INFORMATION LITERACY MODEL FOR HIGHER EDUCATION INSTITUTIONS IN INDIA

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Abstract

Information Literacy (IL) is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information. It helps the learners to master content, become self-sufficient and take greater control over their self-learning. It also helps learners to become independent, critical thinker and life-long learner. The concept of IL has gaining more attention in higher education communities throughout the world. Several associations, educationalist and library professionals have developed IL models in Western Countries like USA, UK, Australia etc., to integrate information literacy course in all levels of education. In the present paper, authors describe the significance of information literacy education in higher education institutions and discuss the some important information literacy models developed throughout the world. Further, authors describe the present Indian higher education environment and suggest a DIAEDCU IL model for it.

KEYWORDS: Information literacy, IL Models, Higher Education Environment, DIAEDCU IL Model, India

1. INTRODUCTION

Higher education institutions are pioneers in society to provide higher education to the people's society. They must meet society's requirements by producing highly skilled people. They act as a leader for societal change and set an example for society to follow. The educated graduate of the 21st century should be one, who must empowered with various skills and abilities such as lifelong learning skills, enquiry and research skills to carryout systematic investigation for finding solutions to complex problems, employability and career development skills to succeed in the rapidly changing working place, capacity survive in the present globalised society, communication and information

literacy skills, ethical, social and professional understanding, capability to think independently , exercise personal judgment and taking initiatives and good collaboration, teamwork and leadership skills. Universities and other institutions of higher learning should be responsible for producing such graduates. Information Literacy (IL) plays a very significant role to produce such skilled graduates in the present rapidly changing technological era. IL is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information. It helps the learners to master content, become self-sufficient and take greater control over their self-learning. It also helps learners to become independent, critical thinker and life-long learner. Hence, the concept of IL has gaining more attention in higher education communities throughout the world. Several associations, educationalist and library professionals have developed IL models in Western Countries like USA, UK, Australia etc., to integrate information literacy course effectively in all levels of education. In the present paper, authors describe the significance of information literacy education in higher education environment and discuss the some important information literacy models developed throughout the world. Further, authors describe the present Indian higher education environment and suggest an IL model for it.

2. EMERGENCE OF INFORMATION LITERACY CONCEPT

The concept of information literacy originates from scholastic training, which means to instruct, to teach and to train. The term information literacy was first used by Paul Zurkowski[1], the President of Information Industry Association in 1974. He used the term in a proposal submitted to the US National Commission on Libraries and Information Science (NCLIS).According to him information literate peoples are those who trained in the application of information resource in their work. They have learned techniques and skills for utilizing the wide range of information tools as well as primary sources in molding information solutions to their problems. Now-a-days the term 'Information Literacy' has become a buzzword and can be used by several authors in different ways as infoliteracy, informacy, information empowerment, information competence, information literacy and skills, information handling skills, information problem solving skills etc. Many definitions of information literacy are available in literature. Some of these are as follows:

- According to *Charted Institute of Library and Information Professionals, UK*[2]defines information literacy as "knowing when and why you need information, where to find it, and how to evaluate, use and communicate in ethical manner".
- According to results of Delphi Study conducted by Doyle[3], an information literate person is one who:
  - recognizes the need for information;
  - appreciates the importance of accurate and complete information to make intelligent decisions;
  - formulates questions based on information needs;
  - identifies potential sources of information;
  - develops appropriate 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 and
- uses information in critical thinking and problem solving.

✶ According to *Association of College & Research Libraries(ACRL) Framework for Information Literacy for Higher Education*[4], Information literacy means " the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning".

3. REVIEW OF LITERATURE

Since the emergence of the concept of IL in 1970's, there were several studies were carried out in educational institutions throughout the world. Some important studies carried out in India and abroad were as follows:

Lloyd and Williamson[5] describe the information literacy as a core literacy of the information society in 21st century to achieve educational, occupational, economic and personal goals in the knowledge society. Alexandria Proclamation on Information Literacy[6] describes IL as the beacons of the information society, illuminating the courses to development, prosperity and freedom. It is a means to "empower people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals". Bruce[7] also states that IL is a natural extension of the concept of literacy in our information society and IL education is the catalyst required to transform the information society of today into the learning society of tomorrow. ACRL, *Information Literacy Standards for Higher Education*[8] USA, IL is common to all disciplines, to all learning environments, and to all levels of education. It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning. Baro and Fyneman [9] states that "information literacy is very important particularly in the present information age because it allows us to empowering with the skills to know when we need information and where to locate it effectively and efficiently" Adeogun[10] expresses similar views by stating that "the purpose of information literacy (IL) education is to help students to develop critical thinking and analytical skills which they will need for transforming information into knowledge" Dadzie[11]also confirms the importance of information literacy by mentioning that "information literacy has thus become one of the most vital set of skills for the twenty first century", and therefore, "everyone needs IL skills to enable him/her to function adequately as a citizen of the community" Karisiddappa and Rajgoli[12] in their paper "Blooming knowledge society and Information literacy in India" states that in the emerging knowledge societies, an educated person will be someone who is willing to consider learning as a lifelong process. IL is considered as a meta-competency of the knowledge society. If one has to be successful in the knowledge society, he/she needs to acquire high level of Information Literacy skills. Rockman[13]

proposes that information literacy is a critical issue for the 21st century and assumes that those students, workers or citizens who are lifelong learners and are information literates will succeed in our multicultural world. Kemparaju[14] in his study mentioned the range of education programs developed by academic libraries such as literacy campaign, functional literacy and library instruction to make library users as intelligent users of information and also explained the need of Information Literacy and Information Technology Literacy program in higher education institutions in the present digital environment. Ghosh and Das[15] pointed out that IL programs are already existed in narrower forms in various libraries and information centers in India, in the forms of user education, bibliographic instruction, library instruction, library research, and Library tours. Boyer's Commission[16] report states that gaining skills in information literacy multiplies the opportunities for students' self-directed learning, as they become engaged in using a wide variety of information sources to expand their knowledge, ask informed questions, and sharpen their critical thinking for still further self-directed learning. By summing up, it can be said that IL is seen as pivotal to the pursuit of lifelong learning and central to achieving both personal empowerment and economic development. In the present knowledge era, higher education institutions in India are needed to take bigger steps to integrate and set up information literacy centers in their institutions to make their students as information literate persons who are in turn become the building stones for the development of country in future.

4. SIGNIFICANCE OF INFORMATION LITERACY IN HIGHER EDUCATION ENVIRONMENT

The concept of information literacy has gained considerable attention in the higher education communities. There is a common belief that higher education's institutions should include the teaching of lifelong learning skills in their missions. Universities have the responsibility of empowering their members with necessary skills, so that they can contend with the world of information independently. Since the 1990s, higher education communities throughout the world have stressed the importance of information literacy (as shown in Figure 1) for the following reasons:

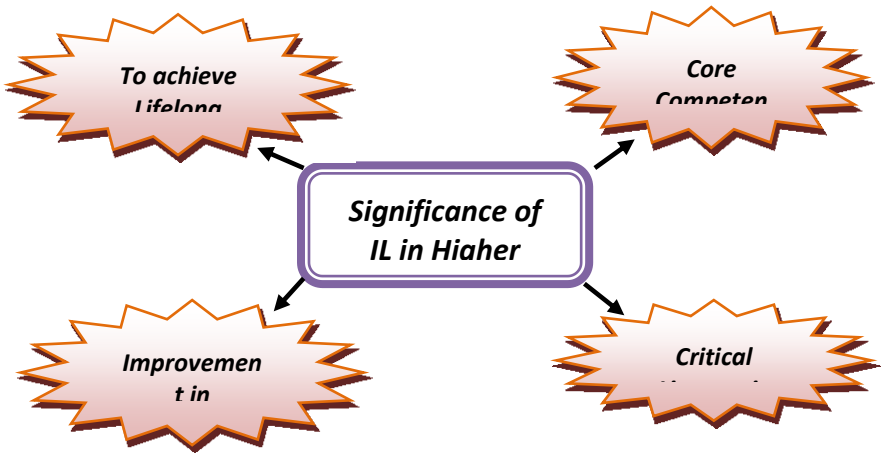

Figure 1: Significance of IL in Higher Education Environment

4.1 Information literacy is essential to successful lifelong learning.

Lifelong Learning is shortly called LLL. In simple terms it means" "learning that continues throughout a lifetime." Hojat et al[17]., 2003 defines LLL is a concept involving a set of self-initiated activities (behavioural aspect) and information-seeking skills (capabilities) that are activated in individuals with a sustained motivation (predisposition) to learn and the ability to recognize their own learning needs (cognitive aspect) .IL forms the basis of lifelong learning. It helps to make the students as lifelong learners and empowers them to acquire all the knowledge, values, skills and understanding they will require throughout their lifetimes and to apply them with confidence, creativity and enjoyment in all roles, circumstances and environments. IL competencies have been identified as a crucial element to foster lifelong learning and keep up with the fast emerging world.

4.2 Information literacy is a core competency in the information age.

The arrival of information age and its rapid growth has created challenges throughout the world. It has brought an enormous increase in the quantity of information available to the public (includes students) and multiplied the media of knowledge transfer such as internet, CDs and electronic databases. Students can easily acquire large amount of information but they don't know how authentic, valid and reliable the information is. This poses special challenges for students in evaluating, understanding and using information in ethical and legal manner. Information literacy as core competency helps students to locate needed information and evaluate it critically in order to face the new challenges of the information age.

4.3 Information literacy contributes to the improvement of learning and teaching

Information literacy rejects the traditional teacher centered learning model, rather, it is based on active learning model in which the student is at the centre of the learning environment. Information literacy programs provide learners with self-directed, independent and constructive learning opportunities. The Alexandria Proclamation on Information Literacy and Lifelong Learning recommends: "Implement active pedagogical practices such as problem-based learning, service learning and constructive learning that are both in support of and well supported by the practice of information literacy"

4.4 Information literacy is one of the most critical literacy for an educated person in the 21st century

In the present 21st century information era, students are needed to develop critical thinking abilities to become skilled users of information sources available in different locations and formats for their own self-directed learning. Foundation for Critical Thinking [18] defines Critical Thinking as the " intellectually disciplined process of actively and skillfully conceptualizing , applying, analyzing, experience, reflection, and reasoning or communication, as a guide to belief and action". People who think critically consistently attempt to live rationally, reasonably, empathically. IL acts as a key

component in making students as critical thinkers, so that they are able to find the right information among the myriad of sources and apply it to make wise decisions.

5. INFORMATION LITERACY MODELS

Information Literacy Models are like a roadmap through information seeking process. They show a perfect path to each individual about how to find, analyze and use information depends on many things including how to learn, the resources available , how to complete information tasks in our hands such as finding information to answer questions, complete an assignment or exploring something about our curious topics. They serve as a guideline for developing information skills among the students community. They can also help to frame information literacy curriculum objectives, learning outcomes, course content and assessment criteria's. Many researchers, education professionals and organizations have developed information literacy models through research and evaluation. A list of some of the important information literacy models developed throughout the world is as follows:

- ♣ Kuhlthau's Information Search Process Model
- ♣ PLUS Model
- ♣ 8Ws IL Model
- ♣ DIALOGUE Model
- ♣ SCONUL Seven Pillars Information Literacy Model
- ♣ EMPOWERING-8 IL Model
- ♣ The Big6 Information Process Model
- ♣ The Research Cycle
- ♣ The Alberta Model
- ♣ Action Learning Model
- ♣ Super 3 Model
- ♣ Follett's Information Skills Model etc.

5.1 Kuhlthau's Information Search Process Model

This model was developed by Carol C. Kuhltahu, Professor of Library and Information Science at Rutgers University in New Jersey in 1988. It is a six stage model; task initiation, selection, exploration, focus formulation, collection and presentation present a holistic view of information seeking from the user's perspective. It incorporates three realms of experience; the affective (feelings) the cognitive (thoughts) and the physical (actions) common to each stage.[19] (as shown in Figure 2). Thoughts that begin as uncertain, vague, and ambiguous become clearer, more focused, and specific as the information search process progresses. Feelings of anxiety and doubt become more confident and certain. Through their actions, people seek information relevant to the general topic in the beginning stages of the search process and pertinent to the focused topic toward closure. Formulation of a focus or a personal perspective of the topic is a pivotal point in the search process. At that point, feelings shift from uncertain to confident, thoughts change from vague to more clear and interest increases.

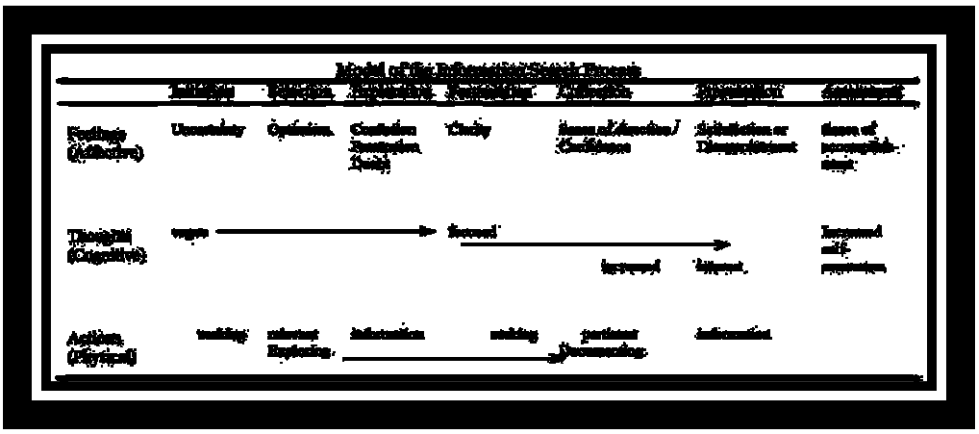

Figure 2. **Kuhlthau's** ***Information Search Process Model***

A brief description of six stages of Kuhlthau's Information Search Process Model is as shown in table 1 given below:

Sl. No.	Six Stages	Description
1.	*Initiation*	***When a person first becomes aware of a lack of knowledge or understanding and feelings of uncertainty and apprehension are common.***
2.	***Selection***	***When a general area, topic, or problem is identified and initial uncertainty often gives way to a brief sense of optimism and a readiness to begin the search.***
3.	***Exploration***	***When inconsistent, incompatible information is encountered and uncertainty, confusion, and doubt frequently increase and people find themselves "in the dip" of confidence.***
4.	***Formulation***	***When a focused perspective is formed and uncertainty diminishes as confidence begins to increase.***
5.	*Collection*	***When information pertinent to the focused perspective is gathered and uncertainty subsides as interest and involvement deepens.***
6.	*Presentation*	***When the search is completed with a new understanding enabling the person to explain his or her learning to others or in some way put the learning to use.***

Table 1 Six stages of Kuhlthau's Information Search Process Model

5.2. PLUS Model

PLUS information skills process model is developed by James E. Herring in 1991 at Scotland**.** It is an information literacy model which encourages pupils to identify purpose (e.g., brainstorming and concept mapping), to locate relevant sources (e.g., using print and electronic sources), to use the ideas and information found effectively (e.g., reading for information, note-taking) and to reflect on their own information skills through self evaluation (e.g., evaluation of original plan or range of sources used). According to this model, a successful information solving process involves four interrelated steps and each

step includes the range of skills required to be possessed by a student or an individual to solve an information problem as shown in figure 3 and table 2 given below [20].

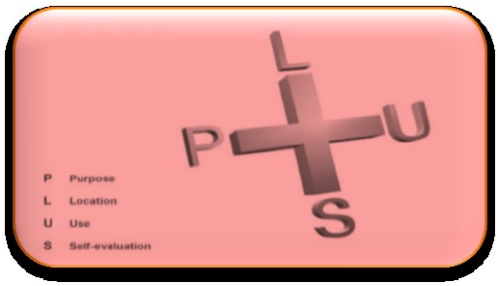

Figure 3 : PLUS Information Literacy Model

STEPS	KEY ELEMENTS	RANGE OF SKILLS
1.	*Purpose*	✦*Cognitive skills in identifying existing knowledge.* ✦*Thinking skills such as brainstorming or concept.* ✦*Skills in identifying information resources.*
2.	*Location*	✦*Location skills such as the ability to find information in library catalogues, books, journals, CD-ROMs and online information resources.* ✦*Selection skills in assessing the relevance of information resources.* ✦*IT skills in using electronic sources such as the Internet.*
3.	*Use*	✦*Reading skills including the ability to skim and scan information resources to find relevant information or ideas.* ✦*Interactive skills including the ability to understand what is being read, viewed or listened to and the ability to relate this to existing knowledge.* ✦*Selective skills including the ability to select the appropriate information and reject information in the context of the purpose identified for using a particular information resource.* ✦*Evaluation skills including the ability to evaluate information and ideas in relation to aspects such as the currency of the information or ideas, the author and any possible bias in the text.* ✦*Recording skills including the ability to take notes in a systematic way which relates to understanding and purpose.* ✦*Synthesizing skills including the ability to bring together related ideas, facts and information about a topic and relating this to existing knowledge.* ✦*Writing or presentation skills including the ability to write an essay or report or project in a well-structured, logically ordered manner which uses the information and ideas found to good effect.*
4.	*Self-Evaluation*	✦*Skills to reflect on the processes involved in assignment-related work and to identify areas of improvement in the effective use of information resources in the future.*

Table 2: Four key elements and range of skills of PLUS IL Model

5.3 8Ws IL Model

8Ws Information literacy model was developed by Annette Lamb in the early 1990s. It is an eight-phase model for project and community based learning on the web/internet. A project and community based learning environment involves wondering about a topic, wiggling through information, and weaving elements together. This model was used to stimulate student interest and focus on the student's perspective in information inquiry on the web. This model states and describes eight phases of information inquiry skills which are needed to be developed among students in the digital environment to complete a project. The eight phases of this model are as follows as shown in table 3 given below [21]:

Sl. No.	Eight phases	Outcomes
1.	*Watching (Exploring)*	*It states students to explore and become observers of their environment to know about world around.*
2.	***Wondering(Questioning)***	*It states students to focus on brainstorming options, discussing ideas, identifying problems, and developing questions.*
3.	***Webbing*** *(Searching)*	*It directs students to locate, search for, and connect ideas and information. Students select those resources that are relevant and organize them into meaningful clusters.*
4.	***Wiggling*** *(Evaluating)*	*It involves evaluating content, along with twisting and turning information looking for clues, ideas, and perspectives.*
5.	***Weaving(Synthesizing)***	*It involves organizing ideas, creating models, and formulating plans. It focuses on the application, analysis, and synthesis of information.*
6.	***Wrapping*** *(Creating)*	*It involves creating and packaging ideas and solutions.*
7.	***Waving*** *(Communicating)*	*This phase deals with communicating ideas to others through presenting, publishing, and sharing.*
8.	***Wishing (Assessing)***	*It is concerned with assessing, evaluating, and reflecting on the process and product. Students begin thinking about how the project went and consider possibilities for the future.*

Table 3: Eight Phases and Outcomes of 8Ws IL Model

5.4 DIALOGUE MODEL

DIALOGUE model[22] is developed by INFOhio, the Information Network for Ohio Schools in Cuyahoga County in 1998. INFOhio is a statewide cooperative project to create an electronic network linking of Ohio students, teachers, library/media specialists and others. It is responsible for incorporating 21st century literacy and learning skills to encourage all students to reach their full potential in today's technologically advanced society. It conducted a series of Information Literacy Skills Workshops from 1998-2003. DIALOGUE model is developed and used by them to develop information skills among the students, educators and parents. The DIALOGUE model (1998) involves the following areas or stages or steps that spell DIALOGUE as shown in table 4 as given below:

Sl. No.	Eight phases	Outcomes
1	*Define*	*Explore/Identify the need for the information.* *Determine the basic question.*
2	***Initiate***	*Distressing ignorance*
3	***Assess***	*Identify keywords, concepts, and possible resources.*
4	***Locate***	*Identify possible sources of information.* *Develop a search strategy.* *Locate and retrieve available resources.*
5	***Organize***	*Identify the best and most useful information sources.* *Evaluate the information retrieved.*
6	***Guide***	*Provides student assistance in searching the information.*
7	***Use***	*Determine presentation format and to develop communication skills.*
8	***Evaluate***	*Evaluate the project/results.* *Evaluate the process.* *Assess the teaching and learning.*

Table 4: Eight Phases of DIALOGUE Model

5.4. SCONUL Seven Pillars Information Literacy Model

SCONUL Seven Pillars Information Literacy Model is a model of *Information Skills in Higher Education* prepared and developed by SCONUL (The Society of College,

National and University Libraries) Advisory Committee on Information Literacy at UK in 1999. Since then, this model has been adopted by librarians and teachers around the world as a means of helping them to deliver information literacy skills to their learners. To make valid and relevant in the presenting changing information environment, SCONUL updated the original seven pillars model into a new model called as "The SCONUL Seven Pillars Information Literacy: Core Model in 2011[23]. (as shown in figure)

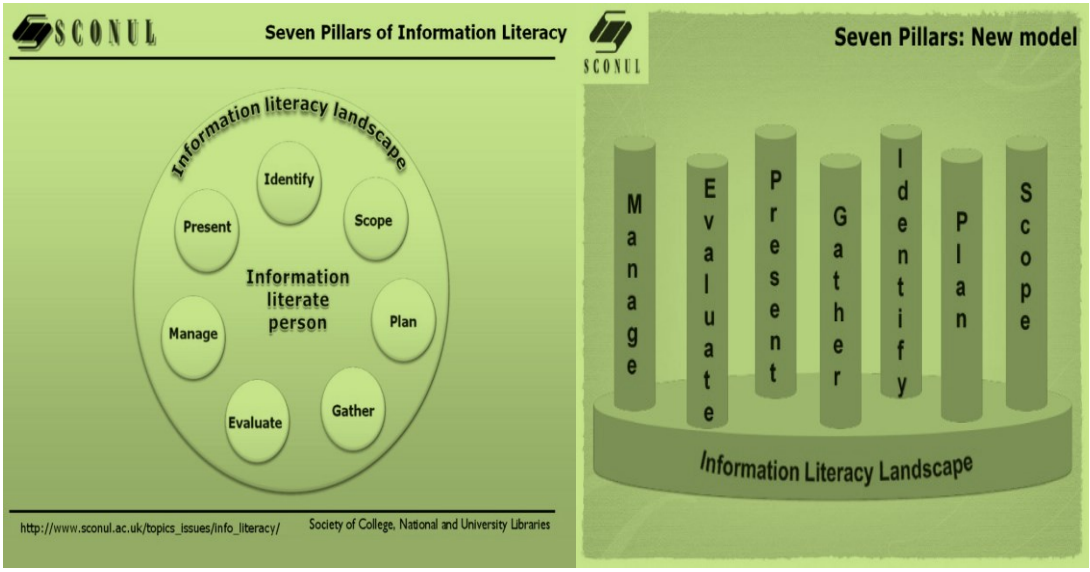

Figure 4: The SCONUL Seven Pillars Information Literacy: Core Model

The new core model is conceived as a three dimensional circular "building" founded on an information landscape which comprises the information world as it is perceived by an individual at that point in time. The information literacy landscape refers to the individual information literacy landscape, i.e., their attitude, background and experiences which will affect how they respond to any information literacy development. The circular nature of the model demonstrates that becoming information literate is not a linear process; a person can be developing within several pillars simultaneously and independently although in practice they are often closely linked. Each pillar is further described by a series of statements relating to a set of skills/competencies and a set of attributes/understandings. It is expected that as a person becomes more information literate they will demonstrate more of the attributes in each pillar and so move towards the top of the pillar. This model describes a set of generic skills and understandings; for different user communities a 'lens' can be developed which highlights different attributes, adds in more complex or simpler statements and uses language recognized by the specific community which it represents. In this way, this model can be used flexibly by individuals and teachers who can adapt it as appropriate to personal circumstances. According to this model, the attributes of an information literate person is as shown in table 5 given below;

SL. NO.	PILLARS	AN INFORMATON LITERATE PERSON
1	Identify	*Able to identify a personal need of information.*
2	Scope	*Able to understand and assess current knowledge and identify gaps.*
3	Plan	*Able to construct strategies for locating information and data.*
4	Gather	*Able to locate and access the information and data they need.*
5	Evaluate	*Able to review the research process and compare and evaluate the information and data.*
6	Manage	*Able to organize information professionally and ethically.*
7	Present	*Able to apply the knowledge gained: presenting the results of their research, synthesizing new and old information and data to create new knowledge and disseminating it in a variety of ways.*

Table 5: Attributes of information literate person-SCONUL Seven Pillars Information Literacy: Core Model

5.5 The Big 6 Model:

The Big6 information problem-solving approach is an information literacy model developed by Mike Eisenberg and Bob Berkowitz of USA in 2001. It is an information search process model which states how people of all ages solve an information problem. It integrates information search and use skills along with technology tools in a systematic process to find, use, apply, and evaluate information for specific needs and tasks. According to this model the successful information solving process encompasses six stages or six steps with two sub-stages or sub- steps shown in table 6 as given below. It **is** a set of basic, essential life skills. These skills can be applied in all situations to school, personal, and work settings. It is applicable to all subject areas across the full range of grade levels. Students can use this model whenever they need information to solve a problem, make a decision, or complete a task. The Big6 Skills are best learned when integrated with classroom curriculum and activities. It is most widely known and widely used model to teach information and technology skills in the world. This model is also used in thousands of K-12 schools, higher education institutions, and corporate and adult training programs[24].

STEP	STAGES	SUB-STAGES
1.	*Task Definition*	*Define the information problem.* *Identify information needed.*
2.	*Information Seeking Strategies*	*Determine all possible sources* *Select the best sources*
3.	*Location and Access*	*Locate sources (intellectually and physically)* *Find information within sources*
4.	*Use of Information*	*Engage (e.g., read, hear, view, touch)* *Extract relevant information*
5.	*Synthesis*	*Organize from multiple sources* *Present the information*
6.	*Evaluation*	*Judge the product (effectiveness)* *Judge the process (efficiency)*

Table 6: Six Stages and Sub-stages of ***the Big6 Model***

5.6. Empowering 8 IL Model

EMPOWERING-8 an information literacy model has been developed at an IFLA-ALP sponsored Information Literacy Workshop hosted by National Institute of Library and Information Sciences (NILIS), University of Colombo, Sri Lanka in 2004 specifically for the stakeholders in the Asia-Pacific Region. It is now registered as an intellectual property of NILIS and being promoted in LIS programmers offered by NILIS and in a variety of other educational contexts of Sri Lanka. This model can be used to solve any information problem effectively using eight stages with several sub-stages under each component. It's not necessary to complete these stages in a linear order, but one can enter the cycle from any point and proceed in a cyclical manner. However, one is taken through all stages in a successful information problem solving situation. Two arrowed lines denote the teacher and the teacher librarian getting involved in the process (Fig.5). This model has a set of 108 corresponding skills ranging from defining the need for information to application of new concepts learned to other situation. This list of skills is still being reviewed depending upon the experience gained. Developing competencies in these skills will take place according to the nature and complexity of the problem being solved using this model. It is applicable to all subject areas across the full range of levels from kindergarten to postgraduate. It is not limited only to the educational context but can be applied in a variety of information problem solving situations in the personal and work environments as well[25].

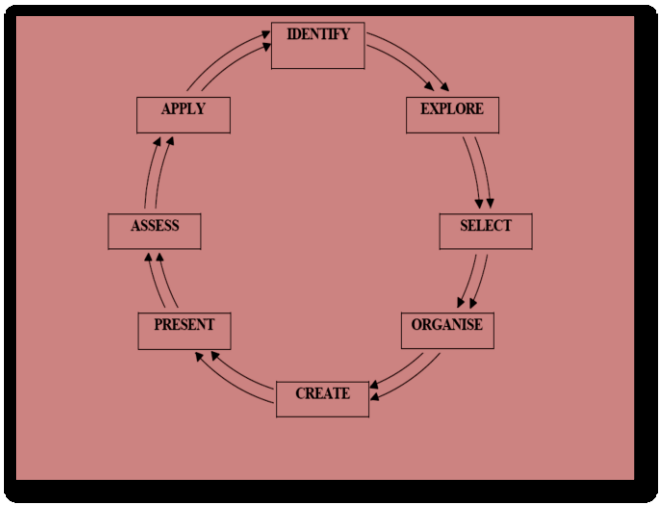

Figure 5. The Eight Components of Empowering 8 IL Model

The following table illustrates the eight components and their learning outcomes of the Empowering 8 IL Model.

STEPS	COMPONENTS	LEARNNG OUTCOMES
1	Identify	▪ *Define the topic/subject.* ▪ *Determine and understand the audience.* ▪ *Choose the relevant format for the finished product.* ▪ *Identify the key words.* ▪ *Plan a search strategy.* ▪ *Identify different types of resources where Information may be found.*
2	Explore	▪ *Locate resources appropriate to the chosen topic.* ▪ *Find information appropriate to the chosen topic.* ▪ *Do interviews, field trips or other outside research.*
3	Select	▪ *Choose relevant information.* ▪ *Determine which sources are too easy, too hard, or just right.* ▪ *Record relevant information through note making or making a visual organizer such as a chart, graph, or outline, etc* ▪ *Identify the stages in the process.*

		▪ *Collect appropriate citations.*
4	Organize	▪ *Sort the information.* ▪ *Distinguish between fact, opinion, and fiction.* ▪ *Check for bias in the sources.* ▪ *Sequence the information in a logical order.* ▪ *Use visual organizers to compare or contrast information.*
5	Create	▪ *Prepare information in their own words in a meaningful way.* ▪ *Revise and edit, alone or with a peer.* ▪ *Finalize the bibliographic format.*
6	Present	▪ *Practice for presentation activity.* ▪ *Share the information with an appropriate audience.* ▪ *Display the information in an appropriate format to suit the audience.* ▪ *Set up and use equipment properly.*
7	Assess	▪ *Accept feedback from other students.* ▪ *Self assess one's performance in response to the teacher's assessment of the work.* ▪ *Reflect on how well they have done.* ▪ *Determine if new skills were learned.* ▪ *Consider what could be done better next time.*
8	Apply	▪ *Review the feedback and assessment provided.* ▪ *Use the feedback and assessment for the next learning activity / task.* ▪ *Endeavour to use the knowledge gained in a variety of new situations.* ▪ *Determine in what other subjects these skills can now be used.* ▪ *Add product to a portfolio of productions.*

Table 7. Components and Learning outcomes of Empowering 8 IL Model

6. INFORMATION LITERACY MODEL FOR HIGHER EDUCATION ENVIRONMENT IN INDIA

Education is one of the significant factors instrumental to the development of a country. It should be transformed to the needs of the time and changing scenario of the world . It provides an opportunity to critically reflect upon the social, economic, cultural, moral and spiritual issues facing humanity. India needs more efficient and educated

people to drive our economy forward. Higher education sector in India has experienced phenomenal expansion since independence. The number of Universities has increased from 20 in 1950 to 799 in 2016. The sector boasts of 44 central universities, 540 state universities, 122 deemed universities, 90 private universities, 5 institutions established and functioning under the State Act, and 75 Institutes of National importance which include AIIMS, IIT's and NIT's among others. The number of colleges has also registered indicates the manifold increase of 500 colleges in year 1950 growing to 39,701 colleges in the year 2016[26]. Despite of this big expansion, India's higher education institutions are not yet the best in the world – India has fewer than 25 universities in the top 200 universities in the world due to the lack of quality in higher education at global level. Thus, the Department of Higher Education, Government of India in FICCI(Federation of Indian Chambers of Commerce and Industry)Higher Education Summit 2013 titled **"***Building Networks for Transforming Indian Higher Education: Enabling to Deliver Value"* at New Delhi has developed a "VISION 2030" for higher education in India which aims to develop India's higher education hub globally by making the planned expansion of the differentiated university system, the transition from traditional teacher-centered learning system to student-centered learning system and the use of intensive technology for study and research. The vision also aims to make the Indian graduates as independent, critical thinkers, lifelong learners so that they can become active and qualitative workforce globally[27]. To achieve this goal, information literacy plays a very significant role. By realizing the significance of information literacy, the developed countries like USA, UK, Australia, etc has formulated policies, guidelines and also developed various models, standards and frameworks for effectively implementing information literacy in their educational institutions. But in India there is no such policies, guidelines, models, standards and frameworks were formulated and developed. Hence a prototype *DIAEDCU* IL model for Higher Education Institutions in India has been developed which has been shown in the figure 6 given below:

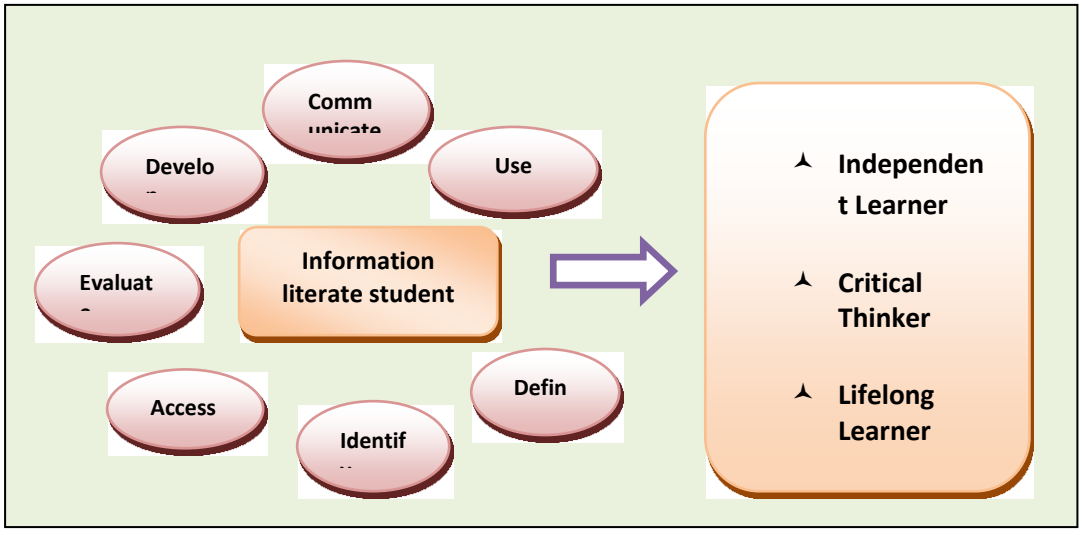

Figure 6. A Prototype DIAEDCU IL Model for Higher Education Institutions in India

According to the above model an information literate student in one who is able to define, identify, access, evaluate, develop, communicate and use information effectively to solve an information problem and thereby becomes a lifelong learner, critical thinker and independent learner". This model includes seven key components representing the key

skill sets such as define, identify, access, evaluate, develop, communicate and use information to solve an information problem. Each key component further divided into sub skill sets which an information literate student is required to posses to become a lifelong learner, critical thinker and independent learner. The key components and sub skill sets of this model is as shown in table 8 given below;

SL. NO.	KEY COMPONENTS	SUB-SKILL SETS
1	Define	*Ability to define information need on a topic.* *Ability to define thesis statement and questions based on information need.* *Ability to identify the key concepts that describes the information need.* *Ability to revise or modify the information need.*
2	Identify	*Ability to understand & identify the major disciplines and sub-disciplines of knowledge.* *Ability to understand& identify formal and informal sources of information.* *Ability to identify and differentiate the primary, secondary and tertiary sources of information.* *Ability to identify the different formats of information sources.* *Ability to identify the purpose and target audience of an information source.*
3	Access	*Ability to understand the general information search process.* *Ability to identify the appropriate information retrieval systems or tools.* *Ability to identify and use the source of help given in an information retrieval system or tools* *Ability to consider the cost and benefit of accessing an information source.* *Ability to construct and use effective search strategies and techniques for the information retrieval system or tool selected.*
4	Evaluate	*Ability to evaluate both print and electronic information sources* *Ability to apply initial criteria's such as authority, accuracy, validity, reliability, timeliness and point of view or bias for evaluating information source.*
5	Develop	*Ability to plan and develop an information product or performance.* *Ability to summarize the main ideas from information gathered.* *Ability to synthesize the main ideas to construct new concepts.* *Ability to organize the content in a way the*

		supports the purpose and format of information product or performance. - *Ability to integrate and manipulate information such as text (print/digital), images and data, as needed, for the development of the new information product or performance.* - *Ability to revise the development process of the information product or performance.*
6	Communicate	- *Ability to communicate the information product or performance effectively.* - *Ability to choose the best communication medium, format and style that supports the purpose of intended audience.* - *Ability to incorporate the principles of design and communication.*
7	Use	- *Ability to understand ethical, legal and social issues surrounding the use of information and information technology* - *Ability to understand the concept of plagiarism and knows how to avoid it.* - *Ability to understand and identify legal issues such as Intellectual Property, Copyright, Right to Privacy, Censorship and Freedom of Information relating to use of information sources (both print and electronic)* - *Ability to understand the issues relating to access and use of free vs. fee-based information sources.* - *Ability to acknowledge and document the use of information sources by using an appropriate documentation style.*

Table 8: Key components and Sub-Skill Sets of DIAEDCU IL Model

CONCLUSION

Concluding it can be said that higher education institutions in India have an opportunity, and a challenge, to prepare students to meet the demands of the information age. Institutions need to identify what graduates should know and be able to do. Recipients of a quality education share certain attributes: critical thinking, problem solving, a global vision and a multicultural perspective, preparedness for work and good citizenship. Institutions must be accountable for how far their students go from the freshman year to graduation. The educated graduates of the 21st century should be the information literate graduates, one who should be able to find, evaluate and apply needed information. Universities and other institutions of higher learning should be responsible for producing such graduates. Administrators must set the tone for the entire campus, by incorporating information literacy into the curriculum and developing IL programs effectively using model and standards that immerse students into information literacy throughout their

higher education. Higher education institutions should go beyond the goal of producing graduates who are not simply equipped to enter the workforce, and broaden their scope to produce enlightened graduates who are able to freely lead happy lives and shape the information society of which they are a part.

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