CHAPTER 2
REVIEW OF LITERATURE

2.1 INTRODUCTION

The greatest challenge for society in the 21st century is to keep pace with the knowledge and technological expertise necessary for finding, applying and evaluating information. It is acknowledged that we live in an information-rich society where the amount of information in the world is presently doubling every three years. Therefore it is necessity of 21st century to include information literacy in education.

Information literate people have a number of qualities and skills (Engeldinger, 1998). We are living in the information age. Information is the basic requirement for every human activity and it is important as food, air and water. Information in itself has no value, but its value lies in its communication and use. Information literacy plays a transformational role in building the information capability at large. It is rightly said that the cultural and educational opportunities available in a community are often missed by people who lack the ability to keep informed of such activities therefore it is a means of personal empowerment. It creates the habit of lifelong learning (Rao and Nagar, 2005). Information literacy is a skill that is widely relevant and extends beyond the walls of the classroom into the world of social responsibility (Idiodi, 2005).

Purpose of the present chapter is to review the relevant literature. Review of relevant literature is an important step for research. After
formulating research problem, the process of reviewing the related literature was started.

A bibliography is a basic information source for finding out researches carried out in the subject of Library and information science. Different bibliographies are available for this purpose. Association of Indian Universities (AIU) published the bibliography of doctoral dissertation in social sciences can be a basic material in this regard. All the bibliographies published by AIU till 1993; Delhi University (1990); and Inter-University Board of India (1974) were referred. In support of this, the bibliography of research in library & information science in India compiled by Vijay Pathak & L. S. Ramaiah (1986); P. S. G. Kumar (1987); were scanned as they have covered research conducted at M. Lib. I. Sc., M. Phil & Ph. D. level. The websites of INFLIBNET (2010) as well as Vidyanidhi (2010) were searched for thesis database.

It was found that in India studies were carried out on the topic of functional literacy by Maiti (1999), Chugani (1990), Kashyap (1996), Venkataiah (1976), Radhakrishna (2007) and Siddiqui (1990). Another topic school literacy is covered by Chakravarty (1998), Bhagar (2005), Mukhopadhyay (1997), Philip (1991); the research conducted on woman literacy by Pattanayak (2006), Chaudhuri (1993), Yadav (1990), Umayaparvathi (1982); Adult literacy is also covered by Mali (1973), Saroja (1997), Venkateswarlu (2004), Koteswara Rao (1998), Krishna Rao (1980), Gayan (1999); Scientific literacy covered by Pinto (1998), Environmental Literacy covered by Suman (2003). It can be stated that all these topics are related with functional literacy. However research at Ph.D level on information literacy was conducted by Rajgoli (2008); King (2007); Davis (2005); Oakleaf (2008) and Manowaluiulou (2008). While research at Master degree level has also been conducted on the subject information literacy by Tez-mei (2004); Ying (2008); Anthony (2003); Mandy (2003); Wing (2003); Isenburg (2004); Mccaskie (2004); Sieberhagen (2005). It is reliably learnt that research is in progress at Karnataka University and University of Pune.
on the topic information literacy. Therefore it can be stated that no research has been conducted on the topic, “E-Information Literacy: A Case Study.”

In addition to this a few books and large number of research articles related to present study have been reviewed by the investigator. Starting from definitional analysis i.e. Information, Literacy, Information Literacy, E-Information Literacy etc.

2.2 DEFINITIONAL ANALYSIS

2.2.1 Information

Information can be defined as “the meaning that a human assigns to data by means of conventions used in their presentation”. In other words, information is data that has given shape. It may be considered as processed data. Thus, information is data plus the meaning, which has to be a result of human action (Seetharama, 1999); some active principal governing the human capacity to process fragments which are meaningless in isolation into a coherent and meaningful whole the receiver (Losee, 1997).

2.2.2 Literacy

Literacy (derived from Latin litteratus) is a concept that has been evolving over time and has had a variety of meanings, to include the skills needed to perform well in society. The simplest form of literacy involves the ability to use language in its written form: a literate person is able to read, write and understand his or her native language and expresses a simple thought in writing (Bawden, 2001).

The term literacy as the quality of state of being literate, knowledge of letters, ability to read and write (Oxford, 1978, Cambridge University Press, 2003); ability to read 40 words per minute, write 20 words per minute and do 2 digits arithmetic (India, 2008); ability to read, write and do arithmetic. It comprises other skills needed for an individual's full autonomy and capacity to function effectively in a given society (UNESCO, 2002).

2.2.3 Information Literacy

Information Literacy is an understanding and set of abilities requiring individuals to recognize when information is needed, have the ability to
locate, evaluate, use effectively the needed information and create information within cultural and social context (Abid, 2004; ACRL, 2000; ACRL, 2004; ALA, 1989; 1995; 2000; 2002; CAUL, 2001; 2004; Dudziak, 2006; CILIP, 2005; Humes, 2005; Chandra, 2006; Garner, 2005; Costa, 1985; Johnston and Webber, 2003; UNESCO, 2003; Webb and Powis, 2004; Karisiddappa and Kavita, 2005; Kumar, 2006; Rajyalakshmi and Kuffalikar, 2006; Gole, 2006; Dhiman, 2006) and then to use that information to make wise decisions or choices (Karisiddappa and Kavita, 2005; Rajyalakshmi and Kuffalikar, 2006); simply in old material (i.e. bibliographic instruction) in a new package (Lawrence, 1991); it includes information technology skills, such as use of computers, software applications, and information retrieval tools, but it is a broader area of competence that encompasses the content, analysis and communication of information (ALA, 2005); to express personal ideas, develop arguments, refute the opinions of others, learn new things or simply identify the truth or factual evidence about a topic (Kumar, Choudhary and Shah, 2004; Smith and Hepworth, 2007); is an essential component of critical thinking and research-led learning and teaching, it enables us to meet the challenges arising from the proliferation of information, will help us read the benefits of the modern working environment in our everyday working life, can play a key role in promoting an understanding of what constitutes plagiarism, deterring its practice by promoting integrity and accountability in the use and presentation of information, a key to lifelong learning in our knowledge society (Lyman and Varian 2003); based on complementary proficiencies in research and web literacy (Mackey and Ho, 2005); an intellectual framework for understanding, finding, evaluating, and using information—activities which may be accomplished in part by fluency with information technology, in part by sound investigative methods, but most important, through critical judgment and reasoning. Information literacy initiates, sustains, and extends lifelong learning through abilities which may use technologies but are ultimately independent of them; (US National Research Council 1999); crucial to the competitive advantage of individuals, enterprises (especially
small and medium enterprises), regions and nations; provides the key to effective access, use and creation of content to support economic development, education, health, human services, and all other aspects of contemporary societies, thereby providing the vital foundation for fulfilling the goals of the Millennium Declaration and the World Summit on the Information Society; extends beyond current technologies to encompass learning, critical thinking and interpretative skills across professional boundaries, empowers individuals and communities (Garner 2005); applicable to all disciplines, learning environments and all levels of education; ensures that learners become more independent, enabling them to assume greater control over their own learning and research; forms the basis for lifelong learning. (Gaunt, 2007); as people trained in the application of Information resources to their work can be called information literates. Peoples are learned techniques and skills for using the wide range of information tools as well as primary sources in molding information solution to their problems; characterizing information literate person: one who has the analytical and critical skills to formulate research questions and evaluate results and the skills to search for and access a variety of information types in order to meet his or her information needs (Doherty and Hansen, 1999); knowledge rather than simply skill, achieved by education rather than training, created through partnership between professionals and is a lifelong endeavour that is contextual in field and service access (Town, 2002).

The standard definition of information literacy now used in Australia is found in the Council of Australian University Librarians’ (CAUL) information literacy standards, released in March, 2001:

An information literate person is able to:
1. Recognize a need for information;
2. Determine the extent of information needed;
3. Access the needed information efficiently;
4. Evaluate the information and its sources;
5. Incorporate selected information into their knowledge base;
6. Use information effectively to accomplish a purpose;
7. Understand economic, legal, social and cultural issues in the use of information;
8. Access and use information ethically and legally;
9. Classify, store, manipulate and redraft information collected or generated; and
10. Recognize information literacy as a prerequisite for lifelong learning (CAUL, 2001; Patel, 2006; Amudhavalli, 2008; Nyamboga, 2004).

   An information literate person must be learn to know, to do, to be and to work together; able to make sense, ensure quality, learn independently, think critically, use information ethically and strategically (Jagtar Singh, 2008).

2.2.4 E-Information Literacy

Electronic information literacy refers to literacy activities (such as reading, writing, and research) that are delivered, supported, accessed, or assessed through computers or other electronic means rather than paper (Shonrock, 2006); is awareness, skills, understandings and reflective-evaluative approaches that are necessary for an individual to operate comfortably in an information rich and IT-supported environment (Martin, 2003); ability to search retrieves, organizes, employ, and evaluate information derived from electronic information resources (Fortier, 1998); natural extension of the concept of literacy in our information society; ability to locate, evaluate and effectively use needed information with a set of skills and attitudes for lifelong learning is a product of information society (Nayak, Nayak and Murgod, 2006); to encompass the combined literacy skills which relate to IT literacy as well as information literacy skills and concomitant creation of new information (Beatty and Mountifield, 2005).

2.3 Evolution of Concept

The term IL achieved its current prominence within the library community with the advent of the information explosion. An information environment characterized by an exponential increase in information that is
freely available over the internet, along with the rapid development of information technologies that facilitate the access and dissemination of this information (Grafstein, 2007).

The term IL was first introduced in 1974 by Zulkowski (the President of the US Information Industry Association), in a submission to the US National Commission on Libraries and Information Science, to identify people trained in the application of information resources to their work (Carbo, 1997; Joint, 2005; Jagtar Singh, 2008; Faust, 2001).

The idea of IL, emerging with the advent of information technologies in the early 1970s, has grown, taken shape and strengthened to become recognized as the critical literacy for the 21st century. He recognized that ‘information literates’ would be better able to exploit information resources (Bruce, 2002).

The IL built upon and expanded the decades-long efforts of librarians to help their users learn about and how to utilize research tools and materials in their own libraries. Librarians wanted users to be able to transfer and apply this knowledge to new environments and to research tools that were new to them. Information literacy expands this effort beyond libraries and librarians, and focuses on the learner, rather than the teacher (Grassian, 2004; Grassian and Kaplowitz, 2001).

eLiteracy and IL are different but mutually compatible concepts with validity within specific contexts. Most librarians work within hybrid library environments, and may feel that eLiteracy is a single medium concept and as a practical tool for promoting the use of their mixed medium information service it is less useful than Information Literacy (Joint, 2005).

2.4 AIMS OF INFORMATION LITERACY

IL aims are given by ALA (2005) is as follows.
1. To teach students how to find information and prepare them for lifelong learning because they can “always find information needed for any task or decision at hand.”
2. It forms the basis for lifelong learning. It is common to all disciplines, to all learning environments, and to all levels of education.

3. It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning.

4. To ensure that people understand how to, and why they need to learn about sources in the information society.

5. To preparing students to enter the world of scholarship. The shift in focus from teaching to learning in higher education can be paralleled in the shift from bibliographic instruction to information literacy.

6. Learning theories state that successful learning includes the person’s ability to increase their knowledge, to memories and reproduce that knowledge, to apply it and understand what was done, to see something in a new way, and finally to change as a person.

7. It gives people the ability to question, research, find meaning, develop ideas, analyze, evaluate, synthesize, reason, communicate, transfer, solve problems, make decisions, understand nature of information, reflect, use technology effectively, use information safely and responsibly and produce new knowledge.

8. It is necessary to make the learners feel more confident and skill in their ability to manage information (ALA, 2005).

9. To apply the principals of scholarly communication to problems of information handling.

10. Confidence in using and satisfaction in carrying out information searching (Ghosh and Das, 2006).

   Ministry of Education Science Sports and Culture, Japan have composed IL in four parts, which also defines the aims of IL is as:

1. Capabilities of judgment (evaluation), selection, organization, and processing of information as well as of information creation and communication;
2. Understanding of characteristics of information society, effect of information user society and human beings;

3. Recognition of Importance of, and responsibility for information; and


The basic aim of Information Literacy is to develop sense-making ability among the stakeholders (Jagtar Singh, 2008).

2.5 NEED AND IMPORTANCE OF INFORMATION LITERACY

IL is the critical issue for the 21st century of keen importance to all educational stakeholders, including administrators, faculty, librarians etc. The information explosion of the late 20th century subsequently gave birth to the concept of information literacy (ACRL, 2002).

IL instruction assists users in identifying and selecting necessary information, and using appropriate search strategies in evaluating, organizing and synthesizing the information thus acquired into a meaningful state. It makes them self-reliant and gives them a sense of being in control of their learning (Kavulya, 2003).

An additional factor that has also made information literacy an essential attainment is that participative citizenship in today's world requires that all people, not only students, become information-literate. This means that they must not only be able to recognize when information is needed, but also be able to identify, locate, evaluate and use effectively information needed for decision-making or fulfilling different goals. Information literacy is a skill that is widely relevant and extends beyond the walls of the classroom into the world of social responsibility (Idiodi, 2005).

The development of IL is central to the academic success (Faust, 2001). Information literacy makes the students beyond the role of passive listener and note taker and allows them to take some direction and initiative during class. The main purpose of including this in education system is to
direct the students that will allow them to discover the material they work with fellow students to understand the curriculum.

2.5.1 Need

The need of IL may be essential due to the following reasons.
1. Rapid increase in the stream of information due to information revolution;
2. Advent of information and communication technologies;
3. Significant changes in information environment in content are affecting information users in several dimensions.
4. Changing shape of libraries ;
5. Wide dispersal of information ;
6. Increase in number of users , and
8. Availability of information in abundance in various forms & formats.
9. Availability of information is free of any geographical boundaries.
10. Abundance of information makes it difficult to find exact information.
11. The question of authenticity, validity & reliability of culled out information clubbed with expanding quantity is a serious problem and needs valid consideration.
12. Abundance of information will not create informed citizenry.
13. Majority of users to use IT & to take advantage of wealth of resources currently available is becoming an important objective, for learners of all ages.
14. Information kiosks, learning resource centers etc. play key role in imparting Information Literacy to their beneficiaries to acquire compatible skills for handling printed vis-à-vis electronic sources.
15. Skills of Information Literacy would train beneficiaries to take a logical path in their search for & application of Information (Mokhtar and Majid, 2008).

2.5.2 Importance

IL is important from the view point of:
1. To be an independent lifelong learner it is essential to achieve a high level of information literacy (Rockman, 2005).

2. Equity of opportunities among citizens is extremely important. One of the ultimate benefits of information literacy is to help close the gap between the information poor and the information rich (Ercegovac, 1998).

3. Information literacy is required to have a critical thinking approach. An approach that would lead to economic and cultural progress of a nation.

4. IL is important for a strong democracy.

5. A sheer abundance of information in electronic format has made information literacy increasingly important. Traditional print resources could be subjected to a quality assurance process. Whereas, on line e-resources in the form of web pages look alike. “With the Internet sources, none of the quality assurance mechanisms can be assumed. The onus is on the user to apply a critical faculty.

6. IL is also important to understand the difficult questions of ownership of information and copyright.

7. Students should learn to respect the author’s rights. The cutting and pasting culture that is widespread among the students can be addressed with the help of information literacy programmes (Hadengue, 2005).

8. IL is a prerequisite for – participative citizenship; social inclusion; the creation of new knowledge; personal empowerment; and learning for life (Bundy, 2005).

2.6 SCOPE OF INFORMATION LITERACY

Scope of IL is broadly presented in a number of ways, formats is as follows.

2.6.1 By Media

2.6.2 By Contents (Aspects)

2.6.3 By Methods

2.6.4 By Models

2.6.5 By Standards
2.6.1 By Media

Bawden (2001) attempts to clarify related concepts and a multiplicity of terms, which are often used synonymously. Some of these are:

2.6.1.1 Visual Literacy
2.6.1.2 Media Literacy
2.6.1.3 ICT Literacy
   2.6.1.3.1 Computer Literacy
   2.6.1.3.2 Digital Literacy
   2.6.1.3.3 Network Literacy
2.6.1.4 Library Literacy

These are basic and implicit in information literacy.

2.6.1.1 Visual Literacy

Visual literacy is defined as the ability to understand and use images, including the ability to think, learn, and express oneself in terms of images (Barden & Hortin, 1982); ability through knowledge of the basic visual elements, to understand the meaning and components of the image; ability to recognize and understand ideas conveyed through visible actions or images (Hirwade, 2006; Fortier, 1998).

Visual information is everywhere: it is encountered in both professional and leisure activities. The truly information literate person needs to be able to understand and use visuals. These new skills are increasingly important because, concomitantly, an appropriate use of visual information supports the ability to think and communicate visually.

A visually literate person is able to interpret and produce visual messages. The acquisition of such skills requires the adoption of new teaching and learning strategies, at least in some domains, ranging from art and design at basic level education, up to technological education on methods and tools to develop effective visual representations. Visual literacy can be divided into three constructs:

- **Visual Learning**
Visual learning refers to the acquisition and construction of knowledge as a result of interaction with visual phenomena.

- **Visual Thinking**
  Visual thinking involves the ability to organize mental images around shapes, lines, colors, textures and compositions. Visual thinking is becoming even more crucial for the learning process itself, owing to the fact that teaching and learning will rely increasingly on multimedia and visual learning environments (Correia and Teixeira, 2003).

- **Visual Communication**
  Visual communication uses visual symbols to express ideas and convey meaning. Visual communication may be accomplished by using a camera or computer graphics programmes.

### 2.6.1.2 Media Literacy

According to Humes (1999) Media literacy refers to critical thinking in assessing information made available through television, radio, newspapers, magazines and increasingly the Internet; Media education seeks to increase children’s critical understanding of the media... How they work, how they produce meaning, how they are organized and how audiences make sense of them (Hancock, 2002); ability to use material in a range of different formats (Secker and Price, 2004); ability to decode, analyze, evaluate and produce communication in a variety of forms (Hirwade, 2006); understand, produce and negotiate meanings in a culture made up of powerful images, words and sounds. A media literate person can decode, evaluate analyze and produce both print and electronic media (McClure, 1993); ability to evaluate the information received from different mass media of information (Correia and Teixeira, 2003).

A media literate person—and everyone should have the opportunity to become one—can decode, evaluate, analyze and produce both print and electronic media. Media literacy has an obvious overlap with more general concepts of information literacy, since the information gained from these
sources often overlaps with, and complements, that from more formal library sources (Livingston, Van and Thumim, 2005).

2.6.1.3 ICT Literacy

ICT literacy = Information literacy + Digital environments

ICT literacy is the interest, attitude, ability of individuals to appropriately use digital technology and communication tools to access, manage, integrate, evaluate information, construct new knowledge, and communicate with others in order to participate effectively in society (Van, 2004); generic and domain specific elements and requires a partnership between IT and subject specialists, which is cumulative and hierarchical, and which evolves over time (Garner, 2005); must bridge the ideas of information literacy and technology literacy(Katz, 2005); ability to appropriately use digital technology, communication tools, and networks to solve information problem in order to function in an information society. This includes having the ability to use technology as a tool to research, organize and communicate information and having a fundamental understanding of the ethical / legal issues surround accessing and using information (Katz et al., 2004); ability of an individual, working independently or with others, to use tools, resources, processes, and systems responsibly to access, evaluate information in any medium, to use that information to solve problems, communicate clearly, make informed decisions, and construct new knowledge, products, or systems (Fortier, 1998).

ICT literacy includes following literacy's is as follows.

2.6.1.3.1 Computer Literacy

Computer literacy is usually associated with technological know-how to manipulate computer hardware and software (Humes, 1999; Oxbrow, 1998); ability to understand and use computers (Zin, 2000; Della, 1995; Adomi and Anie, 2006); have the basic skills to operate a computer, to use software for such tasks as word processing, analyzing and manipulating data on a spreadsheet (Hirwade, 2006; McCulre, 1993).
Computer literacy has to do with taking control of one’s commuter and not letting it control one; an individual is computer literate when he feels he is telling the computer what to do and not the other way round; ability to manage the relentless bits and bytes flooding one’s electronic desktop on a regular basis; knowing what a computer can and cannot do (Morgan, 2004); familiarity with personal computers and ability to create and manipulate documents and data via word processing, spread sheets, databases and other software tools.

2.6.1.3.2 Digital Literacy

Digital literacy considers broad range of resources that are accessible online and underscores the importance of looking at each of the resources with a critical eye; ability to appreciate the potential of ICT to support innovation in industrial, business and creative processes. Learners need to gain the confidence, skills, and discrimination to adopt ICT in appropriate ways; seen as a life skill in the same way as literacy and numeracy (Japan. Ministry of Education, 2003); ability to make informed judgments about what is found online (Maharana and Mishra, 2007); fast becoming a prerequisite for creativity, innovation, entrepreneurship and without it citizens can neither participate fully in society nor acquire the skills and knowledge necessary to live in the 21st century.

There are two different packages of skills with a common digital literacy. Digital literacy is to be deeply literate in the digital world and means being skilled at deciphering complex images and sounds as well as syntactical subtleties of words. Above all, it means being at home on a shifting mixture of words, images and sounds. It is the ability to navigate in cyberspace and has ICT and Information Literacy elements, but it is separate from both. It includes the creation and publishing of information as well as appropriating existing knowledge (European Commission, 2003).
2.6.1.3.3 Network Literacy

Closely related to computer literacy is network literacy, a term that is still evolving. To locate, access, and use information in a networked environment such as www users need to be network literate; most sophisticated of all literacy skills represents what he has called a reconceptualized notion of literacy in an electronic society; encompasses not only the skills required to access electronic resources on networks but also all the literacy skills categorized as traditional literacy, computer literacy and media literacy (McClure, 1993).

He described a network literate person is one who:

- Has an awareness of the range of users of global networked information resources and services;
- Has an understanding of the system by which networked information is generated and made available;
- Can retrieve specific types of information from the network using range of information discovery tools;
- Can manipulate networked information by combining it with other resources, enhancing it or otherwise increasing the value of information for practical situation;
- Can use networked information to analyze and resolve both work and personal decisions and obtain services that will enhance their overall quality of life;
- Has an understanding of the role and uses of networked information in problem solving and performing basic life activities.

2.6.1.4 Library Literacy

Library literacy relates to competencies in the use of library resources and services (Correia and Teixeira, 2003); ability to follow a systematic search strategy to locate, evaluate the most relevant information on a given topic Educating the users would introduce them to right methods that would enable them to use libraries more effective in research and development; not as the presence or absence of skills but as progressive stages...the
library literate can follow a systematic path or search strategy to locate texts and evaluate the relevance of the information. She suggests, by analogy with the progressive stages of literacy itself, from total illiteracy to full literacy, there may be several stages of library literacy:

1. Pre-library literacy (library illiteracy)—the individual cannot find a book on the shelf without assistance.
2. Semi-library literacy—the individual can find books in a catalogue and on the shelf, and find articles in simple readers’ guides
3. Library literate—the individual can follow a systematic search strategy to locate and evaluate the most relevant information on a given topic
4. Library fluent—understands patterns of communication and publication and is able to generalize and modify a search strategy to meet a variety of information needs (Gilton, 1994; Azmi, 2005; Ramesh Babu, 2008).

2.6.2 By Contents

1. **Tool Literacy:** Ability to understand & use & conceptual tools of current IT relevant to education.
2. **Resource Literacy:** Ability to understand form & format, location & access methods of information sources including e-resources.
3. **Social-Structural literacy:** Knowing how information is socially situated & produced.
4. **Research literacy:** Ability to use & understand IT based tools relevant to the work of research scholar and researchers.
5. **Publishing Literacy:** Ability format & publish research ideas electronically in textual & multimedia forms.
6. **Emerging technology literacy:** Ability to adapt to understand, evaluate & make use of continuously emerging innovations in IT.
7. **Critical literacy:** Ability to evaluate critically the intellectual, human & social strengths & weaknesses, potentials & limits, benefits & costs of information technologies (Repanovici and Landoy, 2007; Hirwade, 2006).
2.6.3 By Methods

2.6.3.1 Lessons

Assessment is multidimensional, dealing as it does with cognitive, affective, and skills learning. It may be formative or summative, qualitative or quantitative, or take some other form. Formative assessment deals with programs as they are functioning and tries to foster ongoing improvement for the provider and receiver of the instruction. Summative assessment deals with the aftereffects, usually by testing or some other method employed after the instruction is complete.

They test for understanding rather than memorization, deep learning rather than surface learning. Using qualitative methods, assessment can be developmental, judging where students are in their understanding, or ecological, testing students' abilities to apply knowledge in authentic situations. Assessing in ways that foster deep learning is important because research shows students learn what they expect will be assessed.

2.6.3.2 Instructions

Students today face a daily explosion of information resources and the challenge of using these resources effectively and responsibly. Information literacy instruction (ILI) requires a shift in focus from teaching specific information resources to a set of critical thinking skills involving the use of information. This change is reflected within the Information Literacy Competency Standards for Higher Education, developed by the Association of College and Research Libraries (ACRL) (American Library Association, 2000). ILI in an academic setting includes a variety of instructional approaches, such as course-related library instruction sessions, course-integrated projects, online tutorials, and stand-alone courses (Spitzer, Eisenberg, & Lowe, 1998). Those running formal ILI programs consider curricular objectives, invoking combinations of instructional solutions over a period of time.

2.6.3.3 Stand-Alone Courses or Classes
Stand-alone courses on information literacy may or may not be credit bearing, and may be in seminar format. Breivik (1998) notes that not all stand-alone courses are successful in outreach because students may not enroll in them if the courses are not required.

2.6.3.4 Online Tutorials

Academic libraries have developed a number of online tutorials. Tutorials range from the simple to the complex and focus on issues such as online searching, evaluating Web sites, citing sources, information ethics, and broader information literacy topics.

2.6.3.5 Workbooks

The workbook, aimed at helping students become independent user of information, is available in customized versions for the areas of business, criminal justice, education, humanities, science / technology and the social sciences. Students are not required to complete any one particular version of the workbook but are encouraged to complete a version pertaining to their declared major or if they are undecided, pertaining to an area they might declare as a major.

2.6.3.6 Course-related instruction

Using this type of instruction, librarian highlight discipline specific resources related to particular courses (University of California at Berkeley Library, 2002).

2.6.3.7 Course-Integrated Instruction

Many academic library programs are turning to course-integrated instruction to provide users with information literacy skills in the context of actual information needs (Breivik, 1998). This approach makes information literacy skills instruction inherently more meaningful than when such skills are taught out of context.

2.6.3.8 Training

2.6.3.8.1 Student Training
The Library staff train students to become more self-sufficient in order that they can retrieve relevant information on their own using the resources in the library.

The main objective of students coming to the library is to be able to access online and print-based information. This objective can therefore be achieved through information literacy training because in this among other things students are involved in the practical activity of physically retrieving information sources from the shelves. They are also sometimes rewarded by being employed in the library when they have fully understood the library’s processes.

2.6.3.8.2 Staff Training

The main objective of staff training in the Library is to equip employees of the university with the necessary skills and knowledge to enable them to use the library’s information resources effectively but also more importantly to become information literate and to engage in lifelong learning. As staff members of the institution this information literacy training also offers employees the opportunity to develop themselves personally and professional by gaining new and valuable skills.

The training courses provided to Library staff as with those of students assists them to become self-sufficient information seekers something which is extremely important in a distance education environment such as that of Library.

2.6.4 By Models

Models are theoretical constructs which try to present in a coherent framework most if not all competencies required for attainment of the features above if one person wants to be considered as information literate at a particular developmental stage (Taxonomy of IL, 2008).

Eisenberg and Brown’s (1992) original comparison of information literacy Standard using this figure, we can compare several widely known standards of information literacy that have been developed through research
and evaluation. This side-by-side view of information literacy standards shows that there are many similarities among them.

2.6.4.1 Information Skills Process Models
**Figure No. 2.1 Comparison of information skills process model**

<table>
<thead>
<tr>
<th>Kuhlthau information seeking</th>
<th>Eisenberg/Berkowitz Information Problem-Solving (The Big6 Skills)</th>
<th>AASL/AECT Information Literacy Standards</th>
<th>ACRL Information Literacy Competency Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Initiation</td>
<td>1. Task Definition</td>
<td>1. Determines the nature and extent of the information needed</td>
<td></td>
</tr>
<tr>
<td>2. Selection</td>
<td>1.1 Define the problem</td>
<td></td>
<td>3. Evaluates sources critically</td>
</tr>
<tr>
<td>4. Formulation (of focus)</td>
<td>1.2 Identify info requirement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Exploration (Investiga-</td>
<td>2. Information seeking strategies</td>
<td>2. Accesses needed information</td>
<td></td>
</tr>
<tr>
<td>tion (Investiga-te into the</td>
<td>2.1 Determine range sources</td>
<td>effectively and efficiently</td>
<td></td>
</tr>
<tr>
<td>general topic)</td>
<td>2.2 Prioritize sources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Collection (gather info</td>
<td>3. Location &amp; access</td>
<td>5. Accesses and uses information</td>
<td></td>
</tr>
<tr>
<td>on the focussed topic)</td>
<td>3.1 Locate sources</td>
<td>ethically and legally</td>
<td></td>
</tr>
<tr>
<td>4. Information use</td>
<td>3.2 Find Info</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 Engage (read, view, etc.)</td>
<td>4. Extract info</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Synthesis</td>
<td>5.1 Organize</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2 Present</td>
<td>6. Evaluation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Assessment (of outcome/</td>
<td>6.1 Judge the product</td>
<td>3. Uses information accurately and</td>
<td></td>
</tr>
<tr>
<td>process)</td>
<td>6.2 Judge the process</td>
<td>creatively</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

44
Renowned professionals have developed several IL models which attempt to describe individual's strategies as they search information (Eisenberg, 2008).

### 2.6.4.2 Kuhlthaus Model

The information search process consists of 6 linear i.e. initiation, selection, exploration, collection, presentation and assessment. The models also states that intermediaries such as help the individual beneficiaries to
define their infarction problem and goals during reference interview. It also points out the zone of intervention for librarians.

2.6.4.3 Ellis Model
Contrary to the above this model suggests a nonlinear path of information search, through it has the same and stages as that of the Kuhlthaus model. The relationship between the stages is dependent on the individual’s specific problem and situation (Ellis, 1989).

2.6.4.4 SCONUL Model
The Society of College National & University Libraries (SCONUL) task force on information skills was convened in early in 1990. At the base of the model are the two fundamental block, the basic library skills and basic IT skills (Kuffalikar & Rajyalakshmi, 2006). SCONUL developed 7 pillars model of information literacy in 1999 which is widely used (Chan, 2003; Kuffalikar, 2006).
In the UK, SCONUL has identified “seven pillars of information literacy”. These are
1. The ability to recognize a need for information;
2. The ability to distinguish ways in which the information “gap” may be addressed;
3. The ability to construct strategies for locating information;
4. The ability to locate and access information;
5. The ability to compare and evaluate information obtained from different sources;
6. The ability to organize, apply and communicate information to others in ways appropriate to the situation; and
7. The ability to synthesize and build upon existing information, thus contributing to the creation of new knowledge. (Webber and Johnston, 2003):

2.6.4.5 McKinsey Model

The McKinsey model begins with a business need, but as adapted for information literacy, it begins with an information need. This need comes from a business problem, or, in this case, a research problem, case study, or class assignment. Once the problem has been identified, the next step is analyzing the problem. McKinsey calls this step framing the problem or defining the boundaries of the problem and breaking it down into its component elements in order to come up with an initial hypothesis as to the solution.

Not only is a hypothesis developed at this point, visual tools such as issue trees or mind maps are also used to further break down our ideas into manageable parts. Designing the analysis is the next step in the model. At this point the student must determine the analysis that must be done to prove the hypothesis. Students learn to develop an outline of what they know and what they need to know, as well as where they might find the information they need. This step also includes developing work plans for group study efforts.

Next is gathering the data. It is at this stage that the librarian can talk about specific sources and tools that can be used when gathering data. McKinsey emphasizes the use of fact finding and interviewing as a source of information gathering. Students must understand the importance of time
management. There is never enough time to get all possible data. It is up to the student to find the most pertinent data in the least amount of time. Using people who have expert knowledge is a great tool. Students should remember some simple principles from the McKinsey model:

1. Facts are friendly
2. Don’t accept “I have no idea”
3. Don’t reinvent the wheel
4. Acquire external knowledge
5. Control the quality of your input: garbage in, garbage out
6. Research tips — start with the annual report, look for outliers, and look for best practices

Interpreting the results is the final step—analyzing and evaluating to test the hypothesis. Collaboration between teaching faculty and librarians is crucial at this point, because teaching faculty have subject knowledge to see whether the hypothesis has been proved. From this point, students can develop a course of action to take.

Figure No. 2.3 McKinsey Strategies Problem Solving Model
Analyzing Information
- Framing – Hypothesize – Issue Trees
- Designing – Outline – Work Plan
- Gathering Data – Facts – Interviews
- Interpreting – Analyzing – Evaluating

Figure No. 2.4 Logic Tree for Analyzing Information
The final part of the McKinsey model is creating the final presentation. Many graduate business programs do not instruct students on presentation methods. This is a very important step because it is what the client, employer, or professor sees. Librarians can help students develop the technical skills to develop their final presentations, and teaching faculty can help students streamline their interpretations for the audience (Donaldson, 2004).

2.6.4.6 Empowering 8 Models

To enhance the resource based learning in these countries by sensitizing the participants to information literacy, international and srilankan participants worked independently to develop an information literacy model and at the end, both groups discussed these models. Both models were redefined and merged to form a generic model. There are many models of IL, but the Empowering 8 Model has been developed at an IFLA-ALP sponsored Information Literacy Workshop hosted by National Institute of Library and Information Sciences (NILIS), University of Colombo in 2004 specifically for the stakeholders in the Asia-Pacific Region. These 8 steps of this model in the following words.

Figure No. 2.5 Empowering 8 Models
1) Identify subject, audience, keywords and plan strategy.
2) Explore resources required, information available
3) Select relevant information, stages of work, appropriate citations
4) Organize information earlier selected, between fact, fiction and opinion
5) Create information in your own words, revise and edit create bibliography
6) Present share information with appropriate audience, display in appropriate format
7) Assess feedback, self-assessment and assessment with teacher
8) Apply review feedback and apply to next learning activity

2.6.4.7 Seven faces of information literacy
Figure No. 2.6   Seven Faces of Information Literacy

<table>
<thead>
<tr>
<th>Category one: The information technology conception.</th>
<th>Information literacy is seen as using information technology for information retrieval and communication.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category two: The information sources conception.</td>
<td>Information literacy is seen as finding information located in information sources.</td>
</tr>
<tr>
<td>Category three: The information process conception.</td>
<td>Information literacy is seen as executing a process.</td>
</tr>
<tr>
<td>Category four: The information control conception.</td>
<td>Information literacy is seen as controlling information.</td>
</tr>
<tr>
<td>Category five: The knowledge construction conception.</td>
<td>Information literacy is seen as building up a personal knowledge base in a new area of interest.</td>
</tr>
<tr>
<td>Category six: The knowledge extension conception.</td>
<td>Information literacy is seen as working with knowledge and personal perspectives adopted in such a way that novel insights are gained.</td>
</tr>
<tr>
<td>Category seven: The wisdom conception.</td>
<td>Information literacy is seen as using information wisely for the benefit of others.</td>
</tr>
</tbody>
</table>

The seven categories can be seen as hierarchically related to each other so that the topmost conceptions five, six and seven are complex and powerful regarding information use than the lower conceptions.

Apart from these models various models have been put forth by different authors namely, Web based tutorials for information literacy by Sundin (2008); Li, Leung and Tam (2007); Dalgleish and Hall (2000); Drew, Abbott and Orr (2003); Community information literacy model by Seneviratne (2004); E-learning tutorial for vocational e-literacy by Elliott and Hunn (2005); Vickery’s model of information transfer (Harris, 2006); intensive information literacy model by Hearn (2005); Teaching information literacy skills by Oladokun (2006); the use of electronic information services and information literacy by Crawford (2006); convergent model for information literacy by Mackey and Ho (2005); IT orientation course for librarians model by Madhusudhan (2005); information literacy and competency development program by Majumdar and Rajesh Singh (2008); teaching information literacy a questionnaire by Kennedy (2005); Digital information fluency model by IMSA (2008); information literacy model for academic libraries by Deshpande and Shelar (2005); Sieberhagen (2005); Instruction and funding models by
Whitehead and Quinlan (2008); model for information literacy course development by Loo and Chung (2006); Sharkey (2006); Reflective Online searching skills (ROSS) model by Bruce, Edwards and Lupton (2006); Partridge et al. (2008); information literacy model for role of librarians by Baradol and Gopalkumar (2005); RAC model, Research Cycle, Follett’s Information skills model by Chandran (2005); LOUISIANA information literacy model for lifelong learning by University of Louisiana (2004); models of information literacy training in the undergraduate curriculum by King (2007); Information literacy tutorial by SJSU University (2004); Hunn and Rossiter (2006); University of Massachusetts (2001); Queensland University of Technology (2000).

2.6.5 By Standards

Standards are operational developments of the models, breaking down, describing the nature and extent of different subcategories of IL characteristics.

The American Association of School Librarians (AASL, 1994) published a position statement that identified the steps of the information problem-solving process as the key elements of an information literacy curriculum. The position statement was based on Information Literacy: A position paper on information on information problem solving (Wisconsin Educational Media Association, 1993), developed by the Wisconsin Educational Media Association (WEMA). These steps, which were based on the Eisenberg and Berkowitz Big6 TM model (Eisenberg & Berkowitz, 1988) and also endorsed by the NFIL, include

- Defining the need for information,
- Initiating the search strategy,
- Locating the resources,
- Accessing and comprehending the information,
- Interpreting the information,
- Communicating the information, and
Evaluating the product and process.

The Information Literacy Standards for student learning are articulated in three categories: information literacy, independent learning, and social responsibility. Within the three categories are nine standards and 29 indicators to describe the content and processes students needed to achieve to be information literate (ALA, AECT, 1998).

The following three categories, nine standards, and twenty-nine indicators relate to information that students must master to be considered well educated. The items related to information literacy describe the core learning outcomes that are most obviously related to the services provided by school library media programs also make important contributions.

The latter two categories build upon the first so that, taken together and pursued to the highest levels, the standards and indicators present a profile of the information literate one who has the ability to use information to acquire both core and advanced knowledge and to become an independent, lifelong learner who contributes responsibly and productively to the learning community. The standard and indicators themselves are written at a level of generality that assumes that individual states, districts, sites, and school personnel must provide the level of detail necessary to apply them across multiple sources, formats of information and to the developmental, cultural, and learning needs of all the students they serve.

**Category I: Information Literacy**

The student who is information literate:

**Standard 1:** Accesses information efficiently and effectively, as described by the following indicators:

I. Recognizes the need for information

II. Recognizes that accurate and comprehensive information is the basis for intelligent decision making

III. Formulates questions based on information needs

IV. Identifies a variety of potential sources of information
V. Develops and uses successful strategies for locating information.

**Standard 2:** Evaluates information critically and competently, as described by the following indicators:

I. Determines accuracy, relevance, and comprehensiveness
II. Distinguishes among facts, point of view, and opinion
III. Identifies inaccurate and misleading information.
IV. Selects information appropriate to the problem or question at hand.

**Standard 3:** Uses information effectively and creatively, as described by the following indicators

I. Organizes information for practical application
II. Integrates new information into one’s own knowledge
III. Applies information in critical thinking and problem solving
IV. Produces and communicates information and ideas in appropriate formats.

**Category II: Independent Learning**

The student who is an independent learner is information literate and:

**Standard 4:** Pursues information related to personal interests, as described by the following indicators:

I. Seeks information related to various dimensions of personal well-being, such as career interests, community involvement, health matters, and recreational pursuits
II. Designs, develops; evaluates information products and solutions related to personal interests.

**Standard 5:** Appreciates and enjoys literature and other creative expressions of information, as described by the following indicators:

I. Is a competent and self-motivated reader
II. Derives meaning from information presented creatively in a variety of formats
III. Develops creative products in a variety of formats.

**Standard 6:** Strives for excellence in information seeking and knowledge generation, as described by the following indicators:
I. Assesses the quality of the process and products of one's own information seeking
II. Devises strategies for revising, improving, and updating self-generated knowledge.

**Category III: Social Responsibility**

The student who contributes positively to the learning community, to society is information literate and:

**Standard 7:** Recognizes the importance of information to a democratic society, as described by the following indicators:

I. Seeks information from diverse sources, contexts, disciplines, and cultures
II. Respects the principle of equitable access to information.

**Standard 8:** Practices ethical behavior in regard to information and information technology, as described by the following indicators:

I. Respects the principles of intellectual freedom
II. Respects intellectual property rights
III. Uses information technology responsibly.

**Standard 9:** Participates effectively in groups to pursue and generate information, as described by the following indicators:

I. Shares knowledge and information with others
II. Respects others' ideas and backgrounds and acknowledges their contributions
III. Collaborates with others, both in person and through technologies, to identify information problems and to seek their solutions
IV. Collaborates with others, both in person and through technologies, to design, develop, and evaluate information products and solutions.

The items related to IL describe the core learning outcomes that are most obviously related to the services provided by school library media programs (Ramesh Babu, 2008).

2.6.5.1 ACRL standards for Information Literacy
1. Association of College & research libraries in 2000
2. Information Literacy competency standards for higher education
3. ACRL in all has given five major standards.
   Within each standard it has given performance indicators.

**Standard One**
Information literate student determines the nature & extent of the information needed.

**Performance indicators:**
- Information literate student defines and articulate the need for information.
- Identifies types & formats of potential sources of information.
- Considers cost & benefits of acquiring needed information
- Reevaluate nature & extent of information need.

**Standard Two**
Information literate student accesses needed information effectively & efficiently.

**Performance indicators:**
- Selects most appropriate investigative methods for accessing needed information.
- Constructs & implements effectively designed search strategies.
- Retrieves information online or in person using various methods.
- Refines search strategy if necessary.
- Extracts records & manages information & its sources.

**Standard Three**
Information literate student evaluates information & its sources critically and incorporates selected information into there knowledge base & value system.

**Performance indicators:**
- Summarizes main ideas to be extracted from information gathered.
• Articulates & applies initial criteria for evaluating both information & its source.
• Synthesizes main ideas to construct new concepts.
• Compares new knowledge with prior knowledge to determine value added, contradictions, or other unique characteristics of information.
• Determines whether new knowledge has an impact on individual’s value system & takes steps to reconcile differences.
• Validates understanding and interpretation of information through discourse with other individuals, subject area experts, & practitioners.
• Determines whether initial query should be revised.

**Standard Four**

Information literate student, individually or as a member of a group, uses information effectively to accomplish specific purpose.

**Performance indicators:**

• Applies new & prior information to the planning & creation of a particular product or performance.
• Revises development process for the product or performance.
• Communicates product or performance effectively to others.

**Standard Five**

Information literate student understands many of the economic, legal, & social issues surrounding the use of information and accesses and uses information ethically and legally.

**Performance indicators:**

• Understands many of the ethical & socio-economic issues surrounding information and information technology.
• Follows laws, regulations, institutional policies, & etiquette related to the access & use of information sources.
• Acknowledges the use of information sources in communicating the product or performance (Amubhavalli, 2008).

Australia and New Zealand have a joint framework for information literacy including six [6] standards.
1. Recognizes the need for information and determines the nature and extent of the information needed.
2. Finds needed information effectively and efficiently.
3. Critically evaluates information and the information seeking process.
4. Manages information collected or generated.
5. Applies prior and new information to construct new concepts or create new understandings.
6. Uses information with understanding and acknowledge cultural, ethical, and economic. Legal and social issues surrounding the use of information.

Standards 1, 2, and 6 are very much the same as in the US version. Standard 3 seems slightly more limited in definition than the US. Standards 4 and 5 seem more elaborate than the US framework in specifying how the information gained is used (Bundy, 2004).

2.6.5.2 Other Standards

1. National Subject matter Association Curriculum Standard

Realizing that subject matter content is ever expanding, professional organizations developed national standards that emphasize a process approach. An analysis of these national standards documents shows that they all focus on lifelong learning, the ability to think critically, and the use of new and existing information for problem solving

2. Mathematics Standards

The National Council of Teachers of Mathematics (NCTM) paved the way for all national standards curriculum reform efforts. They published national standards prior to the passage of the goal 2000: Educate America Act.

Information literacy, as presented within this curriculum area, involves problem solving; the use of estimation; thinking strategies for basic facts;
formulating and investigating questions from problem situations; and using computers, calculators, and other technologies.

3. Social Studies Standards

The National Council for Social Studies published curriculum standards for Social Studies (1993), which identifies 10 standards: culture, time, continuity, and change; people, places, and environments; individual development and production, distribution, and consumption; science, technology, and society; global connections; and civic ideals and practice.

4. Science Standards

The science standards include basic understandings of the physical, earth, and life science, divided into grade categories K-4, 5-8, and 9-12. Among the eight content standards is “Science as Inquiry,” which focuses on students’ abilities to conduct scientific experiments and use scientific reasoning and critical thinking skills to analyze results.

The Science and Technology standard requires students to Identify a problem or need to change a current technological design; Gather information and generate and evaluate alternative solutions; Choose and test solutions and communicate results orally or in writing as well as through diagrams, models, and demonstrations, (National Research Council, 1993).

5. Foreign Language Learning Standards

The standards for foreign language learning reflect a philosophy that the study a second language “increases enormously one’s ability to see connections. Since the content of a foreign language course deals with history, geography, social studies, science, math, and the fine arts, it is easy for students to develop an interdisciplinary perspective at the same time they are gaining intercultural understandings” (National Standards in Foreign Language Education Project, 1999).

Learning a foreign centers on an understanding of the relationship between culture and communication and involves the communicative processes of speaking, reading, and writing.

6. National Geography Standards
Geography helps us to understand the relationships among people, places, and environment. A geographically informed person is able to make sense of not only the local environment (for example, the reasoning behind the location of business establishments in relation to consumers) but also global environment (for example the possible effects of global warming). Knowledge of geography require the information literacy skills of identifying, using, and analyzing information in a variety of forms (maps, charts, and satellite photos) for the purposes of decision making, and critical thinking.

7. English Language Arts Standards

The English Language Arts Standards document points out that the definition of literacy has changed greatly. It was once define as the ability to read and write one’s own name; the National Literacy Act of 1991 now defines literacy as “an individual’s ability to read write, and speak in English and compute and solve problem.

8. National History Standards

The standards identify four grades K-4, ranging from living and working together in families and communities to the history of the United States and the cultures of the world. The document also identifies five standards of historical thinking: Chronological thinking, historical comprehension, historical analysis, historical research capabilities, and historical issues analysis and decision making. The standards of historical thinking are interwoven with the outcome measures of the topics and eras.

9. Economics Standards

Economics one of the nine core subject areas identified by the goals 2000: Educate America Act. The voluntary National Content Standards in Economics (National Council on Economics Education, 1997) define 20 content standards with benchmarks, so that students will learn basic economics and become productive and informed workers, consumers, savers, investors, and citizens.

10. Physical Education Standards
The seven content standards for physical education serve to remote a healthy lifestyle and encourage physical activity for emotional well-being. The physical education standards address such basics as the development of motor skills, the ability to demonstrate responsible personal and social behavior in physical activity settings, and the ability to include others of diverse physical abilities in group physical activities.

11. National Health Standards

The standard note that health literate individuals can “identify and creatively address health problems and issues at multiple levels, ranging from personal to international. They can utilize a variety of sources to access the current, credible, and applicable information required to make sound health-related decisions”. The ability to access and analyze information to make informed decisions about one’s health is important particularly as advances in technology and science present a variety of care and treatment options.

12. National Arts Education Standards

The Arts Education Standards encompass dance, music, theater, and visual arts, and state that a secondary student should be able to “Communicate at a basic level in the four arts disciplines and communicate proficiently in at least one art form, including the ability to define and solve artistic problems with insight, reason, and technical proficiency”. The ability to solve artistic problems requires knowledge and understanding of art processes, as well the ability to analyze and evaluate information.

2.7 BENEFITS OF INFORMATION LITERACY

Following are the benefits of information literacy are.

1. Expansion of knowledge through substantive operations of knowledge creation.
2. Synthesis of data and information into knowledge.
3. Appropriate and critical application of information and knowledge in problems solving.
4. Enhancement of the critical thinking
5. Incorporation of validated information in the personal or corporate knowledge base.
7. Appreciation for lifelong learning (Dhiman, 2006; Khairah, 2005).

According to Hancock (1993) IL is beneficial for following ways.

For Students:

Information literate students are more effective consumers of information resources. They learn to recognize that information is packaged in a variety of ways, that it is packaged using a variety of techniques, that it serves a variety of interests, and that it contains a variety of value messages. Information literate students are more critical when they make decisions about the resources they use.

For Citizens:

Information-literate citizens know how to use information to their best advantage at work and in everyday life. They identify the most useful information when making decisions such as where to locate a business, how to vote, or whether to have a child. They are able to evaluate newscasts, advertisements, and political campaign speeches, recognizing when statistics are being used to support only one aspect of a complex issue. Information literacy enables citizens to recognize deception and disinformation so that they may make a truly informed decision.

These citizens appreciate the value and power of information. They believe in the need for information to address problems and questions in their own lives, in their communities, and in society. They understand that information is not necessarily knowledge until it has been analyzed, questioned, and integrated into their existing body of knowledge and experiences. They are equipped to be lifelong learners because they know how to learn.

For Workers:

Workers must be information literate. The workplace has become a place of cataclysmic change and untold opportunity. Adapting to a rapidly
changing work environment will mean multiple career and job changes. An early commitment to learning as a process not as an end product and the role information literacy plays in this process will enable workers to see these changes as transitional, not traumatic.

2.8 Information Literacy Skills

At present we live in a society characterized by the continuing growth in the volume of information the unprecedented growth in the value of information and the corresponding explosion of information in a variety of formats. Rapid growth of information technology such as computer networks, telecommunications systems and databases that are growing fast puts a huge amount of information at our fingertips. However the emergence of the information age has posed tremendous challenges to all of us as we require adequate skills to access evaluate and use information effectively from a vast array of information sources particularly the Internet.

In other words the total large quantity of information will not by itself create a more informed citizenry without a complementary cluster of abilities necessary to use information effectively. Nowadays the success and survival of many companies and individuals depend upon information literacy skills. These skills are required by all people whether they are from rural, urban, developed or developing countries, but the level of skills required things upon the environment in which the individual or group functions.

IL consists of a cluster of skills that people need to successfully handle with the information society. Skills of information literacy are as follows.

1. The ability to locate and access information
   - to develop appropriate searching techniques (e.g. use of Boolean)
   - to use communication and information technologies, including terms international academic networks
   - to use appropriate indexing and abstracting services, citation indexes and databases
1. The ability to use current awareness methods to keep up to date
   ➢ to use current awareness methods to keep up to date

2. The ability to distinguish ways in which the information gap may be addressed
   ➢ knowledge of appropriate kinds of resources, both print and non-print
   ➢ selection of resources with ‘best fit’ for task at hand

3. The ability to construct strategies for locating information
   ➢ to articulate information need to match against resources
   ➢ to develop a systematic method appropriate for the need
   ➢ to understand the principles of construction and generation of databases

4. The ability to compare and evaluate information obtained from different sources
   ➢ awareness of bias and authority issues
   ➢ awareness of the peer review process of scholarly publishing
   ➢ appropriate extraction of information matching the information need.

5. The ability to organize, apply and communicate information to others in ways appropriate to the situation
   ➢ to cite bibliographic references in project reports and theses
   ➢ to construct a personal bibliographic system
   ➢ to apply information to the problem at hand
   ➢ to communicate effectively using appropriate medium
   ➢ to understand issues of copyright and plagiarism

6. The ability to synthesize and build upon existing information, contributing to the creation of new knowledge (SCONUL, 1999).

7. The ability to understand the issues affecting accessibility of sources.

8. To recognize that accurate and complete information is the basis for intelligent decision-making;

9. To access sources of information including computer-based and other technologies;
10. Individually or as a member of a group, uses information effectively to accomplish a specific purpose.
11. Understands many of the economic, legal and social issues surrounding the use of information and accesses and uses information ethically and legally (ACRC, 2000).
12. Determine the nature and extent of the information needed.
13. To formulate questions based on the information needs;
14. To organize information for practical application;
15. To integrate new information into an existing body of knowledge; and
16. To use information in critical thinking and problem-solving (Doyle, 1992).

2.9 APPROACHES

The research approach chosen to fulfill this aim was qualitative and was chosen for a number of reasons. Since federated search tools are relatively new particularly in this country access to quantitative data would be limited as would opportunities for gathering quantitative data especially during the summer when contacting and observing students is difficult. Gathering data about the number of libraries using these tools and the number of searches performed was unlikely to further understanding of the implications these tools may have for information literacy training. Focusing on librarians’ and information professionals’ experience of the implementation of the tools and the concerns and issues that they raised could provide more understanding of the effect of the tools and hopefully inform other libraries who were planning to implement a federated search tool.

Raising issues and concerns that may be applicable to other libraries implementing federated search tools was a potential outcome of the research but creating generalisable results was not a primary aim. The focus was more on understanding issues within their context. Mellon (1990) describes qualitative studies or naturalistic studies as those that view experiences from the perspectives of the people involved and try to understand a situation in-
depth. The type of qualitative research undertaken was descriptive as it was involved with examining and describing the phenomenon encountered in terms of behaviors, beliefs, attitudes related to searching for information and information literacy. The research was inductive because it did not start with a predefined theory but examined specific cases and allowed conclusions to be drawn from them (Gorman & Clayton, 1997).

2.9.1 The big six problem-solving approach

This approach to IL provides such a comprehensive approach to empower students to be successful in an information environment (Berkowith, 1997); approach of Big Six Skills is similar to the one advocated in much traditional library user education; thinking through the information search process before actually conducting the search. The Big Six Skills are a general problem solving approach to library and information instruction. The skills are process based and follow a logical order (Webb and Powis, 2004).

The big six model describes the six thinking steps a person goes through any time there is an information problem to solve. The following are the six steps of the model (Eisenberg, 2008; Loo and Chung, 2006).

Figure No. 2.7  Big Six Model for Problem Solving
1. **Task Definition**
   1.1 Define the problem
   1.2 Identify the information needed
2. **Information seeking strategies**
   2.1 Determine all possible sources
   2.2 Select the best sources
3. **Location and Access**
   3.1 Locate sources
   3.2 Find information within sources
4. **Use of Information**
   4.1 Engage (e.g., read, hear, view)
   4.2 Extract relevant information
5. **Synthesis**
   5.1 Organise information from multiple sources
   5.2 Present information
6. **Evaluation**
   6.1 Judge the result (effectiveness)
   6.2 Judge the process (efficiently)

In an emerging information-based society, it is essential for students to learn how to think actively and critically about information rather than to passively receive pre-packaged facts or materials. The big six problem-solving approach is an instructional methodology used to integrate information retrieval directly into any subject curriculum. The methodology centers on the cognitive psychology theory which states that new knowledge is always constructed on what is already known (Boud and Feletti, 1991). It promotes critical and analytical thinking skills by applying the learner’s own expertise and experience to the initial problem solving and information retrieval process.

As more and more students begin their fact finding by using search engines on the WWW, university instructors can take on a more significant role in the development of critical thinking skills by introducing information literacy as a natural part of the learning process. The big six Problem Solving approach is a teaching strategy that can take everyday situations and create learning opportunities from them.
This approach is collaborative in nature and uses interactive applications to engage groups of learners fully by introducing real-life or simulated problems to be solved. As the instructor presents specific problems students begin the process of formulating a hypothesis and finding information to support their ideas for proposed solutions. The most likely of these solutions are tested, sometimes by trial and error; an answer that best solves the problem is offered. Finding an answer that really works is the driving force for each learner to participate actively, resulting in the acquisition of knowledge and problem-solving skills – both individually and as a contributing member of a team.

2.9.2 Education Approach to Information Literacy

Bruce has provided a perspective on the educational approach to information literacy. She describes three strategies:

1. **Behaviorists approach**: The information user to be described as information literate must exhibit certain characteristics and demonstrate certain abilities so there is emphasis on measurable skills. The approach used in the ACRL standards, mentioned in section 2.1 above, seems to fit here;

2. **Constructivist approach**: with the emphasis on the learner constructing his or her own picture of the domain through for example, problem-based learning;

3. **Relational approach**: This starts by describing a phenomenon in terms of the way in which it is experienced. (Bruce, 1997).

2.9.3 Current Approaches

A variety of approaches and combinations of approaches have been taken depending on the particular needs of the institution. The following sections provide some recent examples.

1. **Online Information Literacy**
With an increase in remote access to information and a demand for more rapid, anytime-anyplace sharing of information, many academic libraries have started to offer Information Literacy through the Internet. The most common online instructional tool is the Web-based guide (e.g., pathfinders, webliographies). Another trend that has gained popularity is the information literacy tutorial which is an interactive, Web-based program designed to introduce students to general information literacy concepts and information resources.

2. The Information Literacy Course

According to Jacobson and Mark (2000) instruction is most effective when offered in context with content-based courses and assignments. Academic libraries have incorporated meaningful learning experiences into information literacy courses in a variety of ways.

Some institutions offer formal information literacy courses. These courses range varies from required to elective and from distance to face-to-face. They can involve integration with a core curriculum, specific discipline or course, or general information skills. Such courses have gained popularity because they offer opportunities for in-depth instruction and reinforcement of research skills through course activities.

3. Information Literacy across the Curriculum

Some Universities go beyond the stand-alone information literacy course by integrating information literacy into the overall curriculum. An across-the-curriculum approach is favored because it ties information literacy into all students’ experiences. This model requires collaboration among the library, other academic departments and administration to meet the common goal of teaching information literacy skills.

Specific approaches include integration of information literacy objectives into general education and first-year programs (Jacobson & Mark, 2000); development of campus-wide information competency initiatives, in these situations librarians faculty and others work together to provide information literacy at the point of need (Nagbhushnam and Javeer, 2005).
2.10 IL PLAN AND PROGRAMME

IL is a key component of, and contributor to lifelong learning. Since higher education institutions vary widely in mission and student body information literacy programmes are to be designed tailored to meet specific needs of the users rather than a prescribed set of criteria.

Introducing information literacy program in an academic setting is an institutional issue for the university as well as the library. In India University Grants Commission (UGC) has taken sincere efforts to bring a boost in the higher education system by introducing UGC-INFONET E-Journals Consortium project. Information & Library Network (INLIBNET) which is the coordinating agency for UGC-INFONET project is conducting various training programmes, user awareness programmes, workshops and seminars to research scholars, faculty members and library staff from more than 40 universities across the country on how to access these abundant resources offered by the UGC. INLIBNET is also responsible for providing training to university library professionals in the use of this network for providing a variety of services to the user.

Examples

Computer application to library and information services (CALIS) – a four week intensive training programmes focusing on the practical aspects in the use of computers in libraries.

Workshop on Automation and Networking of University Libraries (WANULIP), which covers the implementation of INLIBNET in university libraries.

These are several institution that run continuing professional development programmes for library and information professionals in India. Indian National Scientific Documentation Centre (INSDOC) professional bodies, such as the Indian Library Association (ILA), Indian Association of Special Libraries and Information Centers (IASLIC); Society of information
science (SIS) are also involved in continuing professional development in this area.

The literature indicates that developing information literacy programs for adult learners has been an important initiative for many years. These initiatives are not new to library instruction, public libraries, or universities. Rarely however there an entire college established for adult learners in the community wishing to engage in lifelong learning at the university level.

In college and university libraries across the nation, information literacy has become more than just an area of instruction. It has become part of the core mission of the organization. The preliminary steps—team building; needs assessment; environmental scans; timelines; and goal setting are outlined. Then key sections provide methods for writing, maintaining, assessing, and promoting the finalized plan. The writing process—establishing a structure, setting priorities, addressing audiences, finalizing and approving the document, and more is simplified and explained. Special sections include lists of information literacy support associations, definitions, best practices, and Web sites.

IL constitutes an essential knowledge base, skill set, and series of habits of mind for university-educated persons in the 21st century. To this end the University advocates an information literacy program to develop the capacity in students and faculty members to access, evaluate, communicate, and use information within the context of the ever-expanding proliferation of multiple personal and organizational information access points.

This statement is similar with the institutional mission of University which stresses intellectual inquiry, lifelong learning, and the integration of liberal arts and career preparation. The outcomes sought will build upon the ACRL performance indicators, but will necessarily differ due to the vague and immeasurable nature of some of the ACRL indicators. The basic outcome, within the context of the subject area and/or career field is that the individual can access and use information as a tool for problem solving and decision making.
The information literacy program consists of three components: models of collaboration; student library spokespersons / advocates; and tailored research education presentation to four specific audiences.

2.11 ROLE OF LIS PROFESSIONALS IN IL PROGRAMME

The basic aim of the library is serve the reader with information means to provide instantaneous information service to user community. Library professionals with their expertise, knowledge and techniques of where to look up and how to find out information for given query can help the users in their search for information by extending personal help and assistance. LIS professionals have to play a significant role to promote information literacy in society. There exists a gap between Librarians and the users’ information needs. To bridge this gap they need to educate and re-educate themselves to acquire new skills and competencies for a new role and they need to cultivate the concept of lifelong learning of information literacy skills.

LIS professionals need to play an important role in the education process by making people aware of a need and motivating the use of information; a new knowledge and a new ability. Many Librarians have to identify the best-suited mixture of computer knowledge and skills and subject knowledge to produce effective program for educational pursuits. They must encourage students to question their findings every step of the way in the research process, especially as new formats are made available. Librarian must build new paradigms and frames of analysis, including new language. They must accept that they are educators and knowledge managers first and foremost.

Library staffs require students to be highly information literate and technically proficient from the day they start their course. To promote information literacy LIS professionals should come forward to organize the courses which enable students to develop technical and communication skills necessary to ensure that they are of immediate benefit to the students.

There are two components of the course for IL;

• Orientation
This is a primarily concerned with the way of introducing the users to the general techniques of library usage and services available and to the organization layout and facilities of a particular library. During orientation library staff delivers a lecture, which introduces the program, demonstrates the use of the catalogue and shows students how to access the self-paced on-line tutorial. Students work through the library catalogue unit of the tutorial and also complete an exercise. They are able to create a network account and configure and e-mail account during one of their orientation week sessions.

- Instruction

Other is instruction that is concerned with learning to make use of the information resources available with specific subject disciplines. It consists of library staff demonstrating CD-Rom network and web-based databases, and searching the internet using search engines and subject gateways. A lecture by library staff called researching a topic is another great motivation for students to appraise critically the material they find, especially information found on the Internet (Jayaprakash and Gupta, 2005).

2.12 EVALUATION INDICATORS

The emphasis on a process approach to education requires a concomitant shift in forms of assessment. Instead of completing a teacher-prepared examination requiring remote memorization of facts, students are asked to demonstrate and assess their own learning. Through authentic assessment, students reflect on their own learning, growth, and the processes by which skills have been achieved. Some of the forms of authentic assessment include portfolios learning and research logs, and rubrics.

2.12.1 Portfolio Assessment

Portfolios allow students to demonstrate learning and growth over a period of time. The portfolio should be deliberate compilation, gathered according to a plan, for use by an identified reader or readers for specific
needs or purposes (Callison, 1993). It may contain not only a student’s final products or best work but also items that provide evidence of the processes used in the development of such items. The portfolio may include references to, reflections on, resources that have influenced the student’s learning. They can describe the processes they used to identify and gather the resources, they can reflect on how and what they learned about their information-searching skills.

2.12.2 Learning and Research Logs

Reflection allows students to assimilate new information and identify processes that are helpful in completing the task at hand. Learning logs are especially useful in extracting information (Stripling, 1993). Students may note their feelings about the information, questions for further research connections to known information, or comments about usage of that particular information.

A research log may be used to document the processes used in completing a particular project. Students may note their accomplishments as well as any problems, questions, or frustrations they encountered. The library media specialist may comment by offering suggestions, giving encouragement, or asking questions for further exploration.

2.12.3 Rubrics for the Assessment of Information Literacy

Rubrics describe what learners should know and be able to do. Designed in the form of a matrix, rubrics contain target indicators and key behavior skills. Information literacy rubrics were designed by the Colorado State Department of Education (1996) to help educators assess students’ progress toward achieving the goals of that state’s.

The Colorado Rubrics for the Assessment of Information Literacy tool allows teachers to identify what their students already know and what they need to learn in several broad areas of information literacy including

1. Constructing meaning from information
2. Creating a quality product,
3. Learning independently,
4. Participating as a group member, and
5. Using information and information technologies responsibly and ethically.

2.13 CHARACTERISTICS OF INFORMATION LITERATE PERSON

The American Library Association was the first organization to formulate a widely accepted standard for what characterizes an information literate person:

Figure No. 2.8 Seven key Characteristics of an Information Literate Person

To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information. Information literacy is the ability to access, evaluate and use information from a variety of sources (ALA, 1989); person tend to cover the same elements, but expand them in one way or another (Langford, 1999).
2.14 INFORMATION LITERACY IN DIFFERENT COUNTRIES

The seed of IL lies in literacy. The seeds of information literacy are germinating of its own spontaneously. The need of information has been realized for national and international development (Kumar, Choudhary and Shah, 2004).

2.14.1 International

2.14.1.1 USA

Librarians all over the world are teaching people a variety of library and information skills. Each year since 1973 the number of publications related to user instruction and IL are increasing. During the past decade many librarians are sharing their experiences and expertise related to information skills at various national and international conferences. In the USA some professional organizations related to education, law, nursing and medicine have already begun to address lifelong educational needs for their professionals (Karisiddappa and Rajgoli, 2005). ALA, Association for educational communications and Technology’s landmark publication Information power and ACRL publication Information literacy competency standards for higher education, have both become de facto standards for IL competencies from kindergarten to college, both across the US and many other nations throughout the world (Bansode, 2009).

2.14.1.2 UK

During the past three decades academic and schools librarians in the UK are actively involved in developing theories and programmes related to user instruction and IL. The ex-polytechnic universities and schools in particular have experimented with and set up a variety of information skills and instruction programmes. In 1998, SCONUL (Society of College, National and University Libraries) created a task force to prepare a statement on information skills for higher education. SCONUL proposed seven sets of skills developed from a basic competence in library and information technology skills. In March 2002, Scotland hosted an international
conference on Information Technology and IL addressing a variety of topics related to IL teaching and information technology (Ramesha, 2008; Karisiddappa and Rajgoli, 2005; Bansode, 2009).

2.14.1.3 Australia

Australian Library and Information Association policies and guidelines reflect the general position of the Association on issues that have an impact on the library and information sector, and provide direction and advice to those who choose to consider the policies and guidelines for their own use. In Australia, Bruce and Christine, (2000) have expertly defined IL as seven distinct areas, viz, information technology, information sources, information process, information control, information construction, information extension, and wisdom experience.

2.14.1.4 Africa

Librarians in several African countries are working on global information environment by teaching information skills. At the University of Botswana, librarians have integrated information skills instruction throughout the curriculum. In recent years, South African librarians and teachers have collaborated to improve learning instruction for lifelong learning. A noteworthy project with help from the Ford Foundation and the Readers Digest Foundation has helped the Western Cape Librarians develop curriculum-integrated IL programmes in academic institutions.

2.14.1.5 Canada

The information policy of the Canadian government among many other information concerns promotes an information-literate population. During the past three decades, Canadian academic librarians have been teaching their students library and information skills. Instructional librarians in academic libraries are continuing to address the challenge of integrating information skills instruction into the total curriculum (Ramesha, 2008).

2.14.1 National

In the context of India, a few studies being carried out in India. There are no specific standards, reports and policy guidelines for information
literacy brought out either by government, professional associations or the institutes of higher learning. Literature survey of the work done in India shows that few Indian authors have published some papers/articles related to Information Literacy. It is interesting to see that all the authors belong to library profession and are teachers, research scholars or working professionals. Some of the authors have carried out surveys in the university libraries, where in they have mentioned that computer literacy and information literacy are synonymous. But the fact is that computer literacy is a component of Information Literacy. It has also been noticed that India lacks the forums, reports, standards and policy guidelines for primary, secondary, adult and higher education. Some of the authors have also discussed the role of Information Literacy in distance education. Programs that can be organized for the distance learning to enhance their Information Literacy skills have also been discussed (Karisiddappa and Rajgoli, 2005).

The National Literacy Mission (NLM) in India was set up in May 1988, with an objective to assess the strengths and weaknesses of the earlier programmes and to accord a new sense of urgency, seriousness and emphasis with fixed goals, clear time frame and age-specific target groups. Information Technology Task Force (ITTF) was formed in 1998. The year 2000 saw another remarkable development in the application of ICT’s in India. In order to boost e-commerce in India, the government passed the information technology bill in May 2000. a number of seminars and workshops are being conducted in India, thanks to the generous grants from UNESCO.

Though at higher education level, INFLIBNET has taken imitative, UGC and ICAR jointly providing training to the agriculture librarians for information search in digital environment (Kumar, Choudhary and Shah, 2004). In addition to this universities are conducting seminars and symposia. The University of Madras has organized a National seminar on Information Literacy and Higher education during 29-30th January, 2007 (Bansode,
2009). Earlier September, 2008 Punjab University organized a IL teachers training workshop sponsored by UNESCO.

The Society for Information Science (SIS), in its 23rd Annual Convention had a sub theme on Information Literacy. Though the conference was not entirely dedicated to Information Literacy concept alone, but this is the first time in India, Information Literacy aspects were discussed at national level. Authors belonging to different parts of the country presented seven papers related to different aspects of Information Literacy. Some of the authors discussed the need of Information Literacy in digital environment and some pointed out the need of integrating Information Literacy in curriculum. One workshop is organized by SALIS (Society for the Advancement of Library and Information Science) and DLIS, Nagpur University, Nagpur in December, 2006. It sponsored by UNESCO, five papers presented they discussed on components of IL, Models and Standards, Legal aspects of IL and ICT literacy.

One such study was conducted by Devi Hileima and Devi Purnima about information literacy within the library: A study with special reference to academic libraries of Manipur. This study covers only seven [7] selected academic libraries of Manipur.

Today, a developing country like India needs Information Literacy Standards and Policy Guidelines at all levels of education. This is possible only if the conferences, seminars and colloquia are organized at regional, state and national level and the concept of Information Literacy is discussed to bring out the Information Literacy Standards depending on the educational setup, policies and research needs of India. It is hoped that the 51st Annual Conference of Indian Library Association (ILA) to be held at Kurukshetra University during Dec. 2005, having main theme “Information Literacy and Lifelong Learning” may come out with some concrete output in this direction (Karisdiddappa and Rajgoli, 2005).

2.15 CONCLUSION
The review of literature shows that scantily literature is available on information literacy, based on review of literature, the data was collected and it was analyzed.

REFERENCES


• Anthony, Ho Wai Pan (2003). Integrating information literacy into the curriculum: Collaboration between university library and faculty. Unpublished doctoral dissertations, University of Hong Kong, Hong Kong.

• Azmi, Hesham (2005). Teaching information literacy skills: a case study of the QU-core program in Qatar University. In Madhusudhan M.


• Donaldson, Christy A. (2004). Information Literacy and the McKinsey Model: The McKinsey Strategic Problem-Solving Model Adapted to Teach Information Literacy to Graduate Business Students. Library Philosophy and Practice. 6(2).


• Inter-University Board of India, (1974). A bibliography of doctoral dissertations accepted by Indian Universities. New Delhi: Inter-University Board of India.
• Isenburg, Megan Von (2004). Information literacy beyond the library: a study of the attitudes and practices of history faculty at UNC. Unpublished doctoral dissertations, University of North Carolina, Chapel Hill.


• Joint, Nicholas (2005). eLiteracy or Information Literacy: Which concept should we prefer? Library Review. 54(9). 505-507.


• Kennedy, Colleen (2005). Teaching information literacy to the advanced writing class in three sessions. Electronic journal of academic and special librarianship. 6(1/2).


• King, Lizette (2007). Information literacy of incoming undergraduate arts students at the University of Western Cape:


• Maiti, Himani (1999). A study on the attainment level of the Bengali neo literates in the light of a custom-built functional literacy achievement
• Mandy, Chan Yuen Chin (2003). Rethinking information literacy – a study of Hong Kong Students. Unpublished doctoral dissertations, University of Hong Kong, Hong Kong.
• Mccaskie, Lucy (2004). What are the implications for information literacy training in higher education with the introduction of federated search tools? Unpublished doctoral dissertations, University of Sheffield, England.


- Palmer, Stuart and Tucker, Barry (2004). Planning, delivery and evaluation of Information literacy training for engineering and technology students. 	extit{Australian Library and Information Association (AARL).} 35(1).

- Partridge, Helen (2008). The reflective online searching skills (ROSS) environment: embedding information literacy into student learning through on online environment. 	extit{IFLA Journal.} 34(1). 55-71.

- Partridge, Helen and et al. (2008). The reflective online searching skills (ROSS) environment: embedding information literacy into student learning through an online environment. 	extit{IFLA Journal.} 34(1). 55-71.


• Philip, Rhoda (1991). A study to determine the extent in which high school students of Hyderabad and Secunderabad have developed scientific literacy and to identify causes for scientific literacy with a view to suggest remedial measures. Unpublished doctoral dissertation, Osmania University, Hyderabad.


• Rajgoli, Iqbalamad Umarfaruk (2008). Role of information literacy in maximizing the use of information for productivity and development: a
case study of selected library and information centers of higher learning and research in Bangalore City. Unpublished doctoral thesis, Karnataka University, Dharwad.


• Sharkey, Jennifer (2006). Towards information fluency: applying a different model to an information literacy credit course. Reference services review. 34(1). 71-85.
• Smith, Marian and Hepworth, Mark (2007). An investigation of factors that may demotivate secondary school students undertaking


• Tez-mei, Tai (2004). A study of teacher usage of the internet as preparation for developing information literacy in students. Unpublished doctoral dissertations, University of Hong Kong, Hong Kong.


• Wilson, Myoung Chung (1998). To dissect a frog or design an elephant: teaching digital IL through the library gateway. INSPEL. 32(3). 189-195.

• Wing, Leung Hon (2003). A study of computer science student’s conceptions of information literacy and their experience in information search process and use. Unpublished doctoral dissertations, University of Hong Kong, Hong Kong.


• Ying, Ning Koon (2008). A case study examining the transfer of information literacy across subjects in primary schools. Unpublished doctoral dissertations, University of Hong Kong, Hong Kong.

• Yu, Holly and Young, Margo (2004). The impact of web search engines on subject searching in OPAC. Information Technology and Libraries.


• Zin, Nor Azan Mat (2000). Gender difference in computer literacy level among undergraduate students in University Kebangsaan Malaysia (UKM). The Electronic journal on information system in developing countries. 1(3). 1-8.