CHAPTER – 2

REVIEW OF THE RELATED LITERATURE
CONTENTS

2.0 Introduction
2.1 Concept of Information Literacy
   2.1.1 Evolution of the Concept
   2.1.2 Landmark Definition given by American Library Association
   2.1.3 Debate on Definitions of Information Literacy
   2.1.4 Technological Change and Changing Definitions of Information Literacy
   2.1.5 Information Literacy as a Liberal Art
2.2 Role of Librarian in Information Literacy
   2.2.1 Changing Role of Librarians
   2.2.2 Librarians and Technological Advances
   2.2.3 Academic Librarian and Information Literacy
2.3 Information Literacy and Lifelong Learning
   2.3.1 Technology and Lifelong Learning
   2.3.2 Notion of Lifelong Learning
   2.3.3 Importance of Lifelong Learning
   2.3.4 Prerequisites for Lifelong Learning
   2.3.5 Methods of Lifelong Learning
   2.3.6 Correlation between Information Literacy and Lifelong Learning
2.4 Information Literacy Models/Standards/Guidelines
   2.4.1 Dervin's Sense-Making Theory
   2.4.2 American Library Association Information Literacy Standards
   2.4.3 Big6 Information Literacy model
   2.4.4 Kuhlthau's Information Search Model
   2.4.5 Wisconsin Association of Academic Librarians - Information Literacy Competencies
2.4.6 Review of American Library Association Information Literacy Standards

2.4.7 SCONUL Seven Pillar Model

2.4.8 Australian Information Literacy standards

2.4.9 IFLA Information Literacy Guidelines

2.5 Technological impact and Information Literacy

2.5.1 Early Impact of Technology on Library Instruction

2.5.2 Information and Communication Technology literacy

2.5.3 Emergence of New Literacies

2.5.4 Increasing Use of Network Technologies

2.5.5 Impact of Advanced Technologies on Information Literacy

2.5.6 New Skills for the Digital Age

2.6 Information Literacy Education

2.6.1 Role of Librarians in Information Literacy Education

2.6.2 Technology Assisted Information Literacy Programmes

2.6.3 Best Practices for Information Literacy

2.6.4 Course Integrated Information Literacy Assignments

2.6.5 Problem Based Learning

2.6.6 Methods of Teaching Information Literacy Skills

2.6.7 Importance of Computer Assisted Learning

2.7 Information Literacy Assessment

2.7.1 Methods of Information Literacy Assessment

2.7.2 Assessment by Portfolio

2.7.3 Task Analysis and Talk-Through Assessment

2.7.4 Multiple Choice Assessment

Conclusion

References
2.0 INTRODUCTION:

A crucial element of all research endeavours is the review of the literature which gives proper direction to the study. To carry out any research, it is important to know what has already been done on the area of study. The amount of literature published in the form of research papers, reports, books, guidelines and standards etc. needs to be reviewed to understand the concept better. This activity helps in knowing whether the study is going to yield new knowledge or will supplement the already existing knowledge. The review of the related literature presents the descriptive account of similar studies made by others and forms the basis for the study. There are three main categories of literature on Information Literacy: introductory papers, theoretical frameworks and empirical studies. Introductory papers usually state the importance of information literacy, clarify the meanings and definitions of information literacy and provide a short history of its developments. Theoretical frameworks provided by experienced researchers who derived new models from their empirical studies. Those empirical studies, for the most part, asked students about their perceptions of information literacy, tested students’ skill in searching and using information and observed students’ typical practices when dealing with information in their academic studies.

On the basis of the thorough study of the published literature and on the advice of the experts following concepts are chosen for the review;
- Concept of Information Literacy
- Role of librarian in Information Literacy
- Information Literacy and Lifelong Learning
2.1 CONCEPT OF INFORMATION LITERACY:

2.1.1 Evolution Of The Concept:

The concept was first introduced in 1974 by Paul Zurkowski, President of the Information Industry Association in a proposal submitted to the National Commission on Libraries and Information Science. The proposal recommended that a national program be established to achieve universal information literacy within the next decade. Zurkowski further defined this concept as "people trained in the application of information resources to their work can be called information literate. They have learned techniques and skills for utilizing the wide range of information tools as well as primary sources in molding information solution to their problems" (as cited in Eisenberg, Lowe and Spitzer, 2004).

Throughout the 1970s and into the mid-1980s, understanding of the term continued to evolve with input from librarians, communication experts and educators. Computer literacy was becoming an increasingly familiar concept. Tied to that was the idea that a critical-thinking skill should be associated with the technical skills required of an information-based society where the amount of information available was increasing exponentially.
2.1.2 Landmark Definition Given by American Library Association:

The seminal event in the development of the concept of information literacy was the establishment of the American Library Association (ALA) Presidential Committee on Information Literacy in 1987. The committee, established by ALA President Margaret Chisholm, consisted of seven national leaders from the field of education and six from the field of librarianship. The final report released in January 1989 provided a landmark definition of information literacy to which all could refer, and precipitated the dissemination of the concept of information literacy beyond the field of library science. The definition of information literacy given by ALA Presidential Committee on Information Literacy is “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 information needed.... Ultimately information literate persons are those who have learned how to learn. They know how to learn because they know how information is organized, how to find information and how to use information in such a way that others can learn from them.”

Arp (1990) says that the concept of information literacy has created some controversy because its nature continues to evolve. The central elements, however, seem clear. Information literacy implies a conscious and systematic attention to developing the capacity to define effectively an information need, use research tools and processes to identify and locate such information, assess it, and communicate an analysis and synthesis of the information in response to that need. McCrank (1991) expressed that the term information literacy needs more clarification. He further noted that the paradox of information
literacy is that it calls upon librarians to change more than users. Frequently, information literacy is defined in terms of the characteristics that one should possess to be an information literate person. Doyle (1992) gave the following set of characteristics of an information literate person.

- "Recognizes that accurate and complete information is the basis for intelligent decision making"
- Recognizes the need for information
- Formulates questions based on information needs
- Identifies potential sources of information
- Develops successful search strategies
- Accesses sources of information including computer-based and other technologies
- Evaluates information
- Organizes information for practical application
- Integrates new information into an existing body of knowledge
- Uses information in critical thinking and problem solving."

2.1.3 Debate on Definition of Information Literacy:

Lenox and Walker (1993) noted information literate person as 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 need. Most definitions, in fact, circle around these stages of need recognition, search formulation, source selection and interrogation, information evaluation and information synthesis and use. Candy, Crebert and O'Leary (1994) describing information literacy as the zeitgeist the
times... (a German word, meaning spirit of the times) an idea whose time has at long last come. It is consonant with the reform agendas in government, in communications technology and in education... with employer's demands for an adaptable and responsive workforce. It is increasingly multidisciplinary and must be included across the curriculum at whatever level of education or training we are involved in. And finally it is consistent with the notion of lifelong learning and the fact that the only constant is change. While Behrens (1994) notes that information literacy is an abstract concept. As a metaphor it is a nearly packaged and imaginative descriptive phrase that is not literally applicable or easily interpretable, implying something more qualitative and diffuse than is evident. Owen (1996) provided a critical focus as a means of defining information literacy by examining what he considers myths regarding this concept. He acknowledges that information literacy is demonstrated through our capacity to confidently challenge ideas because of our ability to access and use information effectively.

Though the definition given by American Library Association Presidential Committee on Information Literacy is widely accepted, many definitions came on the scene, which revolve around the ALA definition. But Bruce (1997) argued against defining information literacy according to particular skills needed to be information literate. In her opinion information literacy is experienced and so is not definable as a set of skills. And she further argued that these skills can become quickly outdated and many of these descriptions have been designed and accepted without being subject to testing. "They have not been derived from observation of the processes of information users; nor have been examined to determine the extent to which they might be
applicable.” Bruce recommended basing a definition of information literacy on the ways in which people experience it. Through phenomenographic research she identified seven conceptions of information literacy among academics in Australia. Bruce further explains that none of these seven conceptions are inaccurate as they provide a picture of how information literacy is perceived by higher educators. A disadvantage of the conception’s approach is that it is impossible to base information literacy assessments and training courses on conceptions of information literacy alone. The skills based approach to defining information literacy, however, frequently updated assessments and training courses can be more easily built around a set of required standards.

2.1.4 Technological Change and Changing Definitions of Information Literacy:

The new concepts such as visual literacy, media literacy and computer literacy etc. emerged due to the increasing use of technology. Spitzer et al ... (1998) pointed out, information literacy applied not just to the printed word but to other literacies including visual, media and computer. Information literacy is frequently confused with other terms such as library skills, computer literacy, information technology literacy, information skills and learning to learn and authors have sought to emphasise the differences between these terms (Snavely & Cooper – 1997, Bruce – 1997, Johnson – 2001, Corrall – 2000, Bawden & Robinson – 2001). Library and information technology skills for example are just two aspects of being information literate (Corrall, 2000).
Information literacy, as defined, has the same characteristic distribution as conventional literacy (the ability to read and write and is often simplistically viewed as a binary condition, either the person can read or cannot read). While there are those who are exceptionally information literate, knowing the appropriate sources of information in almost any field, there are those who are at the bottom of the scale and might be termed as information illiterate. Between the extremes are the vast majority of people who have some access to information and some knowledge of how to use the information in their work. Ferreiro (2002) defined information literacy as “the right of individuals throughout their lives, to practice and acquire systematically the capability to recognise their need for information, to find it, to select it from many alternative sources, to evaluate the source(s) from which it was retrieved, to learn how to use it, to organise it, and, finally to interpret it in order to respond to their everyday life concerns”. Information literacy is the adoption of appropriate information behaviour to obtain, through whatever channel or medium, information well fitted to information needs, together with a critical awareness of the importance of wise and ethical use of information in society” (Johnston & Webber, 2003). As the technology advanced, authors started integrating the technological aspects while defining information literacy. Even it has been noticed that authors started considering the social, economic and political aspects surrounding information literacy while defining and explaining the information literacy concept.
2.1.5 Information Literacy as a Liberal Art:

Shapiro and Hughes (2003) gave such a typical definition of information literacy. According to them information literacy should in fact be conceived more broadly as a new liberal art that extends from knowing how to use computers and access information to critical reflection on the nature of information itself; its technical infrastructure. And its social, cultural and philosophical context and impact – as essential to the mental framework of the educated information-age citizen as the trivium of basic liberal art (grammar, logic and rhetoric) was to the educated person in medieval society. Information literacy is more than a framework of knowledge and a set of skills, it is an attitude that reflects an interest in seeking solutions to information problems, recognition of the importance of acquiring information skills, information confidence rather than information anxiety and a sense of satisfaction that comes from research competence (Small, Zakaria and El-Figuigue, 2004).

Lupton (2004) noted that information literacy includes, “library research skills and information technology literacy, but it is broader than these. Information literacy is not just about finding and presenting information, it is about higher order analysis, synthesis, critical thinking and problem solving. It involves seeking and using information for independent learning, lifelong learning, participative citizenship and social responsibility”. Where as Lloyd (2004) further extended this definition and felt that information literate people have a deep awareness, connection and fluency with the information environment. Information literate people are engaged, enabled, enriched and embodied by social, procedural and physical information
that constitutes an information universe. Information literacy is a way of knowing that universe.

These definitions are examples of the ways information literacy extends into the realms of critical thinking and ethical usage of information. The definitions also include the recognition that information may be presented in a number of formats, from simple to the complex, and may include printed words, illustrations, photographs, charts, graphs, tables, multimedia, sound recordings, computer graphics or animations.

2.2. ROLE OF LIBRARIAN IN INFORMATION LITERACY:

While reviewing the literature, it was noticed that majority of the authors have discussed about the importance and the role that librarians can play in the advancement and successful implementation of information literacy. Librarians have been actively involved in the library instruction programmes and have been assisting the users in finding the required information. Kuhlthau (1996) believes that users need assistance and that it is a librarian’s job to intervene in the individual’s information search process. Whereas Heery and Morgan (1996) says teaching knowledge and skills must take an essential, rather than desirable place in the librarian’s portfolio. Bruce (1997) in her book “The Seven Faces of Information Literacy”, however, says there is too much emphasis on the intermediary and this distorts the information seeking process.
2.2.1 Changing Role of Librarians:

Rader (1997) explains that librarians are uniquely qualified and positioned to assume an active role in the restructuring of the teaching-learning environment. Librarians are experts in collecting, organising, evaluating and providing access to information in all formats. They are able to teach students how to become knowledgeable information handlers for print formats as well as for electronic information in the Internet environment. Librarians must become active leaders in the electronic information environment and in the educational reform movement. Librarians have long been acknowledged as signal resources supporting teaching, learning and research. They are the chief contributors to the 'repository of knowledge'. Librarians are not only openers of doors and gateways to information. But we are not only navigators of the seas of information; we are not only choreographers of the dance of knowledge; explorers, scouts and pathfinders; also key enablers, able to empower our users to become more self-sufficient in developing information gathering and evaluating skills which will assist others to be well resourced for changing life circumstances (Wooliscroft, 1997). Bundy (1999) put a different perspective to the role of librarian in information literacy and proposed that librarians must not only deeply involved in information literacy as an intermediary, but they must also be at the forefront of the concept itself to ensure that others are aware of the assistance provided by librarians in organisations.

But McNamara and Core (1998) stressed that if "librarians are to play their full part in the provision of a quality learning environment for students, then librarians must become trained and qualified
educationists as much as their academic colleagues." Libraries and librarians have an opportunity to improve the quality of education by participating in and strengthening information literacy programmes (Schaffner, Stebbins and Wyman, 1999). In order to do this, libraries need to adopt a broader conceptualisation of the role of the academic library – beyond collecting, organising and preserving materials. In other words, the academic library becomes a teaching library, which is actively involved in all aspects of higher education – teaching, research and community service (Boisse, Guskin and Stoffle, 1984; as cited in Allen, 2000). Schmidt and Cribb (2000) elaborated the role of librarians in the information age. According to them, in transforming the learning environment, one goal of the library in the information age is to foster effective self-service among users and to create lifelong and self-directed learners. The library is focusing on the creation of self-sufficient information literate customers. Librarians must also reinvent themselves and become involved actively in teaching how to find, use and evaluate information as part of a lifelong learning continuum.

Although academic libraries have already established a ‘training’ role in universities, substantial technological, pedagogical and cultural changes occurring within the higher education sector now demand that librarians become educators. This complex role demands more than sound pedagogical knowledge, advanced teaching skills and an ability to develop and deliver effective learning experiences. It also requires that the teaching librarian functions as an educational professional; that is as one who can engage in educational debate and decision-making processes, influence policy, forge strategic alliances and demonstrate diplomatic sensitivity. Peacock (2000) says that the success of the
information literacy initiatives of a library and indeed a university is largely dependent upon the commitment of the librarian to the goals and objectives of a programme, and their ongoing involvement in the development, promulgation and implementation of educational services and resources. In order to be “explorer”, “mentor” and “promoter and educator” to meet their own training needs, librarians need to be well versed with the skills necessary to effectively carry out the information literacy instruction. Moreton and Salisbury (2001) suggests that librarians need to pursue and identify skills needed to effectively practice and deliver information literacy programmes. The librarian’s role has mostly been limited to teaching students how to use library collections and the information retrieval tools. When the role of teacher changes from a single authority to the facilitator of learning processes and a librarian who also forms a part of this facilitator of learning processes becomes Cybrarian. When librarian becomes Cybrarian, a cyderdective or an infonaut, teaching and learning will never be the same (Niinikangas, 2001).

2.2.2 Librarians and Technological Advances:

Bruce (2001) says in the recent times librarians are beginning to recognise the need to move away from a library and information retrieval centered view of information literacy toward a broader understanding of the role of information literacy, and the role of the information professional in fostering student learning. Ryynanen (2001) expressed that library professionals should work hard to make their presence felt in the Information Society. Libraries are a good answer to many of the challenges in the Information Society including the
promotion of information literacy. Peacock (2001 and 2002) and Jackman (2002) noted that librarians need to not only be conversant with pedagogy and practice, they must be ahead of the game in terms of teaching and learning. As academics ask less “what is information literacy?” and more “how do I do it?” the librarian’s position as a consultant in the teaching and learning cycle becomes more critical than ever before. In taking this role, they must be willing, able and confident enough to do so, in order that they may do it well and that the academics trust and value their contribution. Peacock further urges librarians to position themselves “as key educators in the teaching and learning environment and empowered with an educational competence and professional confidence equal to that of their academic peers.”

While Macauley (2001) describing Peacock’s statement as “missionary zeal” claims that “librarians can certainly complement the skills of their academic peers, librarians must also expect to follow a similar pathway to academia.”

With increasing use of information technology in disseminating the library services Edwards (2002) felt that librarians have a lot to offer that can be tapped in the digital era – they provide access; they realise the importance of partnership; they are good at structuring knowledge; and can be useful in providing easy access; they are good at imparting skills and preserving heritage. Librarians have been trained to establish user needs and to select and evaluate appropriate information. Librarians need to recognise that information literacy is not a subject discipline and that they do not control it. Instead, they need to recognise the limits of their expertise and communicate to students the knowledge they have acquired as librarians. Librarians know how to
use tools to find information. They know where information is kept. They know that the vast majority of accumulated knowledge for the past 500 years is kept between the covers of books. They know how to construct a search, when precision is called for and when it is better to search more generally. They know how to distinguish between sources of information, how to evaluate the potential value of sources and their credibility. They understand that information is dynamic, ever-changing and valuable only so long as it is accessible (Asher, 2003). Librarians are strongly committed to equity of opportunity through information empowerment. They recognise that in an information intensive society the most critical divide is between those who have the understandings and capabilities to operate effectively in that society and those who do not – and that this constitutes the information literacy divide, of which the so called digital divide is one aspect (Bundy, 2003).

2.2.3 Academic Librarian and Information Literacy:

Academic institutions have not yet realised the true nature of information literacy as one of the core skills that the labour markets expects from everyone graduating from tertiary education. Academic librarians must assume the responsibility for creating opportunities for students to acquire this skill during their library user education (Correia and Teixeira, 2003). Bundy (2004) in his paper “Beyond information: the academic library as educational change agent” says information literacy is an issue for librarians but it in not a library issue. It needs to be owned by all educators. However, turning information literacy and how to learn into 21st century substance will, it seems,
continue to require leadership by librarians. The leadership will not usually come from academic teachers, who may have difficulty in grasping the issue, see it as a threat to their autonomy or may be reluctant to move beyond the comfort zone of content exposition and commentary.

2.3. INFORMATION LITERACY AND LIFELONG LEARNING:
2.3.1 Technology and Lifelong Learning:

The process of information literacy requires not only the learning of a constellation of skills, but also a new way of thinking in order to derive meaning from learning. Technological storage and sharing of information has increased the availability of data tremendously. Much of this information is available only through telecommunications. Information literacy in telecommunications is achieved when learners know when to use online resources; know to access information competently; know how to evaluate information as to accuracy and pertinence for each need and know how to use this information to communicate effectively. Learners who have learned these skills of information literacy have lifelong learning skills that need in the information age (Hubbard, 1987). Hancock (1993) said that beyond the basic skills of reading, writing and arithmetic, the citizen/worker of the 21st century needs complex analytical skills. The technological tools of the information age – computer networks, telecommunication systems, and databases – have put an unprecedented volume of information at our fingertips.
2.3.2 Notion of Lifelong Learning:

One of the major shifts is that education is now conceived as an on-going activity rather than a once-off preparation for a career. This notion of lifelong learning is closely linked to a person’s capacity to deal independently with new information in a range of contexts; that is, to be able to identify, locate, access, evaluate relevance of, retrieve and use information in a range of forms using various media. Candy (1993) refers to this as life-wide learning to capture the pervasive nature of learning expectations. Information literacy enables this kind of independent learning and has become a central issue for both those within the workplace, and those involved in educating others for the workplace. Wooliscroft (1997) proposed that often the choices by which individuals can be empowered to learn, what, when, how and where they like, throughout their lives, is constrained in practice. Information literacy may well provide an important connection between the information society and the learning society. Information skills assist people to learn and re-learn, to train and re-train as the various vicissitudes of living in a rapidly changing world require them to be adaptable and flexible with speed and competence in ways barely imaginable a few years ago.

Information literacy enables students to recognise the value of information and use it to make informed choices in their personal, professional and academic lives. Information literacy requires an ongoing involvement in learning and in evaluating information so that lifelong learning is possible (Wisconsin Association of Academic Librarians Information Literacy Committee, 1998). Teaching information literacy for lifelong learning will help career development,
tackle unemployment, encourage flexibility and change, raise personal and national competitiveness, help develop complete human beings, preserve or develop national culture, sustain a sense of local community, overcome social exclusion and build international understanding (Bundy, 1998).

2.3.3 Importance of Lifelong Learning:

Lifelong learning is now viewed as both a social prerogative and economic necessity (Anderson, 1999). The information arena has changed dramatically over the last few years, and continues to change with the impact of the Internet serving as a delivery platform for library information a source of content and a medium for dialogue. Lifelong learning come to involve a variety of learning experiences or modes (Knapper and Cropley, 2000). These include formal university campus teaching, workplace open learning, modular flexible learning programmes, correspondence-based distance learning courses, and most recently Web or multimedia – based courseware (also known as “virtual learning”). Dunn (2000) described that developing lifelong learners is central to the mission of higher education institutions. By ensuring that individuals have the intellectual abilities of reasoning and critical thinking and by helping them construct a framework for learning how to learn, colleges and universities provide the foundation for continued growth throughout their careers, as well as in their roles as informed citizens and members of communities.

Within today’s society says Breivik (2000), the most important learning outcome for all students in their being able to function as independent lifelong learners. The essential enabler to reaching that
goal is information literacy. Lifelong learning is the goal for which information literacy is an essential enabler. A 1999 report of the United States National Research Council promotes the concept of 'fluency' with information technology and delineates several distinctions useful in understanding relationships within information literacy, computer literacy and broader technological competence. The report notes that 'computer literacy' is concerned with total learning of specific hardware and software applications, while 'fluency with technology' focuses on understanding the underlying concepts of technology and applying problem solving and critical thinking to using technology (as cited in Bundy, 2001).

2.3.4 Prerequisites for Lifelong Learning:

Motivation and self-image are the broad pre-requisites for lifelong learning (Cronau, 2001). These attitudes, values and motives allow learners to believe that learning is desirable. The notion of lifelong learning has evolved by way of continuing education and universities of the Third Age which value learning for its own sake and the pursuit of personal fulfillment through learning. The term has been taken up and redefined in the contexts of the pace and nature of changes in work and society by organisations such as UNESCO and OECD (Organisation for Economic and Co-operation and Development) and by other writers. Notions of information literacy have a somewhat different history arising from information literacy as an academic research skill to information literacy as a set of knowledge skills and abilities transferable to the workplace. These notions – of lifelong learning and information literacy have been understood as
interrelated, but their integration into coherent and strategic framework for implementation has been problematic (George et al, 2001). Lifelong learning has most often been modeled after traditional learning in schools and universities says Bork (2001). And further predicted that in the future, as our population ages, lifelong learning, including adult learning, will be the “tail that wags the dog” for all learning. All learning will use it as a model.

Marcoux (2001) notes that ... economically the question of interfacing non-technological goals with technological means for citizens looms as an issue, for the concerns of economical life skills now include the abilities of information access and use from a technological viewpoint.

To respond effectively to an ever-changing environment, people need more than just knowledge base. They need techniques for exploring, making connections and making practical use of information. This becomes even more acute with lengthening life spans and increasing leisure time. Information literate citizens know how to use information to their best advantages, both at work and in everyday life. Information literate citizens understand the need for quality information to address problems and in society, as well as the need to analyse, question and integrate the information available into their own bodies of knowledge and experiences (Correia, 2002).

2.3.5 Methods of Lifelong Learning:

Information literate individuals form the backbone of today's society and are essential to social and economic well being. Information literacy focuses on interaction with information, including sharing and
learning from it. The practice of information literacy and its contribution to continuous learning is important to knowledge creation. O'Sullivan (2002) further predicts that information literacy can go some way to enabling knowledge management to move beyond software, by identifying the human processes and skills necessary for successful interaction with information and enabling staff to take advantage of the structures and processes developed as part of a knowledge strategy. Information literate workers develop an intellectual and cultural framework that facilitates knowledge sharing.

The concept of lifelong learning has had international currency since at least 1972, with the appearance of the Final Report of UNESCO's International Commission on the Development of Education. The so called Faure Report argued that "every citizen should have the means of learning, training and cultivating himself/herself freely available. Later in the same Report, the authors advocated lifelong learning "as the master concept for educational policies in the years to come for both developed and developing countries" (as cited in Candy, 2002). The concept of lifelong professional learning for the information professional is again emphasised as they contribute to the new environment and position themselves as knowledge professionals. The knowledge professionals recognises and embraces a set of skills and expertise from a variety of disciplinary areas – human resources development, training and development, communications, technology system design, usability, information management to name a few. However, while it is acknowledged that the information professional needs a new literacy
for knowledge management initiatives to succeed then there must be an upskilling/reskilling of all workers (Houghton and Halbwirth, 2002).

According to a Google press release, more than 17 million Internet sites and 3 billion web pages may be available, plus huge amounts of print and multimedia materials. It is all too easy for students to become confused or overwhelmed. People having information literacy and lifelong learning skills can only survive the flood of information (Rockman, 2002). The new frontier of information has many similarities with gold rushes and migrations of the past. Anyone can "stake a claim", so there is great variation in the quality and credibility of the content. In order to succeed in the new frontier, it is vital to develop the ability to locate effectively, evaluate critically and incorporate information into their knowledge frameworks. Information literacy is not a destination, it is an ongoing journey and it is the key to lifelong learning (Cunningham and Lanning, 2002). Lifelong education is a comprehensive concept, which includes formal, non-formal and informal learning extended throughout the lifespan of an individual to attain the fullest possible development in personal, social and professional life. It seeks to view education in its totality and includes learning that occurs in the home, school, community and workplace and through mass media and other situations and structures for acquiring and enhancing enlightenment (Dave, 1973 as cited in Man, 2002).

In order to survive in the world and in the workplace, it is recommended that individuals gain a range of information literacy, critical thinking and lifelong learning skills. In a world dictated by information and communication technologies (ICTs), information
literacy is, in the words of Bundy (2003), "a prerequisite for participative citizenship, social inclusion, creation of new knowledge, personal empowerment and learning for life." Information literacy has become a key academic and life skill. Information literacy is the meta-competency of the knowledge economy says Lloyd (2003). In the knowledge economy, the ability of the individual to become information literate and to engage effectively the operational skills of information literacy are attributes in which organisations should invest, in terms of both recruitment and training. The information literate employee is a critical thinker and problem solver. Information literate individuals have developed the ability to make informed decisions based on the ability to integrate and synthesise operational and cognitive information that is gained through the engagement and interaction with information environments; information systems, resources, information services, colleagues and other individuals. Information literacy has become an important skill for undergraduate students due to societal changes that have seen information becomes a valuable commodity, the need for graduate to become lifelong learners to remain effective across their working lives and the recognition that information literacy is an underpinning generic skill for effective learning in higher education (Tucker and Palmer, 2003).

2.3.6 Correlation between Information Literacy and Lifelong Learning:

Lifelong learning or learning from cradle to grave does not have the same connotation as recurrent education within the educational system. Lifelong learning reflects a more holistic view on education and
recognises learning in and from many different environments. Lifelong learning is related to recurrent training available within the framework of the formal education system, but it is not the same thing. Lifelong and life-wide learning is a concept with broader scope and consequences (Haggstrom, 2003). Barlow (2003) noted that we are living in a time of transition and the old view, that after schooling or vocational training the development of ability was due to "experience", remains a significant influence on how people often think of learning. Basically, that view does not recognise learning. The assumption is that ability is gained, through experience, by a sort of osmosis. Today, what is gained from experience is seen as being gained through a process of learning.

The value of the concept of lifelong learning is that it carries within it the exhortation to us all that we each need to be learning all our lives long. That is a powerful message, bringing us to the questions of what we need to learn and how we will go about it. Information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments and to all levels of education, while recognising the disparities in learning styles and in the nature and development of literacy in different countries. It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning, information literacy should be introduced wherever possible within national curricula as well as in tertiary, non-formal and lifelong education (Abid, 2004). Hager (2004) advocates that there is much scepticism about the concept of lifelong learning within both the educational literature and the literature on work. Certainly, many work
arrangements discourage learning, let alone lifelong learning. Nevertheless, there are also work situations in which significant learning occurs. However, even in instances where work arrangements are more favourable for learning, there does not seem to be wide recognition that this is the case. All societies in all nations are experiencing the effects of globalisation on economic and financial flows, information flows, and infrastructure demands. To be merely current with today’s technology one must learn effectively and take a broader view of life and relationships than was possible in the past (Agee, 2005). Preece (2005) proposed that lifelong learning has become an essential characteristic of learning society. There cannot be a learning society without widespread opportunities for and participating in learning by all its members throughout their lives. All purposeful learning activities are to be undertaken on an ongoing basis with the aim of improving knowledge, skills and competence... lifelong learning is the key to ensuring social integration and to achieving equal opportunities.

2.4 INFORMATION LITERACY MODELS / STANDARDS / GUIDELINES:

Over the years many models of information literacy and information skills have been developed and these models attempt to describe an individual’s strategies as they search for information. Some models are linear, meaning that the steps must be performed in a set manner and other are non-linear. Non-linear models suggest that an individual passes through different stages at different times depending on what information they need and what they need it for.
2.4.1 Dervin's Sense-Making Theory:

Dervin's (1986) sense-making theory described the need to gain a 'sense' about new data before an individual can move on in the information search process. An individual's information need is determined by their situation, information gaps in their existing knowledge and intended use of the data. Dervin proposes that information is constructed by an individual and does not have an existence independent of that individual. All individuals that encounter the same data must develop their own 'sense' or recognition about that data to incorporate it into their existing body of knowledge.

2.4.2 American Library Association Information Literacy Standards:

Information Literacy developments in United States are based on national collaborations. The national work groups, professional organizations and task forces have worked together to define the components of Information Literacy in higher education. American Library Association states "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" ALA (1989).

2.4.3 Big6 Information Literacy Model:

Eisenberg and Berkowitz (1990) developed the Big6 information literacy model. This is one of the most widely used models of information literacy. It represents a schematic approach to problem solving. The Big6 are non-linear and stages can be repeated if necessary. To solve a problem, the learner needs to define the problem, decide...
which sources are appropriate to solve that problem, and develop skills to physically locate these sources. Learners then need to extract information from the sources they have found, apply the information to the problem at hand, and then evaluate how effectively they solved the problem. The Big6 skills are task definition, information seeking strategies, location and access, use of information and synthesis and evaluation. It is designed as a set of skills that are transferable across the educational spectrum, employment situations and subject areas. Although there is a logical flow to the above steps, information problem solving is not always a sequential process. However, authors state, it is important that the various steps must be completed at some point.

2.4.4 Kuhlthau's Information Search Model:

The information search process consists of distinct stages that are marked by changes in the individual's cognition and experience. Kuhlthau's (1993) model is linear and consists of six stages; initiation, selection, exploration, collection, presentation and assessment. Information needs change as the individual's understanding of their information problem becomes more clear. The information search is dynamic because it involves learning during the search. Ellis' (1993) model has eight stages, which are similar to Kuhlthau and Eisenberg & Berkowitz. This model is non-linear and the relationship between the stages is dependent on the individual's specific problem and situation. Kuhlthau (1996) states that intermediaries such as librarians can help the individual to define their information problem and goals during reference interviews. Kuhlthau's zone of intervention describes the
point at which it is appropriate for librarians to intervene in the individual's information search process.

2.4.5 Wisconsin Association of Academic Librarians Information - Literacy Competencies:

The Wisconsin Association of Academic Librarians (1998) developed the information literacy competencies and criteria for libraries in Wisconsin. It has recognised ten standards and probable indicators and possible outcomes in its report.

- Identify and articulate needs which require information solutions
- Identify and select appropriate information sources
- Formulate and efficiently execute search queries appropriate for the information resource
- Interpret and analyze search results and select relevant sources
- Locate and retrieve relevant sources in a variety of formats from the global information environment
- Critically evaluate the information retrieved
- Organise, synthesise, integrate and apply the information
- Self-assess the information-seeking processes used
- Understand the structure of the information environment and the process by which both scholarly and popular information is produced, organised and disseminated
- Understand public policy and the ethical issues affecting the access and use of information
2.4.6 Review of ALA Information Literacy Standards:

In the year 2000, the information literacy standards developed by the American Library Association (ALA) in 1989 were reviewed by Association of College and Research Libraries (a division of ALA) Standards Committee and approved by the Board of Directors of Association of College and Research Libraries. These standards were also endorsed by the American Association for Higher Education (AAHE). These five standards are supplemented with 22 performance indicators and 87 probable outcomes.

2.4.7 SCONUL Seven Pillar Model:

The Society of College, National and University Libraries (SCONUL, UK) Task force on Information Skills was first convened in early 1990, as a result of increased awareness of information skills training as an important strategic issue for university and college libraries and information services. It was felt that within higher education, information literacy should include the notion of an individual who is able to contribute to the synthesis of existing information, to further develop ideas building on that synthesis and ultimately create new knowledge in a particular subject discipline. The 'Seven Pillar Model of Information Literacy' was drawn up by SCONUL in 1999. The model attempts to show the relationship between the 'novice information user' at the basic level and the more advanced idea of information literacy. The pillars show an iterative process whereby information users progress through competency to expertise by practising the Seven Headline Skills.
These seven skills mentioned in the diagram are supplemented with eighteen performance indicators.

Bainton (2001) says in this model basic IT skills are seen as a key element underpinning information skills. However, this is only an assumption and SCONUL model does not provide standards that are tailored specifically to individuals at different levels of educational status. As SCONUL suggests, their model is a useful framework for education and assessment but it may need to be interpreted to suit individual needs thus, institutions must establish their own levels of competency loosely based on these recommendations.
2.4.7 Australian Information Literacy Standards:

Australian Information Literacy Standards are based on the United States standards. The United States standards were reviewed at a workshop by the University of South Australia for the Council of Australian University Librarians (CAUL). Keeping in view the Australian research, theory elaboration and practice, the United States standards were modified to suit the Australian higher education setup where the standards were first intended to apply. The major difference between Australian and United States standards is that Australian standards are more inclusive than the United States version and talks throughout about the "Information Literate Person" rather than the "Information Literate Student". The scope of Australian standard is obviously wider covering not only to the students but also the faculty member and non-academic setting (AARL, 2001).

2.4.9 Information Literacy Standards in Science, Engineering and Technology:

In January of 2002 JoAnn DeVries, Chair of the Science and Technology Section, charged the STS Task Force on Information Literacy for Science and Technology with developing standards, performance indicators and outcomes for library instruction in science and technology. The STS Council approved the resulting product in June of 2004 at the American Library Association Annual Conference in Orlando, Florida. Based on the ACRL Information Literacy Competency Standards for Higher Education, five standards and twenty-five performance indicators were developed. Each performance indicator is
accompanied by one or more outcomes for assessing the progress toward information literacy of students of science and engineering or technology at all levels of higher education.

2.4.10 IFLA Information Literacy Guidelines:

The International Guidelines on Information Literacy have been compiled on behalf of the Information Literacy Section of IFLA, with the aim of providing a pragmatic framework to those professionals who need or are interested in starting an information literacy programmes from scratch. The guidelines will help libraries to guide their work to meet current information needs of those who are engaged in educational programs, that is schools and higher education. However, most of the concepts, principles and procedures can be applied with some adaptation to any library setting. Information competencies are vital for success in lifelong learning education and are also vital for any citizen in their jobs and interactions of daily life.

The information literacy standards to become effective learners include three basic components: access, evaluation and use of information. Lau (2004) notes that these core goals are found in most of the standards created by individual educators and library associations such as AASL, ACRL, SCONUL and the Australian and New Zealand Institute for Information Literacy. The IFLA information literacy standards are based on these international experiences and contributions. The IFLA standards are grouped under the three basic information literacy components.
ACCESS:
- Definition and articulation of the information need
- Location of information

EVALUATION:
- Assessment of information
- Organisation of information

USE:
- Use of information
- Communication and ethical use of information

2.5. TECHNOLOGICAL IMPACT ON INFORMATION LITERACY:

2.5.1 Early Impact of Technology on Library Instruction:

In the midst of the information explosion, the ability to access, retrieve and evaluate information should constitute a significant part of today's definition of literacy. In an era when today's 'truths' become tomorrow's outdated concepts, individuals who are unable to gather pertinent information are almost as helpless as those who are unable to read or write. The college-educated person can no longer rely on previous knowledge, textbooks and faculty to provide the information necessary to make informed judgements; no single person or group of individuals is capable of assimilating all the available information or of keeping abreast of new information as it is generated. The ability to program a computer – will be a key element in an updated concept of literacy (Breivik and Gee, 1989). Notably the Internet and World Wide Web (WWW) have profoundly changed the way one works, lives, collaborates and communicates. With the rapid growth of the Internet
and the Web, one can see a move toward a new communication
paradigm: a shift from face-to-face human contact to human-machine
interaction; from paper-based information transfer to electronic
delivery; from text-centered mode to multimedia and from physical
presence to tele-presence or virtual presence (Xiao, Mosley and
Cornish, 1997).

Khan (1997) feels that in terms of instructional design the
medium of the Web seems ideally suited to the task of teaching
information skills. Information sources required by students are
increasingly delivered via the Web. Furthermore the Web is a powerful
medium that has the potential to provide meaningful learning
environments. Kokkonen (1997) noted that the fast development and
adoption of modern information technologies are changing the
traditional ways of communication also in the academic world. On the
other hand, even though new media and new channels of
communication are emerging, the old ones are not necessarily
disappearing, rather, they are getting new features. With growing use
of information and communication technologies, demands for literacy
have now heightened with growing emphasis on reading,
comprehension and information literacy, and on the ability to gather
information from multiple sources and to use the information
meaningfully and critically. This is leading to a more complex
understanding of literacy that includes making critical judgements
about the accuracy, current relevance and unexpressed messages
implicit in information (Mikulecky and Kirkley, 1998). The amount of
information available to students from all sources, both offline and
online is increasing rapidly. Once students master skills for
determining the accuracy, authority and authenticity of Web resources, it is just as important they take the process to the Web to the purpose at hand—their own information problem. Shih et al (1998) conducted a study that showed “different types of students using different learning strategies and patterns of learning with different learning styles can learn equally in web-based courses” (as cited in Shrock, 1998).

2.5.2 Information and Communication Technology Literacy:

Use of a range of communication tools such as the Internet, e-mail and the World Wide Web for the location of information and dissemination are now considered to be components of ICT literacy and yet not necessarily that of computer literacy. Many authors describe the place of computer literacy as a component of a more encompassing list of ICT skills (Eisenberg and Johnson, 1996; Shapiro and Hughes, 1996 and Bruce, 1998). In the information age, the speed at which we work makes us increasingly dependent on high-quality and accurate information. However, information is becoming more voluminous, fragmented into different formats and media and duplicated in multiple physical locations. In order to access and use these myriad sources effectively, people must be information literate.

To use information sources effectively, one need both technology infrastructure and information literacy infrastructure in place. However accurate, up-to-date information determines the difference between the rich and the poor in the Information Age (Ercegovac and Yamasaki, 1998). Calvert (1999) in his study described that the topic of “misinformation” on the World Wide Web has barely been explored despite its obvious relevance to the use of information resources in
education. Are students equipped to detect misinformation on the Web, and what can be done to reduce the impact on higher education of Web misinformation. Does the availability for discredited information unknowingly to be widely disseminated and cited? Calvert further notes that if this is the case, then greater use of the Web by students will lead to a faster dissemination of misinformation than has ever happened before. He recommends the most commonly prescribed solution to this problem as “information literacy”. Though this was criticised on the grounds that it is fuzzy concept and that it cannot reach all the people, it nevertheless has the support of the experts and the students in the developed countries.

2.5.3 Emergence of New Literacies:

With the advances in technologies the terms computer literacy, network literacy, Internet literacy and information and communication technology literacy got much impetus from the authors. Gilster (1999) says “digital literacy is the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers. Acquiring digital literacy for Internet use involves mastering a set of core competencies. The most essential of these is the ability to make informed judgements about what you find online.” The incredible advancements in information literacy are also swiftly changing the education scenario and a major shift from a traditional to hi-tech classroom is expected. New terminology is being coined and terms like electronic, digital, virtual or cyber classroom are being suggested for future learning sites. Majid (1999) urges that mere availability of sophisticated hardware and access to a variety of
electronic information sources would not be enough to actualise these innovative concepts. Major changes in instructional methods and teaching methodologies would be desirable for proper utilization of modern technologies.

Technology as a object of instruction approach and technology as the tool of instruction approach has greater impact. Technology is changing the way higher education institutions are offering instruction (Plotnick, 1999). With the explosion of information generated and stored, the unregulated sprawl of the Internet, the shift from a print – to an image based culture, the development of sound and video archives and the ease of seemingly infinite reproduction of words and pictures through electronic media, the pitfalls for college students have multiplied geometrically. There is so much information, so much of it of doubtful quality, so accessible through so many different platforms” (Roth, 1999). Individuals who are knowledgeable about finding, evaluating, analyzing, integrating, managing and conveying information to others efficiently and effectively are held in high esteem. Dewald (1999) has commented that the “unique capabilities of the Web allow librarians to move beyond traditional pedagogical techniques to active, creative learning.

The Internet and World Wide Web, however, have had a profound effect upon the ways in which we access and interact with information. There are challenges associated with teaching students not rely on web search engines for all their information needs and to think critically before utilizing Web resources for scholarly research. The challenge lies in teaching students both sophisticated keyword searching concepts and how to make good use of thesauri, indexes, and
controlled vocabulary within specific databases (Kutner 2000). The amount of information one can retrieve on a specific topic may be daunting; it is therefore an essential part of library instruction efforts to include discussion of critical evaluation of information resources and an opportunity to teach and reinforce information literacy skills through a sustained, progressive library instruction effort.

2.5.4 Increasing Use of Network Technologies:

The development of the "digital library" or "virtual library" in particular has created an information environment that is complex and fluid, connective and interactive and diverse and unpredictable and where the professional provision of information is no longer constrained by time and place. It is becoming increasingly clear that information technology and the development and management of digital collections and information services is challenging and reshaping the way libraries do almost everything they do, and this has major implications for information literacy initiatives (Todd, 2000).

McKenzie (2000) urges that it is time to replace the term IT (Information Technology) with IL (Information Literacy). Information technology is mainly about flow – the movement of information through networks... but adding information in a time of infoglut and data smog can actually interfere with learning and understanding.

Fjallbrant (2000) noted that information technology has made access to information easier, in the sense that full-text journals and articles can be accessed via computers, both at work and from home. It is also possible to access databases in a variety of forms – from CD-ROMs, computer cached storage or directly via the Internet. Librarians
have been initiators of ... new development (in information literacy) and the profession has an intimate awareness of the information environment and critical abilities to communicate and work with information users (Bruce, 2000). Webber (2001) reiterated that information technology skills are acknowledged as being key for all types of student. If you are trying to get more resources for information literacy education, then jumping on the information literacy bandwagon may be effective. In particular, students and academics are interested in using the Internet effectively. Promises of more effective web searching will lure people into information literacy sessions, when promises to help search the catalogue better would excite indifference at best.

2.5.5 Impact of Advanced Technology on Information Literacy:

Peacock (2001) agrees that the impact of technology has changed the face of teaching, learning and research and that the widespread use of information and communication technology in academia has been pervasive and irreversible. E-mail is perhaps the most important technological resource for the traditional learning paradigm. Bulletin boards, listservs, chat rooms, teleconferencing and other technologies are also used (Bork, 2001). Many of these technologies are expensive and work for only small numbers of students, they are not scalable to large numbers. Universities spend large sums on computers and infrastructure, almost, as it is magical. Orr, Appleton and Wallin (2001) also noted that increased access to technology has altered the way that students study, while the variety of electronic information resources has widened the potential resource base for all students. It has also
meant that librarians need to alter the way they plan and deliver information literacy instruction. Tricarico, Tholl and O'Malley (2001) states that technology and its partner, information literacy, equip students with the tools needed for a proactive role in their own education and for lifelong learning.

Librarians are assisting mature users in brushing up on their computer skills, they need to be aware that these mature users witnessed the birth and growth of digital information. They know that predictions regarding new possibilities often are too optimistic, and their own experience of not being able to find what they are looking for only confirms this impression. A less apparent complication is that mature users can be quite insecure about the skills they do possess. When one is used to being in control, it is unpleasant not to be able to master a machine. Even when technology fails, as it frequently does, mature users often feel that they themselves are probably to blame (de Ruiter, 2002). While learning about computer literacy and media literacy are necessary preconditions of information literacy, they are insufficient for the Internet Age (Feicheng and Cuihua, 2002). Information literacy has always been important to success and quality of life. The only thing that has changed is the amount and variety of information that is now available.

2.5.5 New Skills for the Digital Age:

It is important to note that information literacy is not dependent on digital tools such as computers nor is it dependent on alphabetic literacy. Information literacy "unplugged" or information literacy without electronic media – existed in cultures that have only an oral tradition of learning. Stern (2002) predicted that having access to a
computer does not make a person information literate any more than owning a pen makes one a writer. Computers and pens are merely literacy tools. Information literacy is what gives a person the intellectual and social skills to use information tools effectively and wisely. Investing in teaching people to be information literate offers the return on investment that people will be equipped to gather the information they need to improve their own health, economic, political, religious, social well-being and educational situations.

On the other hand Correia (2002) notes that recent developments in information and communication technologies have made it easier for individuals to access information; the impact of the Internet and other electronic and digital resources, enable people to use more methods and sources than ever before, to satisfy their information needs. In the excitement of finding information, the need to be aware of the currency, provenance and reputation of a source can be forgotten. “Let the buyer beware” is good advice in the commercial world but, now that the World Wide Web has made publication an uncomplicated task for anyone with access to a network, the need for this cautionary approach needs to be more widely recognised. This is not to argue that freedom of access to a publishing system is undesirable or that a process of peer review is a necessary protection for society, but it is to argue the need for searchers and users of information to understand something of the nature of publication and validation of information (Underwood, 2002). Web is really a hybrid – at once an information and technological tool and it is a critical element of information literacy. Teaching about the Internet and appropriate use of the Web involves the same types of conceptual skills as teaching about other research tools. However,
teaching as teaching about the Web is unlike teaching traditional "bibliographic" instruction where the librarian has some control of library resources that the students will be exposed to (Warnken, 2004).

Abid (2004) sees information literacy as closely related to information technology skills, but has broader implications. Information technology skills enable a student for example to use computers, software applications, databases and other technologies to achieve a wide variety of academic, work-related, and personal goals. Information technology is an intellectual framework and a social process for understanding, finding, evaluating, communicating 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 discernment and reasoning. Information literacy initiatives, sustains and extends lifelong learning through abilities which may use technologies but are ultimately independent of them.

2.6. INFORMATION LITERACY EDUCATION:

The literature on information literacy education is diverse and this review is limited to information literacy programmes delivered in the higher learning and research environment. It has been noticed that majority of the authors believe integrating information literacy in the curriculum is the best and safest way of promoting information literacy. And much of the literature deals with information literacy programmes and tutorials developed by libraries and information centres attached to higher learning and research institutions.
2.6.1 Training the Trainer:

Hubbard (1987) opined that information skills are the mutual responsibility of teachers and library media specialists, and must be infused into instruction across the curriculum. Teachers should be trained to be information conscious and to ingrate the use of library media centres and information skills in the curriculum. User education of information literacy should focus on what the users need to learn which requires co-operation with faculty to discover that these needs are. Librarians need to be able to assure academic staff that they are teaching students relevant skills. Without asking them what is required to be most successful and it can be said that the course seems more relevant and serves a purpose to students (Lupton, 1992; Bruce, 1995). Shapiro and Hughes (1996) urges that defining information literacy broadly, so as to constitute both a liberal as well as a technical art and turning the definition into a curriculum are major challenges both intellectually and practically and deserve extended discussion and collaboration among both educators and information systems professionals, humanists and computer/information scientists.

In an in-depth analysis of information literacy instruction, Bruce (1997) highlights the role of content when she explains that, “Learning always has a content as well as a process. When applied to information literacy education this means learning to be information literate cannot be achieved in a decontextualised scenario... Information literacy cannot be learned without engaging in discipline specific subject matter.”
2.6.2 Technology Assisted Information Literacy Programmes:

Engineering students and researchers face an ever-growing mass of information, which is distributed in a variety of ways; print and electronic. This makes it more difficult for them to find exactly what they are looking for. In order to tackle this problem, the Into Info programs have been designed to meet the needs of Scientists, Engineers, Doctors and Teachers. The programs provide a means for learning about and accessing relevant information sources. Into Info includes both indicative tools such as handbooks, reviews, encyclopedias and databases, as well as full-text material. Information is required for use, so the programs include sections on the evaluating of search results, constructing personal reference databases and writing abstracts, reviews and theses. Into Info is based on the use of the World-Wide-Web (WWW) a hypertext information system, which offers a very suitable tool for the development of a global education programs. WWW merges the techniques of networked information and hypertext to provide a powerful global information system that is easy to use. There is the additional advantage that the programs are available over the networks and can be used as and when required. Into Info provides alternatives designed to suit individual users (Fjallbrant et al, 1998). It has been argued that information literacy education is a vehicle through which life skills for learning and knowledge production will be engendered.

The infusion of information literacy into courses, curricula and academic programmes is seen as a means of articulating information and subject knowledge. The development of educational spaces in which learners experience and information resources are valued, in
which learners can explore and develop their potential, in which learning is contextualised, is challenge (INFOLIT, 1998). Curriculum-integrated instruction serves as a valuable model for combining general information skills with subject or discipline-specific information literacy. Breivik (1998) connects these two concepts: “planning for information literacy across the curriculum must include the tailoring of learning experiences to the literature of the various disciplines and fields of study and to eventual on-the-job information management needs.

Information technology will continue to constitute a large component of the information literacy curriculum; librarians must adapt and contextualise the use of a wide range of technologies in terms of communication and information retrieval (Peacock, 1999). Information skills, especially higher-level concepts and skills, depend on a disciplinary context, because the organisation and structure of knowledge, and the approach to seeking and using information are dependent on the structure and processes of a specific discipline. Fjallbrant and Levy (1999) make a distinction between general and subject-specific information literacy, stating that “subject-specific information literacy has additional dimensions and is closely related to the pattern of information literacy flow within that discipline”.

2.6.3 Best Practices for Information Literacy:

Dewald (1999) provided a compilation of best practices for information literacy instruction. She observed that library instruction is best received when it is course-related and more specifically assignment related. Anyone who has worked with students has found
that the retention of materials is much higher when it relates to a specific subject taught to them or when there is an assignment attached. In these situations students are more highly motivated to learn. When instruction is delivered for some unknown future use, students tend to dismiss what is being covered. Lawson (1999) describes a course aimed at first year college students which includes searching the OPAC, Boolean logic, simple searching, choosing appropriate sources of information, using a variety of electronic and print resources as well as email. These more in-depth courses have usually been accompanied by attempts to incorporate information literacy into the student curriculum (Hepworth, 1999; Weetman, 2002, Peacock, 2002). Breivik (1999) argued that delivery of information literacy training must be shared between wider educational institutions, policy-makers and administrators.

She further said "information literacy cannot be taught by librarians or by faculty, it must be learned by students through experiences shaped by librarians and faculty. Thus, it appears that there needs to be more consultation of academic staff in universities regarding the establishment of information literacy needs of students. The University of Queensland Library uses a variety of information skills programs. Special programs for Postgraduate students have been developed. A particularly effective program has been developed for first year engineers. This program has evolved from a print-on-paper based approach five years ago through an initial web experiment to a fully-fledged interactive program using WebCT. A Web-based instructional tool, WebCT was used to create the program which is interactive, has links to information resources available both in the library and outside (Schmidt and Cribb, 2000). Hepworth (2000) points
out, that the spectrum of information literacy training is diverse. At one end of the scale is the teaching of discrete skills in isolation by library staff. For example the learning outcomes to locate websites, books and journals as it does not encourage continuous self-improvement. At the other end of the spectrum is the total integration of information literacy training into the curriculum of particular disciplines, which tend to take a resource-based approach.

Resistance from faculty is based on a number of reasons including fear of loss of control over subject matter and lack of time to incorporate information literacy objectives into class lectures, however, the most compelling reason may be that the viewpoints of librarians and faculty differ, due to “distinct pedagogical discourses” (Allen, 2000). Smith (2001) noted that developing discipline or course specific research skills tutorials for teaching students to conduct research in a certain discipline will be of more effective. A humanities student approach a research project in a much different manner than a physics student does. Usually a discipline-specific tutorial supports a particular course, often a survey course with multiple sections. This type of tutorial will be very focussed and provides the student with in-depth instruction on how to do research in a particular field. It will include information about appropriate sources and research processes unique to that discipline.

2.6.4 Course Integrated Information Literacy Assignments:

Nerz and Weiner (2001) state that course-integrated assignments address many of the weaknesses of other types of instruction. The opportunity for instruction occurs in the context of an assignment.
Students need to learn how to find information in order to complete the work. Thus it addresses their focus on the end product. Because of this and the fact that their instructor support it, they tend to value such learning more. The instruction is relevant and well trained. These often involve a great deal of interaction between the librarian and students. Discipline or subject areas frequently rely on specific types of data, tools and search processes. The study carried out by Bracke and Critz (2001) refers to the need for science and engineering students to master complex resources and search skills within their disciplines. The authors explain “as science and engineering students advance, they need to recognise both the many channels available for information in their discipline and the many different searching mechanisms within these channels.”

2.6.5 Problem Based Learning:

Including information literacy education courses is a key strategy for closing the gap across curricular boundaries, because general education courses form the foundation of a common learning experience for all students. Such courses will help students to make intellectual connections between disciplines, solve problems, and think deeply, independently and critically outside of their major areas of study (Sonntag and Ohr, 1996; Faust, 2001). Some of the most innovative teaching styles explore the use of problem solving techniques to improve critical and analytical thinking skills states Macklin (2001). Problem-based learning (PBL) is an instructional methodology being used where librarians can work together with
content area faculty to develop a seamless approach to integrating information retrieval directly into the curriculum.

Problem based learning (PBL) is a teaching strategy that takes everyday situations and creates learning opportunities from them. The methodology of PBL centres on the cognitive psychology theory that states new knowledge is always constructed on what is already known. Furthermore, as Orr, Appleton and Wallin (2001) states, “Information literacy, like phenomena such as teaching and learning, does not have a life of its own, rather it is a way of thinking and reasoning about aspects of subject matter.” The educational philosophy underpinning the standards strongly promotes the idea that information literacy should be tightly woven into the web of mainstream teaching and learning activities. To quote the standards, “information literacy is not extraneous to the curriculum but is woven into its content, structure and sequence.” This approach of weaving information literacy into mainstream academic curricula is described as curriculum ‘integration’ or ‘embedding’. The standards therefore represents a decisive break with the past in recommending that all academic curricula be reformed in line with its recommendations as a matter of university-wide policy (Blackwell, 2002). Peacock (2002) urges that, it is through the curriculum that education will enable transferability of information skills from one context to another, and empower students to create knowledge and learn how to learn for life.

Manuel (2002) found that the rationale behind discipline specific information literacy courses is three-fold. Firstly, students often devote more attention to courses within their degree programs than to courses outside them. Secondly, the general abilities outlined in the information
literacy competency standards for higher education may be minimally necessary but are not inherently sufficient for information literacy within a specific discipline. Finally, sometimes extensive course- and curriculum-integrated library instruction does not meet coherently students’ needs.

2.6.6 Discipline Based Approach to Information Literacy:

Information literacy – the development of information skills for lifelong learning – has become a major focus of many library instruction efforts and research. ACRL (2002) states that, “information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments and to all levels of education.” A number of innovative programs and seminal sets of standards and goals have been developed in this area (Arp and Woodard, 2002). Generally, however, much of the research and instructional activities in information literacy have focused on basic and general or universal skills – skills considered to be fundamental to all aspects of information seeking, evaluation, and use. These skills are being integrated into the general undergraduate curriculum, often through English or writing courses, or occasionally through independent information courses. Information literacy must also incorporate discipline or subject-specific skills and resources. Grafstein’s (2002) paper “A discipline-based approach to information literacy” states that teaching information literacy skills to students “involve equipping them with both knowledge about the subject-specific content and research practices of particular disciplines, as well as the broader, process-based principles of research and information retrieval that apply generally across disciplines.” Skov and Sknrbak
(2003) opined that integration into the curriculum ensures than students attend and receive credit for information literacy sessions. When fully integrated, information literacy becomes an accepted subject of study rather than an optional add-on or "soft skill". From a learning point of view, it is much more useful to teach information literacy skills to students in authentic and meaningful ways within the context of learning in other subject area.

Parker (2003) expressed the total integration of information literacy into the curriculum – where an information literacy activity (such as looking for information for an assignment) is embedded into the students' course materials, delivered in the context of the subject they are studying, attracts marks, and is devised on the basis of collaboration between library staff and academic colleagues – is often mooted by practitioners as the most effective method for enabling students to develop their information literacy skills. Curriculum-integrated instruction provides an optimal approach in both planning and implementation, to helping science students develop general and discipline-specific information skills (Smith, 2003).

2.6.7 Importance of Computer Assisted Learning:

In order to maximise the benefits of Computer Assisted Learning (CAL) approaches to use education and to offset its disadvantages in comparison with traditional user education methods, Joint (2003) advocated integration of online information skills material into the mainstream curriculum via Virtual Learning Environments, but in the widest possible sense of "an information and learning commons." Brown, Murphy and Nanny (2003) noted that it is no longer effective to
provide information literacy instruction is thought to be "good for" college students, but rather, instruction must focus on the learning styles and preferences of the target population. Their study reports a series of hands-on/minds-on information literacy activities that dissolve student's misconception that "techno-savvy" is synonymous with information literate. Careful and thorough instruction in the mining of popular Internet search engines for authoritative information was coupled with instruction in the use of traditional library resources. In their study they found that the college students studied possess a high need for clarity and a low tolerance for ambiguity and therefore any activities assigned must be thoroughly, yet succinctly, described in order to achieve success. Rockman (2004) describes a information literacy curriculum as campus wide, problem-based, inquiry-based and resource-based (that is, it uses a variety of information resources); makes effective use of instructional pedagogies and technologies; is learner-centered; and is integrated and articulated with a discipline learning outcomes.

2.7. INFORMATION LITERACY ASSESSMENT:

2.7.1 Methods of Information Literacy Assessment:

Assessment of student performance, whether formal or informal is the requisite indicator of learning in higher education. As Patterson and Howell (1990) notes, it is important that the teacher has the ability and knowledge to adequately and comprehensively examine students on course content, to measure and analyse test results, and to evaluate justly students' educational development and progress. Student mastery of the skills of information competence could be assessed
through a standardised test or through a performance or demonstration of the skills; the assessment could be course-based or competency based (Curzon, 1995).

2.7.2 Assessment by Portfolio:

Assessment by portfolio is an assessment practice where students knowing the criteria by which learning is to be assessed, select and present evidence of their own learning. Use of portfolio in courses is generally likely to be favoured by educators who foster a constructivist approach to learning (Biggs and Tang, 1997). Cribb and Woodall (1997) used a workbook format which consisted of a workbook of exercises which students completed on the Web. The advantages of Web-based assessment are that they are easy to administer, mark and analyse, there is less likelihood of error on the part of the marker and students can gain instant feedback on their performance. As noted by Wright (1997), "judgement about the quality of an individual's performance are increasingly made on the basis of a wide variety of evidence, not merely test scores or other numeric data; and the evidence is evaluated narratively and multi-dimensionally for strengths and weakness not merely in command of factual information or concepts, but in terms of skill levels and qualities such as creativity, risk taking, persistence, meticulousness, ethical or social consciousness, empathy, cultural sensitivity and the like."

In a competency based training program, assessment measures the learner's performance against set criteria on a pass or fail basis. Measures of assessment need to be valid, reliable, flexible and fair. Librarians need to ensure that they pay close attention to designing
assessment that meets all four of these criteria to ensure that training is successful (Smith, 1998; Kaplowitz, 2001; Noe, 2002). Spitzer, Eisenberg and Lowe (1998) suggest portfolio assessment and learning and research logs as other methods through which students can demonstrate knowledge of the processes needed to be information literate. These are useful methods of identifying if students have achieved higher as well as lower order information literacy skills but are not appropriate diagnostic testing methods unless they carried out in the educational institutions students attend before coming to university. Universities could then use this information to continue to improve student's abilities. Assessment is central to evaluating the effectiveness of the information literacy program and improving it. Assessment is the third of three basic steps in library instruction. Assessment is accomplished through a combination of methods (Higgins and Cedar Face, 1998).

2.7.3 Task Analysis and Talk-Through Assessment:

Hepworth (1999) reports of the use of task analysis, talk-through and observations but all of these are time-consuming and difficult to implement on a large-scale. Simoneaux et al (1999) felt that the overall assessment of the tutorial designed for information literacy program and the effectiveness of its objectives is a must. And the assessment can be carried out by using feedback from the focus group. Bruce and Middleton (1999) noted that assessment by portfolio facilitates students' control over their learning and provides a coherent framework within which to encourage students to engage in aspects of professional practice. The strategy requires careful design to ensure that students
understand the criteria by which they will be assessed and to encourage them to target higher level learning outcomes.

2.7.4 Multiple Choice Assessment:

Williams (2000) suggests further alternatives to multiple choice assessment which may be more suitable for mass assessment including selected response, constructed response, essay and complex answers for each of which she points out the advantages and disadvantages. She argues that each should be best suit the individual situation. Smalley (2000) describes a test instrument that asks students to find suitable books, periodicals and Internet sites on a specific topic. These types of assessment are particularly suited to information literacy because they require students to show that they have used information-seeking processes. Hill (2000) used a survey, focus group session, assessment and observation methods to evaluate an information skills course for engineering students at Queensland University. Samson (2000) reports of a test being available on the Web administered at the end of an instruction session. But as Webber (2001) points out, multiple choice assessment methods allow for guess work and a relatively good mark can be obtained with little knowledge. Condon (2001) argues, all good assessment, like all politics is local. The constructivist paradigm takes advantage of access to local contexts – to curriculum, faculty, administrators, students, institutional values, etc. – in order to increase the evaluations’ usefulness by increasing its relevance to the local context. Positivist methodologies tend to distance evaluation from the local context not only by employing outside experts to perform the evaluation, but also by using standard methodologies rather than
developing methods that fit the context of the program being evaluated. Bloom and Deyrup (2003) mentioned several assessment methods such as a survey, quizzes, journaling and anecdotal evidence. Donaldson (2004) reported an information literacy programmes where in assessment was carried out using ACRL’s information literacy competency standards for higher education which also outlines performance indicators and outcomes.

CONCLUSION:

The review of the related literature reveals the enormous work done all over the globe. It is a fact that information literacy is an ongoing process and at the same time never ending process. It is assuming the global recognition. Countries irrespective of their political, social and economic status are paying more and more attention to the promotion of information literacy. Many countries have successfully lead the campaign of information literacy so as to motivate and empower their user community to fact the onslaught of knowledge explosion.
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