a relationship between students' information-seeking capabilities and their information literacy.
13. There is a relationship between students' type of leisure time and their information literacy.
14. There is a relationship between students' need for success and their information literacy.
15. There is a relationship between students' interest in the field of study and their information literacy.
16. There is a relationship between students' level of proficiency in the second language (English) and their information literacy.
Sub-hypotheses of the Second Main Hypothesis (Educational Factors)

17. There is a relationship between professors’ teaching method and students’ information literacy.

18. There is a relationship between the library facilities of university and students’ information literacy.

19. There is a relationship between the use of modern educational strategies in teaching and students’ information literacy.

20. There is a relationship between students’ e-learning and their information literacy.

21. There is a relationship between students’ informal learning and their information literacy.

Sub-hypotheses of the Third Main Hypothesis (Socio-economic Factors)

22. There is a relationship between students’ economic and social status and their information literacy.

23. There is a relationship between interaction group of students with friends and colleagues and their information literacy.

24. There is a relationship between the members of students’ family and their information literacy.

25. There is a relationship between the income of students’ family and their information literacy.

26. There is a relationship between students’ use of facilities and their information literacy.

Sub-hypotheses of the fourth main hypothesis (cultural factors)

27. There is a relationship between students’ beliefs about themselves and their information literacy.
28. There is a relationship between students' **social values about education** and their information literacy.

29. There is a relationship between **the number of articles and books published by students** and their information literacy.

30. There is a relationship between **parents' educational level** and their information literacy.

- **THEORETICAL FRAMEWORK OF RESEARCH**

The theoretical framework of the present study is systematic; to be exact, it is not based on a prevalent viewpoint, but it is a combination of existing viewpoints on the topic of the present study in different fields. Among the existing views, theoretical framework of this study is based on ‘Information Literacy Competency Standards for Higher Education’ in information literacy. Furthermore, in order to develop the hypotheses, the ideas of behaviorism, cognitivist, and constructivism learning theories in educational psychology and information-seeking behavior theories of library sciences were applied.
Figure 1

Analytical Model of Study

Quality of education
Professors’ teaching method
Library
E-learning
Informal learning
Use of modern educational strategies
Information and communications technology

Educational factor

Socio-economic factors

Cultural factors

Individual factors

Process of learning

Define information needs
Information sources
Search strategies
Evaluate information
Citation guides

Information literacy

Level of education
Self-efficacy
Motivation
Information-seeking capabilities
Personal experience
Learning style
Intellect
Transfer of skills
Talent
Creativity
Type of leisure time
The need for success

Economical and social status
Interaction group of students with friends and colleagues
Family size
The income of family
Use of facilities

Values
Beliefs
Attitudes
The number of published articles and books
Parents’ educational level

Define information needs
Information sources
Search strategies
Evaluate information
Citation guides
INTRODUCTION RESEARCH METHOD

Based on the presented objectives in the first chapter in the present study, the descriptive and survey methods are used.

Descriptive research aims at answering the questions like how much, who, and what is happening. In fact, it controls and reports the current situation.

A survey is a method in social researches which is beyond a specific technique in information gathering. Although in most cases questionnaire is used in this method, other techniques such as structured interview, observation, and content analysis are also used. The characteristic of survey is a structured or systematic collection of data which is called variable by case data matrix (khaki, 2003:210-212).

THE THEMATIC AND RESEARCH SCOPE OF STUDY

The thematic scope of research includes scientific, cultural, and information-seeking behaviors and skills, and on the basis of the nature of subject of the present research, studies of education sociology, educational psychology and library sciences are being used too.

AREA OF THE STUDY

The scope of place of this present study is Osmania University in Hyderabad in Andhra Pradesh of India.

THE SCOPE OF TIME IN RESEARCH

This study has fulfilled during 3 years from the years 2011 to 2014.

POPULATION OF THE STUDY

The population surveyed in this study is composed of all the students in M.A. and Ph.D. degree of Osmania University in main campus. Based on the latest statistics (2013), total number of these people was 8,162 and it was published by the Department of Informatics.
of the university in 2013. The total number is used as the basis of the research population.

- **SAMPLING METHOD**

If the total area of interest happens to be a big issue, a convenient way in which a sample can be taken is to divide them into a number of smaller non-overlapping areas and then to randomly select a number of these smaller areas (usually called clusters) with the ultimate sample consisting of all (or samples of) units in these smaller clusters (Kothari-2010:65). In this regards, depending on the quality of distribution of people in population and based on the intended features of this study, the samples were drawn by following multi-stage sampling technique and firstly the faculties were selected by using clustering sampling method, and then, proportionate stratified was used to select the colleges, and eventually the simple random sampling method is to select the student respondents. Therefore, among nine colleges in main campus, three colleges of art, engineering and science were chosen as a sample by using cluster sampling. Then, they were classified in to two groups of men and women and two groups based on education degree of Ph.D. and master, and the distribution of each class was determined (Table 2.2 shows the distribution). Finally, the samples were chosen by using simple random sampling.

- **DETERMINATION OF SAMPLE SIZE**

Using Cochran formula, the size of sample was determined 367 people in this study and it was analyzed statistically.

\[
p = 0.05 \quad q = 0.05 \quad d = 0.05 \quad t = 1.96
\]

\[
n = \frac{Nt^2pq}{Nd^2 + t^2pq}
\]

\[
n = \frac{8162 \times (1/96)^2 \times 0.5 \times 0.5}{8162 \times (0.05)^2 + (1/96)^2 \times 0.5 \times 0.5} = 367
\]
Table 1

Number of Samples in each Class Based on the Sample Size and Proportion of Population

<table>
<thead>
<tr>
<th>Art collage</th>
<th>Level</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Post graduate</td>
<td>37</td>
<td>15</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Ph.D.</td>
<td>22</td>
<td>15</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>59</td>
<td>30</td>
<td>89</td>
</tr>
<tr>
<td>Science</td>
<td>Post graduate</td>
<td>661</td>
<td>51</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>Ph.D.</td>
<td>441</td>
<td>37</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>110</td>
<td>88</td>
<td>198</td>
</tr>
<tr>
<td>Eng. Tech</td>
<td>Post graduate</td>
<td>511</td>
<td>18</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Ph.D.</td>
<td>7</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>581</td>
<td>22</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Post graduate</td>
<td>154</td>
<td>84</td>
<td>238</td>
</tr>
<tr>
<td></td>
<td>Ph.D.</td>
<td>73</td>
<td>56</td>
<td>129</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>227</td>
<td>140</td>
<td>367</td>
</tr>
</tbody>
</table>

Tools and Methods for the Data Collection

The most common technique for data collection in survey research is using questionnaire. In this regards, in this study questionnaire is used to provide the structured data matrix. The questionnaire is designed in three separate parts. In the first part, the demographic features of samples are questioned. In the second part, the information literacy is evaluated based on Information Literacy Capabilities Standards for High Education by using nominal scale. In its third part, the research hypotheses are evaluated by using standard questions and Likert scale.

- EVALUATION OF RELIABILITY AND VALIDITY MEASUREMENT TOOLS

Evaluation of reliability and validity measurement of the tools are presented as follows.

▶ Validity of Measurement Tools

In this study, two methods of construct and content validity have been used to certify the questionnaire. A measurement instrument has content validity when its questions are the
real and exact representative for evaluating all characteristics of measured phenomena (Seif, 2002:262). Baroudi and Olson and Ives pointed that a degree to which an item should have correlation with the total scores is an indicator of construct validity of that item (Olson, Ives, 1983:785-794). Kerlinger and Lee (2000) suggest two methods for determining the validity of construct; one is studying the correlation between test’s total scores and scores of the items, and the other is studying the results of factor analysis test.

The validity of the questionnaire of this study was calculated in several stages. Multiple texts and scales were studied to develop the preliminary plan for information literacy scale. In this regards, about 500 preliminary questions were collected from different texts and questionnaires. Then, all questions were examined and improved in terms of content, frequency, and similar items by a group of experts, and 44 questions were selected. In the next stage, the designed questions were presented for professors and Ph.D. students of library department to evaluate the content and formal validity, and they were asked to leave comment about the rate of appropriateness of each question according to the indicator and outcome indicators of Information Literacy Competency Standards for Higher Education. In this stage, the respondents determined the appropriateness of each question in the form of presented spectrum and according to the specified standard, performance indicator and the outcome related to each question and if they think any of the questions need to be edited, they should leave their comment in the intended place for it or just above the question. Based on the collected data and according to the comments of professors and students of the department of library and information sciences, the compiled questions were appropriate to the extent of 75.38%. A few questions which were inappropriate were reviewed and modified or replaced with other questions based on the suggested changes. Then, it was asked from the senior librarians and people in charge of reference section to leave a comment, based on the indicator and Outcomes indicators of Information Literacy Standard, on the rate of appropriateness of the questions; that is, their formal and content validity, associated with master and Ph.D. students’ information literacy competencies. In this step, the content validity of questions in questionnaire was appropriate to the extent of %91.55, according to the reviewer group. Accordingly, the content and formal validity of instrument was calculated during
several steps. Meanwhile, the coefficient of content validity was also calculated based on the correlation between professors and Ph.D. students’ viewpoints as well as senior librarians and people in charge of reference section’ opinions. Results showed there is a significant positive correlation at 0.01 levels between views presented by professors and Ph.D. students and senior librarians and reference section. Thus, different groups of respondents agree strongly on the appropriateness of the content of questions in questionnaire with Information Literacy Standard (ACRL). In the next step, in order to have a preliminary study, a 44 item questionnaire was distributed among a sample of 50 master and Ph.D. degree students of different fields in Osmania University. In this step, students were asked to fill out the questionnaire and at the same time provide their feedback concerning each question. Factor analysis test was used to measure the validity of construct. Data factor analysis was carried out by Varimax orthogonal rotation method. Regarding the eigenvalue, specific values of factors (that is, sum of the squares of factor's coefficient available for each factor) were identified. In this factor analysis, factor loads of at least 30% has been used which means the correlation coefficient of 30% was determined as an acceptable minimum degree of correlation between each item and the identified factors. Meanwhile, to determine the adequacy of the research sample, KMO test was used in data analysis. Statistical characteristics of five extracted factors are presented in Table 2.3.

\[\text{Table 2}\]

<table>
<thead>
<tr>
<th>Factors</th>
<th>Specific value</th>
<th>Percentage of explained variance</th>
<th>Cumulative percentage of explained variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9.736</td>
<td>17.702</td>
<td>17.702</td>
</tr>
<tr>
<td>2</td>
<td>7.834</td>
<td>14.243</td>
<td>31.945</td>
</tr>
<tr>
<td>3</td>
<td>6.677</td>
<td>12.141</td>
<td>44.085</td>
</tr>
<tr>
<td>4</td>
<td>6.013</td>
<td>10.933</td>
<td>55.018</td>
</tr>
<tr>
<td>5</td>
<td>5.614</td>
<td>10.207</td>
<td>65.225</td>
</tr>
</tbody>
</table>
As it can be seen in table 2-3, five (standard) factors of information literacy including 44 items are 17.702%, 14.243%, 12.141%, 10.933%, and 10.207% respectively and in total, they can estimate and explain 65.225% of variance of information literacy by statistical sample.

➤ **Reliability of Measurement Instrument**

Reliability of measurement instrument refers to the rate of decline rate in measurement error of the instrument.

Straub (1989) pointed out the reliability of a measurement tool is usually calculated by Cronbach's alpha test. He believes that relatively high correlation between the items in questionnaire or alpha coefficient higher than 70% indicates that items in questionnaire are reliable (Straub, 1989: 147-170).

In this study, reliability coefficient of information literacy questionnaire was calculated by Cronbach's alpha test and the score of 79% was obtained, score of 90% was obtained for questions related to assessment of research hypotheses, though. Based on the feedback received from students, some of the items of questionnaire were modified and rewritten. Then, the 44-items questionnaire was presented to three experts in the fields of library and information sciences and educational sciences in order to determine the formal validity; finally, it was modified in terms of literary and technical aspects. This scale was lastly prepared and carried out for implementation on the main sample; i.e. the 367 master and Ph.D. students in three colleges of Art, English, Technology and Sciences.

- **SOURCE OF SECONDARY DATA**

Besides the primary data received from processing the questionnaires, the researcher collected secondary data from academic journals, reference books, relevant theses, and the internet.
- CLASSIFICATION AND TABULATION OF COLLECTED DATA

To make the analysis and interpretation of the data more reliable and findings more accurate, the collected data are classified and tabulated. Various materials collected from different sources have been classified into numerous categories in terms of their relevance. A scheme of coding, mostly centered on the hypotheses of the study, has been devised to transform the data from the questionnaire schedule to the computer to be analyzed with special spreadsheet software like SPSS, and MS-Excel.

- ANALYSIS AND INTERPRETATION OF THE DATA

During the coding process, care must be taken not to overlook important data. Bryman (2001) suggests that coding is to be done as soon as possible after the data have been collected. This provides the researcher with a more accurate understanding of the collected data and leads to more efficient research process. After arranging the collected data through tabulation and classification, they are analyzed and findings are interpreted. Several statistical methods like measures of central tendencies, percentages, standard deviation, correlation, regression, and parametric test like T-test, and ANOVA, LSD as well as non-parametric tests like chi-square, and Friedman tests (F-Test) were used in the study. Finally, the multi-variance regression was calculated and direct and indirect effects of independent variables on dependent variables were examined by using path analysis. During the process of data analysis and its interpretation, the researcher has implemented great care and attention to achieve a reliable conclusion in an objective manner.
- PROBLEMS OF THE STUDY

During research, the researcher will face with a collection of limitations which are specific to that research. Among the limitations this study encountered, we can mention to the following:

The questionnaire of this study was translated into English and presented to the students but one of the major problems was that some Hindi and foreign students do not have the proficiency in English. The reason can be the fact that during past ten years, most of students educated in other languages. This was evident in lack of proper understanding from some students in case of complex questions. It is a fundamental barrier for researcher's lack of access to the proper results of the research.

In this study, finding Ph.D. students was very difficult, because during data collection Ph.D. students had passed their educational course and they rarely attended in the university.

Large size of questionnaire and considerable amount of time and energy in distributing and collecting it was another important problem. Due to large size of the questions, the researcher had to distribute the questionnaire or collected them in the following days thereby it took a lot of time and energy.

Due to large size of questionnaire, some of the respondents do not answer all questions completely. In this regards, these questionnaires were invalidated by researcher. Furthermore, to achieve the desired sample size, the researcher had to distribute more questionnaires among students and it took more time, energy, and cost.
Lack of students’ cooperation with the researcher in filling out the questionnaire through email was another serious problem. Despite sending the questionnaire to the emails and Face books of more than hundred students, only a handful of students have completed them and turned back them to the researcher.

In this study, despite much effort, researcher has not succeeded to find a research that directly addressed to the issue.

- **ORGANIZATION OF THE STUDY**

The organization of the present study is as follows:

**Chapter – I** starts with introduction part which consist of the significance of the study, Statement of the problem, Review of Literature, Objectives and Hypothesis of the study.

**Chapter – II** describes the methodology and procedure part in which the universe and sampling techniques, tools of data collection, analysis and tabulation of data are described.

**Chapter – III** portrays the inherited socio-economic and cultural conditions of the respondents who were selected as the samples for this study.

**Chapter – IV** Measuring Respondents' Information Literacy level has been evaluated according to the Information Literacy Standards (ACRL).

**Chapter – V** based on the objectives and hypotheses of the research, factors affecting respondents' information literacy are investigated and dealt with.

**Chapter VI** reviews the research study and its major findings and conclusions. It also provides a detailed account of more observations done during the course of study. It is concluded by further suggestions and acknowledging the potential are as for future studies.
FINDINGS OF THE RESEARCH

According to the existing theories, information literacy is a set of capabilities that necessitates people to realize the fact that when they need information and whether they should have the ability to locate, evaluate, and use the needed information effectively (ACRL, 2000).

This study determines the level and the kind of relationship between personal characteristics and social features and conditions in Osmania University in Hyderabad and the level of students' information literacy based on the idea that information literacy is a function of personal and social conditions like all kind of social actions. To achieve this purpose, by studying and reviewing the researches and theories related to the topic, all personal and social factors which were effective on the information literacy from theoretical aspect have been collected and in the survey stage they have been evaluated on the sample by a tool which includes 118 items.

In some cases, the results of this assessment were in full compliance with theoretical information and the existing predictions. Furthermore, in some cases, new results have been gained which represents the specific feature of the population.

Results of Descriptive Analysis of Data

To answer the first question of the study which is about the level of students' information literacy, the descriptive data of study show that based of the indices of project the mean of students' total score of information literacy in the questionnaire is gained 26.78 with the standard deviation of 7.954 which is less than the half of total score of questionnaire which is 74. Comparison of means based on the fields of study shows that the highest mean of teachers' information literacy belongs to the students in human sciences, fundamental sciences, applied sciences, and engineering, respectively.

To answer the second question of the study, the descriptive data of study show that the mean and standard deviation of students' information literacy in five standards of information literacy shows that students of human sciences have the highest mean in standards one and two and students of fundamental sciences have the highest mean in
standards three, four and five. Thus, students of applied sciences and engineering have fewer scores than the two other educational disciplines.

MANOVA-test has been used for identifying the significant difference of the means of various educational disciplines with each of standards of information literacy and it was found out that there was no significant difference between students’ information literacy and its five standards in various educational disciplines.

➤ **Results of Testing the Hypothesis:**

The level of correlation of study's variables with students' information literacy is as follows:

Among individual factors, there was no significant relationship between students' information literacy and variables of gender, level of education, field of study, marital status, educational motivation, and type of leisure time.

Among socio-economic factors, there was no significant relationship between students’ information literacy and variables of economic and social status, family size, and the income of family.

In this regards, based on the existence of a relationship between students' information literacy and the components and indices of the project, the hypotheses of the research could not be verified.

Furthermore, according to the data of research, among individual factors, there is a significant relationship between students' information literacy and variables of age, self-efficacy, creativity, personal experience, learning style, transfer of skills, information-seeking capabilities, the need for success, interest in the field of study, and proficiency in the second language (English).

Among educational factors, there is a significant relationship between students' information literacy and variables of professors' teaching method, the library facilities of university, modern educational strategies, e-learning, and informal learning.
Among socio-economic factors, there is a significant relationship between students’ information literacy and variables of interactions with friends and colleagues, and use of facilities.

Among cultural factors, there is a significant relationship between students' information literacy and variables of students' belief about themselves, students' social values about education, the number of articles and books published by students, and parents' educational level.

In this regards, the hypotheses of the research could be verified which they are based on the existence of a relationship between students' information literacy and these variables based on the components and indices of the project.

The following tables show the acceptance or rejection of each variables and their level of correlation coefficient separately.
### Table 3

The Results of Individual Factors Test Affecting Students' Information Literacy

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
<th>The measured test</th>
<th>Value</th>
<th>Sig</th>
<th>Result of testing the hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>T-Test</td>
<td>------</td>
<td>2.480</td>
<td>0.000</td>
<td>*</td>
</tr>
<tr>
<td>Age</td>
<td>F-Test</td>
<td>6.824</td>
<td>0.000</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Level of education</td>
<td>T-Test</td>
<td>------</td>
<td>0.065</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Field of study</td>
<td>F-Test</td>
<td>------</td>
<td>0.519</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td>T-Test</td>
<td>------</td>
<td>0.395</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Educational motivation</td>
<td>Kendall's tau-b</td>
<td>------</td>
<td>0.315</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Gamma</td>
<td>0.236</td>
<td>0.001</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Creativity</td>
<td>Spearman Correlation</td>
<td>0.106</td>
<td>0.042</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Personal experience</td>
<td>Gamma</td>
<td>0.171</td>
<td>0.028</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Learning style</td>
<td>F-Test</td>
<td>7.115</td>
<td>0.000</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Transfer of skills</td>
<td>Gamma</td>
<td>0.198</td>
<td>0.007</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Information-seeking capabilities</td>
<td>Kendall's tau-b</td>
<td>0.198</td>
<td>0.029</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Type of leisure time</td>
<td>F-Test</td>
<td>------</td>
<td>0.362</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The need for success</td>
<td>Gamma</td>
<td>0.345</td>
<td>0.000</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Interest in the field of study</td>
<td>Gamma</td>
<td>0.256</td>
<td>0.000</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Proficiency in the second language</td>
<td>Gamma</td>
<td>0.135</td>
<td>0.046</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>
Table 4

The Results of Educational Factors Test Affecting Students' Information Literacy

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
<th>The measured test</th>
<th>Value</th>
<th>Sig</th>
<th>Result of testing the hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational</td>
<td>Professors’ teaching method</td>
<td>F-Test</td>
<td>2/005</td>
<td>0/014</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>The library facilities of university</td>
<td>F-Test</td>
<td>3/727</td>
<td>0/005</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Modern educational strategies in teaching</td>
<td>Phi</td>
<td>0/245</td>
<td>0/015</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>e-learning</td>
<td>Phi</td>
<td>0/235</td>
<td>0/027</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Informal learning</td>
<td>Phi</td>
<td>0/282</td>
<td>0/001</td>
<td>*</td>
</tr>
</tbody>
</table>
### Table. 5

**The Results of Socio-Economic Factors Test Affecting Students' Information Literacy**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
<th>The measured test</th>
<th>Value</th>
<th>Sig</th>
<th>Result of testing the hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-</td>
<td>Economical and social status</td>
<td>F-Test</td>
<td>----</td>
<td>0.082</td>
<td>*</td>
</tr>
<tr>
<td>Economic</td>
<td>Interactions with friends and</td>
<td>Gamma</td>
<td>0.227</td>
<td>0.001</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>colleagues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family size</td>
<td>Kendall's tau-c</td>
<td>----</td>
<td>0.358</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>The income of family</td>
<td>Kendall's tau-c</td>
<td>----</td>
<td>0.390</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Use of facilities</td>
<td>Gamma</td>
<td>0.144</td>
<td>0.036</td>
<td>*</td>
</tr>
</tbody>
</table>

### Table. 6

**The Results of Cultural Factors Test Affecting Students' Information Literacy**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
<th>The measured test</th>
<th>Value</th>
<th>Sig</th>
<th>Result of testing the hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural</td>
<td>Beliefs</td>
<td>Gamma</td>
<td>0.162</td>
<td>0.005</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Social values</td>
<td>Gamma</td>
<td>0.216</td>
<td>0.002</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>The number of published articles</td>
<td>Gamma</td>
<td>0.339</td>
<td>0.001</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>and books</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parents' educational level</td>
<td>F-Test</td>
<td>1.849</td>
<td>0.004</td>
<td>*</td>
</tr>
</tbody>
</table>

Calculation of the square of multiple correlation coefficients for each of main hypotheses in chapter five of this study shows that:

- Square of multiple correlation coefficients for hypothesis one is equal to 0.222; that is, the independent variables remained in the output determine 22% of
changes in dependent variable of information literacy. The calculated value of $T$ has been significant for six variables in individual factors. Variable of age with Beta value of 0.136, variable of learning style through watching with Beta value of 0.130 and variable of learning style through thinking with Beta value of 0.123, information-seeking capabilities with Beta value of 0.109, the need for success among students with Beta value of 0.281, and the variable of interest in the field of study with Beta value of 0.193 have been influential on the dependent variable of information literacy.

- Square of multiple correlation coefficients for hypothesis two is equal to 0.150; that is, the independent variables remained in the output determine 15% of changes in dependent variable of information literacy. The calculated value of $t$ has been significant for 3 variables in educational factors. Variable of modern educational strategies with Beta value of 0.129, variable of library facilities with Beta value of 0.129 and variable of teaching method with Beta value of 0.179 have been influential on the dependent variable of information literacy.

- Square of multiple correlation coefficients for hypothesis three is equal to 0.033; that is, independent variables remained in the output determine 3% of changes in dependent variable of information literacy. The calculated value of $t$ has been significant for one variable in socio-economic factors and variable of interactions with friends and colleagues with the Beta value of 0.148 has been influential on the independent value of information literacy.

- Square of multiple correlation coefficients for hypothesis three is equal to 0.254; that is, the independent variables remained in the output determine 25% of changes in dependent variable of information literacy. The calculated value of $t$ has been significant for 4 variables of cultural factors. Variable of father's educational level with Beta value of 0.218, variable of mother's educational level with Beta value of 0.236, variable of social values about education with Beta value of 0.148, and variable of the number of printed books and articles with Beta value of 0.271 have been influential on the dependent variable of information literacy.
Results of Regression Analysis

Evaluating the regression model of factors influencing on the information literacy shows that these factors can determine 59.9 percent of changes in students' information literacy and other changes related to the variables which were not considered in this study. In regression model, 11 variables of age, self-efficacy, learning style, the need for success, interest in the field of study, professors' teaching method, the library facilities of university, modern educational strategies, e-learning, published articles and books, and parents' educational level were significant and they were added to the multiple regression equation in an attempt to drawing the path analysis diagram.

Diagram 2

Regression Model of Effective Factors on Information Literacy

![Diagram showing the relationship between factors and information literacy]

Results of Path Analysis

Path analysis technique is used for calculating the direct and indirect effects of independent variables on dependent variable. The Beta coefficient of independent variables determined in each stage of equation and in this way path analysis diagram was drawn.
Standardized partial coefficients in path analysis of factors affecting students’ information literacy directly shows that variable of age (0.109), self-efficacy (-0.123), learning style (0.199), the need for success (0.244), interest in the field of study (-0.159), professors’ teaching method (-0.139), the library facilities of university (-0.160), modern educational strategies (-0.166), e-learning (0.174), published articles (0.240), parents’ educational level (-0.226) all have been influential on the changes of students’ information literacy.

Diagram 3

**The Path Analysis**

The sum of direct and indirect effects of independent variables on dependent variable was gained by calculating the total casual effects (table 5-40). Age (0.109), self-efficacy (-0.081), learning style (0.199), the need for success (0.244), interest in the field of study (-0.156), professors’ teaching method (0.139), the library facilities (-0.160), modern educational strategies (0.199), e-learning (0.174), the number of published articles and books (0.290), and parents’ educational level have been influential on the dependent variable. Variable of the number of published articles and books with value of
0.290 is more important than other variables; in other words, it had the greatest impact in explaining the dependent variable. Thus, it can be stated that students who are pragmatists have more skills in information literacy.

Table 7

The Total Direct and Indirect Effects of Independent Variables on the Dependent Variable of Information Literacy

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Indirect effects</th>
<th>Direct effects</th>
<th>The total direct and indirect effects of each variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0</td>
<td>0/109</td>
<td>0/109</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.04148</td>
<td>-0/123</td>
<td>-0/08152</td>
</tr>
<tr>
<td>Learning style (watching)</td>
<td>0</td>
<td>0/199</td>
<td>0/199</td>
</tr>
<tr>
<td>The need for success</td>
<td>0</td>
<td>0/244</td>
<td>0/244</td>
</tr>
<tr>
<td>Interest in the field of study</td>
<td>0</td>
<td>-0/156</td>
<td>-0/156</td>
</tr>
<tr>
<td>Professors' teaching method</td>
<td>0</td>
<td>0/139</td>
<td>0/139</td>
</tr>
<tr>
<td>Library facilities</td>
<td>0</td>
<td>-0/160</td>
<td>-0/160</td>
</tr>
<tr>
<td>Modern educational strategies</td>
<td>0/0337228</td>
<td>0/166</td>
<td>0/1997228</td>
</tr>
<tr>
<td>e-learning</td>
<td>0</td>
<td>0/174</td>
<td>0/174</td>
</tr>
<tr>
<td>Publishing article</td>
<td>0.050752</td>
<td>0/240</td>
<td>0/290752</td>
</tr>
<tr>
<td>Parents' educational level</td>
<td>0.030256</td>
<td>-0/226</td>
<td>-0/195744</td>
</tr>
</tbody>
</table>

- **SUGGESTIONS**

Literacy should be investigated in comprehensive and inter disciplinary way and with respect to its various aspects. Therefore, it will attain to more practical and certain results if it is carried out in team works and with the help of experts from various fields of sciences. Some practical suggestions or solution can be proposed here in order to improve students' information literacy; these proposals are as follows:
In general, education is a major factor in improving information literacy; therefore, it is important in three educational grades of primary education, academic or higher education, and general education:

- **Primary education**: by teaching sciences in schools through the heuristic approach and teaching information literacy skills in Education of India;
- **Higher education**: by formal teaching of information literacy in a framework of courses and teaching sciences in an integrated approach, up to a certain level of academic education in a way that students become aware of the knowledge of other fields of study for academic excellence and be prepared for a better life in the world;
- **Information literacy's general education**: through writing book about sciences and information that are understandable for public; in this regard, the mass media can introduce the most recent informational and scientific achievements.

The following points should be considered in the process of education:

- Teaching independent learning strategies;
- Teaching fast reading skills to perceive and process information correctly;
- Teaching and gaining the needed skills for problem-solving;
- Teaching and gaining the needed skills to evaluate thinking, ideas, and scientific works critically;
- Gaining the needed skills to manage time, resources, and personal efforts;
- Encouraging and teaching people to learn and master at least two languages;
- Encouraging people in active, interactive, and participation-seeking activities in order to attain to a lifelong learning;
- Strengthening the sense of people's curiosity as an aspect of thinking dispositions;
- Using and encouraging the creative thoughts and supporting inventions and innovations;
- Teaching and using information and communications technologies (ICT);
It is necessary to use annual or biannual measurement programs for identifying the nature of students' information literacy; in fact, these researches identify the basic needs of students and helps managers schedule students' information literacy education program. ICT or electronic computer systems are important in producing, converting, storing, protecting, processing, transmitting and retrieving information and so on.

- Expanding the spirit of scientific development by supporting the researches and studies done by students;
- Encouraging students to learn the ICDL's 7 module and use it practically;
- Use of e-Library in public and special libraries of cities;
- Paying attention to the development of literacies through oral tradition (radio, TV, websites, etc.) due to dominance of these cultures in written culture of Indian society;
- Designing the National Information Literacy Policies, Standards, and Guidelines by suitably reviewing existing educational policies;
- Designing National Information Literacy Portal through which in Information Literacy, ideas, projects, initiatives, activities, education resources, programs, tutorials, self-assessment tests, and etc. will be shared and organizations network.

- RECOMMENDATION FOR FURTHER STUDIES

The recommendations and suggestions for further research is this area is as follows:

- This study has evaluated information literacy in three fields of study including human sciences, fundamental sciences, and engineering in M.A. and Ph.D. degrees. Students' literacy can be assessed and analyzed in order to become aware of the level of information literacy in other degrees and fields of study in higher education system with regard to students’ basic needs in all aspects of information literacy and through index construction of a particular concept of information literacy in that degree.
In the present study, the real measurement is used to assess information literacy and self-assessment is used to assess the hypotheses of research. Although self-assessment and real assessment are considered as the two major methods in assessment of variables (Pausch and Popp, 1997), it seems that using real measurement in information literacy has provided more accurate results. Therefore, in further researches this point should be taken into consideration that self-assessment should not be used for achieving to more accurate results in measurement of variables.
REFERENCES


