Chapter - II

INFORMATION-SEEKING BEHAVIOUR: CONCEPTUAL FRAMEWORK
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## CHAPTER - II

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CHAPTER - II
INFORMATION-SEEKING BEHAVIOUR:
CONCEPTUAL FRAMEWORK

Information-seeking takes place when a person has knowledge stored in long term memory that precipitates an interest in related information as well as the motivation to acquire it. It can also take place when a person recognizes a gap in his knowledge that may motivate that person to acquire new information.

The basic notions behind what Garner and Zerbinos describe date back to John Dewey's (1910/1933) characterization; Dewey saw inquiry as motivated by recognition of a problem as something lacking in a situation. Gary Marchionini's definition of Information-seeking as: "a process in which humans purposefully related to learning and problem solving" (1995, pp.5-6). Indeed, for some investigators Information-seeking has come to be synonymous with sense-making.

The totality of human behaviour in relation to sources and channels of information, include both active and passive Information-seeking, and information use. Thus, it includes face-to-face communication with others, as well as the passive reception of information as in, for example, watching television advertisements, without any intention to act on the information given.

Information-seeking behaviour depends upon factors such as work activity, discipline and availability of facilities. The Information-seeking also
depends upon the hierarchical position of the individuals. The Post Graduate students have different needs, because they are studying for different discipline-oriented courses. The reasons for conducting the Information-seeking behaviour of Post Graduate students in universities are:

- Identifying the actual strength and weakness of library resources and services
- Identifying the levels and kinds of users needs
- Identifying the Post Graduate students’ priorities for library resources and services
- Identifying the level of involvement and participation of users in the library programmes
- Identifying the limitations or problems that seem to discourage the use of library

2.1 Information-seeking Behaviour: An Overview

The terms information, information need and Information-seeking behaviour are all used in different ways. Within the context of user studies, information has been used ‘to denote factual data or advice or opinion, a physical object, such as a book or journal or the channel through which message is conveyed, for example, oral or written communication’ (Rohde, 1986).

2.1.1 Concept of Information

Information is a data value in planning, decision making and evaluation of any programme and it is data that has been subjected to some processing functions capable of answering user's query, be it recorded, summarized, or simply collected; that would help decision making. It is well
understood in terms of books, journals, magazines, public and private sector documents of all kinds, whether published for mass circulation or unpublished and restricted or confidential in nature, results of research efforts which are made available to colleagues in form of reports, books articles and non-printed materials. From all these definitions, it is apparent that information is crucial to man's survival. The researcher concludes that information is required about man's daily activities; be it school, play, or work situation (Uttor, 1999).

As per the cognitive viewpoint of information science, information is associated with a text which is the generators modified by purpose, intent, and knowledge of recipient’s state of knowledge conceptual structure and underlines the surface structure (Belkin, Oddy and. Brooks, 1982). Ingwersen (1995) subsequently elaborated by defining information as being the result of transformation of the generator's cognitive structures by intentionality, model of the recipients' state of knowledge, and in the form of signs; quoting the other way information is something - a structure, which, when perceived may affect and transform the recipient’s state of knowledge.

2.1.2 Information Behaviour

According to Wilson (1997), the general model of information behaviour needs to include at least the following three elements

- an information need and its drives, i.e. the factors that give rise to an individual's perception of need
- the factors that affect the individual's response to the perception of need
- the processes or actions involved in that response
Information is the product of certain elements of the information use environment. The elements according to him are: the assumptions, formerly learned or not, made by a defined set of people concerning the nature of their work; the kinds and structure of the problems deemed important and typical by this set of people; the constraints and opportunities of typical environments within which any group or sub-group of this set of people operates and works the conscious and perhaps unconscious assumptions made as to what constitutes a solution, or better said, a resolution of problems, and what makes information useful and valuable in their contexts. Based on this definition, he concluded that information behaviour of different groups of people is different (Taylor, 1991).

2.1.3 Information Needs

The term information need has also been used in a variety of ways. Information need is a subjective, relative concept only in the mind of the individual experiencing it. It has been defined as the "recognition of the existence of uncertainty" (Krikelas, 1983). For a person to experience an information need, there must be a motive behind it (Wilson, 1997). This is understood in information science as stemming from a vague awareness of something missing and as culminating in locating information that contributes to understanding and meaning.

Information need arises when user perceives gaps in their state of knowledge and ability to make sense of experience. Information needs can be categorized into three dimensions such as cognitive, affective and situational.
• Cognitive

The information need and uses of scientists, engineers, medical practitioners, managers, decision makers, academicians etc., has been the subject of research inquiry. To bridge the cognitive gap, individuals seek information to make new sense and use this information to help them continue their journey. Allen (1996) suggested three categories of information needs that are based on knowledge gaps, such as: Information needs arising from failure of perception; Information needs associated with exploring a topic area so as to identify alternative courses of action; Information needs that arise from choosing between alternative courses of action.

• Affective

The second dimensions of cognitive needs are draped in affective responses so that they are as much felt as they are thought about. When sense runs out, lack of understanding creates a state of uncertainty. Kuhethau (1993) explained that uncertainty causes a number of affective symptoms, including anxiety, apprehension, confusion, frustration, and lack of confidence. These affective states motivate and direct the individual's Information-seeking and information using experiences. Affective responses influence and are influenced by the individual's ability to construct meaning, focus information needs, manage moods and expectations, and deepen personal interest in the search.

• Situational

Information needs arise from the problems, uncertainties and ambiguities encountered in specific situations and experiences. Such situations and experiences are the composite of a large number of elements
that relate not just to subject matter, but also to situational factors such as goal clarity and consensus, magnitude of risk amount of control, professional and social norms, time and resource constraints and so on. Information needs would vary according to the complexity of the situation in which the information is to be utilized. Situational complexity increases when many actors and entities are involved and when these agents interconnect and interact in complicated and unpredictable ways. A specific instance of situational complexity is perceived by environmental uncertainty.

2.1.4 Information-seeking

Information-seeking as a process requires information seekers, or what might be called 'personal information structures' such as a person's cognitive abilities, his or her knowledge skills in relation to the problem or task domain, knowledge and skills specific to a system and knowledge and skills regarding Information-seeking. In other words, a dimension noted that research on Information-seeking has looked at how individuals go about finding the materials they need. Information-seeking is a basic activity indulged in by all people and manifested through a particular behaviour. It is also an aspect of scholarly work of most interest to academic librarians who strive to develop collections, services and organizational structures that facilitate Information-seeking (Wiberley, 1989).

Information-seeking is the process in which they purposefully search for information by identifying, selecting and interacting with sources. Users may rely on their own memory or intuition to fill the information need. They may also suppress their information needs or avoid a problem situation so that no Information-seeking is necessary. User can and frequently do engage in information avoidance. They interact with their environment by limiting their intake of information if it is associated with negative outcomes.
and taking information shortcuts (Allen, 1996). When Information-seeking does occur, it is purposive and goal directed and resembles a problem solving or decision-making process. The individual user identifies possible sources, differentiates and chooses a few sources, locates or makes contact with them and interacts with the source in order to obtain the desired information. The Information-seeking behaviour dimensions can be categorized as cognitive, affective and situational.

- **Cognitive Information-seeking Behaviour**

  At the cognitive level of Information-seeking behaviour, the user would select a source that is perceived to have the greater probability of providing information that will be relevant and useful. Moreover, the individual would be concerned with the accuracy and reliability of the source.

- **Affective Information-seeking Behaviour**.

  At the affective level of Information-seeking behaviour, the user's degree of personal motivation and interest in the problem or topic would determine the amount of energy that he or she invests in Information-seeking. Kuhuthau (1993) suggested that, information search progress, initial feelings of uncertainty and anxiety fall as confidence rises. If a clear theme is developed to focus the search, the individual may become more highly motivated and if the search proceeds well, there is a growing feeling of satisfaction and accomplishment.

- **Situational Information-seeking Behaviour**.

  At the situational level, the selection and use of sources is influenced by the amount of time and effort that is required to locate or contact the source, and to interact with the source of extract information. The attributes of this source may be bundled together in a variable called perceived source
accessibility. The accessibility is influenced by experience with the source. However, when the users ponder whether to accept or reject ideas from the sources as tentative solutions to their problems, the dominant factor becomes the technical quality of the sources rather than accessibility. The user uses sources in proportion to accessibility, but they accept ideas from these sources in proportion to technical quality.

- Louise Limberg Conceptions of Information-seeking

Limberg (1999) found that the conceptions described above were linked to learning outcomes of subject content. For example, Category C students demonstrated a more sophisticated understanding of the topic being studied, while Category A students demonstrated fragmented understanding of the topic.

A-category - finding the 'right' answer

- Information-seeking was experienced as fact-finding or finding the right answer to discrete questions.

- Easy access was an important criterion of relevance.

- Information was judged as enough when students did not have time or energy to use any more.

- The cognitive authority of sources was assessed from surface signs such as status and expertise.

- Biased information was not considered useful due to the lack of facts.

- Information-seeking was considered as finding the "right" facts to answer the research questions one at a time.

- Students with conceptions used a smaller number of information sources than other students.
B-category - choosing the ‘right side’

- Information-seeking and usage was considered as finding enough information for forming a personal standpoint on a controversial issue.

- The most important relevant criterion was that information would allow students to answer their research questions and cover their subtopic.

- The cognitive authority of information sources was assessed by surface signs rather than content.

- The students thought it difficult to handle bias in information, and when they met lack of balance between Yes and No, they chose one side.

- Students with B-conceptions used a larger variety of sources and libraries than those with A-conceptions.

C-category - ‘creating’ an answer

- Information-seeking was experienced as seeking and using information for understanding a topic.

- When the topic happened to be a controversial issue, the students thought of Information-seeking as critically evaluating and analysing information sources.

- This view meant placing the topic in a wider context, thus not restricting relevance judgments to the subtopic.

- Scrutinizing information would imply trying to reveal and structure underlying values and motives in information sources.

- C-conceptions concurred with the use of the widest variety of sources among the whole group of students.
2.1.5 Information-seeking Behaviour

Information-seeking behaviour which results from the recognition of some need is defined by Krikelas (1983) 'as any activity of an individual that is undertaken to identify a message that satisfies a perceived need. In other words, Information-seeking begins when someone perceives that the current state of possessed knowledge is less than that needed to deal with some issue or problem'.

The various search techniques are undertaken by library users to search and locate relevant information. In order to understand how users of libraries search and locate relevant documents, it is necessary to understand the search techniques and what resources and sources of information they generally use. There are many ways and means of looking at the Information-seeking process. Ford (1973) offers a conceptual model for researching information needs and uses on the basis of information communication. The model has six components - sources or originators, methods or activities, messages, channels or media, recipients, and information. It is presented as:

(SOURCE) (METHOD) (MESSAGES)

(CHANNEL) (RECIPIENT) (METHOD)

'The source / writes or speaks / ideas, research results, etc. / which are transmitted by / journal, meeting, etc, / to the recipient, who reads or hears / the message and is thus informed. At this point the message is converted into INFORMATION'.
2.1.6 Information-seeking on the Internet Platform

The internet is an existing network used by millions of people every day. In addition, the internet is a generic term for a bundle of technologies available under the internet umbrella. The internet is very similar to the global phone system. In the phone network, whoever is a subscriber is reached by dialing the right country code, area code and local phone number.

Internet users today use a small but powerful set of applications. The most widely used applications are e-mail, WWW content browsing, and file transfer services. These services are provided by high-powered servers within the network and the software implementing those applications. The Domain name serve in the following ways.

- It converts the widely seen host names into IP addresses and authorization services provide support across applications.

- Transport services provide the option for reliable transport of information (error detection and retransmissions) or simple unacknowledged transfer. These services may operate end-to-end (e.g. in case of file transfers between the end user and a remote internet server). In such cases, the network does not get involved at the transport level.

- In other cases, when the user is accessing a web server internal to the network, the transport service is provided by the network TCP
(Transmission Control Protocol) IP (Internet Protocol) infrastructure enhancements provide differentiated services at the IP router level.

- These emerging capabilities and extensions to the current IP features will become key to future applications on the internet.
- Based on this technology, in particular IP all types of networks and their services could be standardized.

Figure 1 and 2 show Information-seeking behaviour cycle and how they are using the internet respectively.
The Principal components of internet include:

- Web servers that maintain home pages;
- Web browsers that directly support users to view, download, and upload information to/from web servers;
• Backbone offering broader bandwidth for higher data volumes;
• Access network offering narrower bandwidth for lower data volumes;
• Networking components including routers, switches, transfer shapers and firewalls;
• Communication protocols such as IP for the backbone and higher layer protocols such as HTTP, FTP to support management applications.

2.2 Information-seeking Models

2.2.1 Ellis Model of IS – Information-seeking

Information-seeking behaviour is comparable and is very similar in different fields, the difference generally surfaces during emphasis. Ellis’s elaboration of the different behaviours involved in Information-seeking consists of six features i.e. starting, chaining, browsing, differentiating, monitoring and extracting. Ellis makes no claims to the effect that the different behaviours constitute a single set of stages; indeed, he uses the term 'features' rather than 'stages'. (Ellis et al. 1993) These features are named and defined below:

• Starting

In the starting stage of the Information-seeking process the researcher is beginning a new or unfamiliar project. This initial familiarization involves ‘... activities characteristic of the initial search for information’ (Ellis et al., 1993) and includes obtaining starting references and information. The idea is to identify the topic and begin a search for
relevant information. In starting a research project there are many informal and formal resources one could use. Informal resources can include personal contacts or colleagues, browsing through catalogue systems or the internet. Formal resources are such things as printed indexes, formal bibliographies, research guides, and abstracts.

Nearly all researchers use personal contacts or colleagues for initial information sources, but there is a noticeable difference in the use of formal resources between fields of study. There are two principal factors which determine the use of particular sources for information: accessibility and quality (Ford, 1973). Accessibility is based on the perceived cost of attaining the source of information. For example, it could be based on the distance to travel or the time delay waiting to retrieve the resource. Accessibility is seen as one of the strongest predictors of use. Quality ‘governs the acceptability of the information retrieved’. Studies note that researchers generally do not rely on libraries for providing the information required in the starting phase of the information gathering process. Libraries or librarians are seen as sources for acquiring material previously identified as relevant, rather than as a primary source for identifying relevant information. They do not play an important part in the initial search process for sources (Folster, 1995). However, academics in Humanities read, on average, more than people in other fields of study. A consequence of this is that they tend to know where to find information required starting a new project, and generally making more use of the library and its facilities (Wiberley and Jones, 1989).
• **Chaining**

The chaining or chasing stage is "...following chains of citations or other forms of referential connection between material" (Ellis *et al.*, 1993) Chaining involves locating references to further work by using relevant material already retrieved. Ellis *et al.*, (1993) categorizes chaining as being either forward or backward. Backward chaining looks at the references within an article to locate other relevant printed articles written in the past. Forward chaining makes use of citation indexes to find out which articles have cited the relevant article you possess (Ellis *et al.*, 1993). Another method of chaining uses catalogue systems to locate work with the same author, subject, topic or classification.

Most studies regarding Information-seeking did not state the way in which information is located once the initial relevant references were found. The library services used in the chaining stage of Information-seeking are limited mainly to online bibliographic and catalogue services. Even then, most of those that acknowledge the use of these facilities prefer, when possible, to use these facilities from the comfort of their own personal computers.

• **Browsing**

Browsing is a planned or unplanned examination of sources, journals, books, or other media in the hope of discovering unspecified, new, but useful information. It is concerned with searching from where to what rather than from what to where. However, it must be noted that there are two main types of browsing across-document browsing and within-document browsing
Across-document browsing is often identified with card catalogue systems or bookshelves and it is when records or books are surveyed to find items to examine more closely. These items could be on a specific topic or to keep up-to-date. Within-document browsing is mainly used during the differentiation stage of the search process to determine if the material retrieved is relevant or to gain an overview. Browsing can be seen as either a specific stage in the Information-seeking process or an activity carried out during phases of the process; for example, during the starting stage one may browse library bookshelves for initial sources of information.

The methods of browsing for scientists include browsing through journals, current contents, abstracts, along shelves in the library or in bookshops and displays at conferences (Ellis et al., 1993). Most computer scientists know the primary journals in their field and browsing them is an activity that is performed regularly.

Browsing can be a rewarding task because browsing is a natural and effective approach to many types of Information-seeking problems. It is natural because it coordinates human physical, emotive and cognitive resources in the same way that humans monitor the physical world and search for physical objects. It can be effective because the environment and particularly human-created environments are generally organized and highly redundant. The library is an organized environment classified to invite browsing by topic area, yet there are some disciplines in which their subject can include many topics scattered through out the classification scheme.
This may be a reason why most individuals prefer to browse their own collections rather than browse library bookshelves for relevant information.

- **Differentiating**

  Ellis *et al.*, (1993, p. 362) define differentiating as "... an activity which uses differences between sources as a filter on the nature and quality of the material examined'. Differentiating is based on human judgment to determine the relevance of the information retrieved. The selection of material based on some predefined criteria defines the usefulness or satisfaction of the information retrieved. This criteria can be based on the actual information contained in the publication, or guidelines such as cost saving, precision, completeness, credibility and convenience of location, or it could be based on the perceived relevance of specific authors, journals, institutions, etc.

  To determine relevance on the basis of subject, individuals often read the material specifically to gain an overview to form an opinion on its content. Browsing can be used to ascertain this. For example, by scanning the title page, table of contents, section headings, index and reference list of a book, we gain a sense of the content's scope, depth of coverage and the author's organizational perspective and thereby can decide quickly whether to invest time reading it or not.

  Ellis *et al.*, (1993) state that scientists and social scientists tend to use factors such as topic, author and journal source. The source of information was also analysed for the quality, level and type to decide relevance. From these factors, a list of core journals is often determined which can also be
used to identify material. Determining the relevance of a document or source is solely an individual's perspective, so the library or librarian is not a determining factor in differentiating sources. It would, however, be advantageous for a library to know and have the relevant material available for use. Traditionally, librarians have sought to provide relevant material. However, due to the rising cost of documents, they have had to be more selective in their acquisitions. In response, positions such as special librarians were created. A special librarian is usually engaged to determine and purchase relevant material for an associated subject area (Folster, 1995). This service is advantageous to both novices and experts in a particular subject area. These librarians knowing where relevant material might be located can direct novices to their area of interest, experts benefit from this system because their subject area has been investigated so that relevant information is easily accessed frequently.

- Monitoring

Monitoring 'is the activity of maintaining awareness of developments in an area through regularly following particular sources' (Ellis et al., 1993) as previously noted, a large part of monitoring is conducted using browsing techniques. However, browsing is also a major information gathering technique in its own right. In monitoring the individual must determine a select range of sources to look at, so as not to get overwhelmed. These sources are usually the predominant sources used in the particular field. There may be different sources of information used in each discipline for monitoring, but the overall nature and form of the activity remain the same.
For scientists, monitoring often means constantly surveying their small number of core sources, mainly personal contacts and journals. Other sources can include conferences, conference proceedings, magazines, abstracts, books, newspapers, television and computer search updates (Ellis et al., 1993). Scientists often maintain a concise personal collection of information which is used for monitoring their fields of interest.

- Extracting

Extracting is defined by Ellis et al., (1993) as the behaviour involved in systematically going through a specific source and identifying material to locate or follow up. Formal sources are more frequently used for systematic analysis, although informal sources may be used in extracting. This is a task which is primarily carried out during the starting or initial familiarisation phase of the Information-seeking process to produce a concise list of references to begin searching for. Folster (1995) also includes the reading of material to decide what information will be part of the final report as an extracting activity.

Research into extracting generally reveals only the sources used. However, Ellis et al., (1993) discusses the significance of the activity and reveals the stages of the Information-seeking process in which extraction of source material is most likely to happen. For most scientists, extracting for further information is a minimal activity that generally happens only in the starting and monitoring stages. In the case of physicists, after initially familiarizing oneself with a project, they tend not to seek further. Physicists also tend to use extraction during current awareness activities. Likewise,
chemists are inclined to use this activity in writing reviews, forcing them to maintain awareness. The sources used for extracting by scientists are usually journals, monographs, indexes, abstracts, bibliographies and computer databases. Sources of information that are mainly used by computer scientists are journals and computer databases, specifically the internet. Online catalogues and CD-ROMs are used infrequently. Computer scientists locate information via the World Wide Web and investigate the home pages of researchers and research institutions. This sort of activity is not an extensive one for computer scientists and they tend to base their own contributions on either one or a few documents.

For most users, the library is seen as a reservoir of information, so it is expected to provide easy access to formal sources used to extract information. When extracting is used to maintain current awareness, access is particularly important for browsing and reading the most recent core journals in the respective fields. The material must also be current and relevant.

- Verification and Ending

Verification and ending are information gathering activities used during the verifying and ending phases of researching. In verifying, the information and sources used to produce their own material are checked for information accuracy and errors. The sort of problems that come to light include typographical, numerical, equation and citation errors. Verification for most only involves knowing and using reliable sources. This sort of
activity is seen as minor and is usually subsumed under other activities; for example, social scientists tend to include it under chaining.

Most scholars do their major information gathering activities at the start of a project for initial familiarization and some also perform literature and information searches during the lifetime of the project. However, Ellis et al., (1993) notes that some chemists returned to the literature at the writing up stage of the project to discuss their contribution; in light of reviewing the literature. Some of the chemists minimally collated information in the starting stage of the project and performed a thorough information search at the end.

Wilson (1999) proposes a process version of Ellis's behavioural framework of Information-seeking behaviour in Figure 3.

![Figure 3: A process version of Ellis's behavioural framework (Wilson 1999)](image)

2.2.2 Ingwersen's Model of the Information Retrieval (IR)

The general orientation towards queries posed to an Information Retrieval System point to a concern with the active search, which is the concern of most Information-seeking models. However, the model makes explicit a number of other elements: first, he demonstrates that within each
area of his model, the functions of the information user, the document author, the intermediary, the interface and the IR system are the result of explicit or implicit cognitive models of the domain of interest at that particular point. In particular, the elements user's cognitive space and social/organizational environment resemble the person in context and environmental factors specified in Wilson's (1999) models.

![Diagram of Ingwersen's model of the IR process]

**Figure 4: Ingwersen's model of the IR process**

Thus, users have models of their work-task or their information need, or their problem or goal, which are usually implicit, but often capable of explication. Again, the IR system is an explication of the system designer's cognitive model of what the system should do and how it should function. Secondly, Ingwersen brings the IR system into the picture, suggesting that a
comprehensive model of Information-seeking behaviour must include the system that points to the information objects that may be of interest to the enquirer. Thirdly, he shows that various cognitive transformations take place in moving from the live-world in which the user experiences a problem or identifies a goal to a situation in which a store of pointers to information objects can be satisfactorily searched and useful objects identified. Finally he points to the need for these cognitive structures and their transformations to be effectively communicated throughout the 'system', which will include the user, the author and the IR system designer.

Thus, Ingwersen's model, to a degree, integrates ideas relating to information behaviour and information needs with issues of Information retrieval (IR) system design and this is an important strength of the model. In Ingwersen's model, there are several entities of the Information System and Retrieval (IS&R) interplay present and some of their relevant features are explicated. Therefore, there are better possibilities for formulating research questions for empirical study; for example, how is an individual user's uncertainty related to the intermediary functions. However, there is still some way to go before one may say that an empirical research problem has been specified. This could be done by classifying, for example, uncertainty and intermediary functions in ways that suggest empirical relationships.

2.2.3 Information-seeking Framework of Bystrom and Jarvelin

Bystrom and Jarvelin (1995) used the framework of three classifications of tasks, information and information sources, for the analysis of their data structured in work charts. In combination, the three
classifications suggest a set of hypotheses of the type: "Tasks of complexity type X require information of type Y that is available from sources of type Z". Thus the classifications suggest analytical relationships between the variables.

Figure 5: Structure of Information-seeking Framework

They developed a qualitative method for task-level analysis of the effects of task complexity on Information-seeking and found, in a public administration context, that these effects are systematic and logical. The specific research problem studied was: what kind of information is sought? through which types of channels; from what kinds of sources in which kinds of tasks? They found that, as task complexity increased,

- complexity of information needed increased
- needs for domain information and problem solving information increased
- share of general-purpose sources i.e. experts, literature, personal collections, increased while that of problem and fact-oriented sources decreased
- success of information-seeking decreased
- internality of channels decreased and
- number of sources increased.

The contrast between simple and complex tasks underlines the importance and consequences of task complexity: in the latter understanding, sense-making and problem formulation are essential and require different types and more complex information through different types of channels from different types of sources.

Further, Bystrom (1999) presented a revised model of task-based Information-seeking in Figure 6 that contains eleven statements viz., S1 to S11. The statements refer to

- S2: the more the information types needed, the greater the share of people as sources.
- S6: the higher the degree of task complexity, the more probable is the need for multiple information types: first task information, then task and domain information and finally task, domain and [problem] solving information.
- S8: the higher the degree of task complexity, the more information types are needed and the greater the share of general-purpose sources and the smaller the share of task-oriented sources.
• S10: task complexity is distinctly related to increasing internality of people as sources and decreasing internality of documentary sources.

• S11: Increasing task complexity fosters the use of people as sources.

Figure 6: Model of Task-based Information-seeking

2.2.4 Model of the Information search process

Kuhethau (1994), reported a model of the information search process that depicts common patterns of tasks, feelings, thoughts and actions in six
stages: initiation, selection, exploration, formulation, collection and presentation.

**Stage 1: Initiation:** The search process begins with the announcement of the research assignment, which frequently causes students to express feelings of uncertainty and apprehension. Their thoughts centre on contemplating the assignment and comprehending their task. They recall prior experiences with similar assignments and begin to explore the boundaries of possible topics to select. They may talk to each other about the assignment and browse the library collection.

**Stage 2: Selection:** In the second stage of the search process students select topics to research. They frequently feel uncertain until they have made their choices and then express a brief elation after their selection. Their thoughts involve weighing possible topics against the criteria of personal interest, the assignment requirement, the information available, and the time allotted for the project. They predict possible outcomes of their choices and select the topic that they consider to have the most potential for success. Their actions include continuing to talk to other people, in particular their teacher, classmates and family; making a preliminary search of the library; and using reference sources to gain an overview of topics under consideration.

**Stage 3: Exploration:** The third stage, when students explore information to learn about their topics, is often the most difficult. As they seek information, they are likely to become increasingly confused by the inconsistency and incompatibility they encounter among different sources.
and with their own preconceived notions. Feelings of doubt concerning their topics are prevalent, as well as doubt in their ability to do the assignment well. In the library they have to seek the information they need. In exploratory thinking, efforts and attention need to concentrate on learning about the general topic and on seeking an appropriate focus. The students' actions involve locating information and evaluating relevance, reading to become informed and reflecting on new information. Taking notes should consist of listing interesting facts and ideas rather than copying long passages from texts.

Stage 4: Formulation: The fourth stage, when students form a focus from information on the general topic, is the critical point in the search process. The focus is a personal perspective, an angle or hypothesis that is developed from reading and reflecting on information gathered about a general topic. As a focus is formed, feelings shift from confusion and doubt to optimism and confidence. When students do not form a focus during the search process they often experience difficulty throughout the remainder of the assignment that may result in writing blocks.

Stage 5: Collection: In the fifth stage, students collect information on their focused view of the topic rather than on all aspects of the topic in general. Although they realize the considerable amount of work ahead at this point they have more confidence, a sense of direction and frequently experience an increased interest in their projects. The focus serves as a controlling idea for gathering information and directing the search. Students find it helpful to seek information to define and extend their focused topics, taking detailed notes only on that which pertains to their chosen focus and
not on the topic in general. In this stage, a comprehensive search of the library collection and use of a wide range of sources is helpful.

Stage 6: Preparation: The sixth stage of the search process prepares students to write. As closure approaches, they draw the search to an end, frequently noting diminishing relevance and increasing redundancy in the sources of information they encounter. They express feelings of relief, as well as satisfaction and occasionally disappointment, depending on the success of their search. Strategies that students find helpful are to return to the library for a final search before beginning to write and to outline in order to organize their ideas for writing.

2.3 Higher Education System

Higher education institutions are today recognised by national governments and donors as key agents for social and economic development in view of their inherent capacity to foster knowledge creation, processing and dissemination and the countries whose higher education sector is weak and inactive will be continually marginalized in a world where economy is increasingly globalized and knowledge-driven. Hence, each country tries to improve itself in the quality of the higher education programmes. However, the developing countries face greater challenges in providing quality higher education than their counterparts in the developed regions.

The objective of higher education is to achieve a profound transformation of education in order that it becomes an effective promoter of sustainable human development and, at the same time, improves the
relevance with the world and achieves quality in teaching, research and business and community extension functions, including lifelong learning. The Government established University Grants Commission (UGC) by an Act of Parliament in 1956 serves as a vital link between the Union and State Governments and the institutions of higher learning. It monitors developments in the field of collegiate and university education; disburses grants to the universities and colleges; advises Central and State Governments on the measures necessary for the improvement of university education; and frames regulations such as those on the minimum standards of instruction. As on 31.03.2005, there were 342 Universities including 18 Central Universities, 211 State Universities, 95 Deemed Universities and 5 Institutions established under State Legislation and 13 Institutes of National Importance. There were 17625 colleges, of which 5386 have been recognized by the UGC under Section 2(f) and 12(B) of the UGC Act. In 2004-05, an estimated 104.81 lakh students were enrolled in the institutions of Higher Education as against 99.54 lakh in the previous year and the faculty strength was 4.71 lakh as compared to 4.57 lakh in the previous year.

The role of the library is necessarily dependent upon the educational objectives of the institution. Frequently, these are unstated or inadequate. The view is urged that libraries and therefore librarians, should be treated as integral and active parts of the educational process and the latter be involved in course planning and development. However, this assumption may seem too simplistic because it is also plausible to argue that even when there are good facilities and quality teachers, students' achievement may still be hampered due to some factors involving students. The most vital among
them is the way the students seek and organise academic information. Hence, the way students organise their learning and search for academic information could be considered very crucial to their overall performance. This situation gets more chaotic, especially when students are given assignments and asked to make presentations. They need to search for information on their own, consequently it is expected that they consult appropriate sources for academic information. From looking at how researchers in the academic and professional roles conduct Information-seeking and retrieval, it is interesting to note that the library is mostly used as a source for previously identified material, to browse bookshelves mainly for current awareness and for the inter-loan facilities. The significance of Information-seeking behaviour of students, research scholars and teaching and non-teaching faculty occupies pivotal role focusing on obtaining information on the nature of academic information needed, the information sources i.e. both printed and non-print materials consulted and the general pattern of information searching system, problems in accessibility, reasons for under utilization of information sources and overall ability of respective libraries in meeting better accessibility to information sources. Thus, knowledge generated by user studies can help to develop information systems and information services.

'Education' and 'library' are two inseparable-indivisible concepts, both being fundamentally and synchronically related to and co-existent with each other. This inter-relation, this co-existence, this dependence of one upon the other have been coming down from the birth of human civilization to the posterity through a process of evolution in accord with varied needs,
changes and circumstances of various stages of human life. Education is the result of acquired knowledge and the accumulation of observations and experiences, while a library is both the fountain and source, and the protector and storehouse of that knowledge and experience. Education cannot exist alone in the absence of library, and library has no meaning if it cannot impart education.

Education is an eye-opener to a human being. It gives him perfect, adequate knowledge, creates civic and rational sense, withdraws him from the subjection of low habits, selfish passions, and ignoble pursuits, and thus educes him from abysmal darkness to limpid and perspicuous enlightenment, while library is an instrument of self-education, a means of knowledge and factual information, a centre of intellectual recreation, and a beacon of enlightenment that provides accumulated-preserved knowledge of civilization which consequently enrich ones mental vision, and dignify his habit, behaviour, character, taste, attitude, conduct and outlook on life.

Library makes available all the records of knowledge of the past and present, whereas a man acquires that conserved knowledge to choose as between good and bad, the right or wrong, which distinguish him from the other animals who have no rational power or thinking. Library does not mean merely a collection of books. It is a learned institution equipped with treasures of knowledge maintained, organized, and managed by trained personnel to educate the children, men and women continuously and assist in their self-improvement through an effective and prompt dissemination of information embodied in the resources. A good well-equipped library is a *sine qua non* for the intellectual, moral and spiritual advancement and elevation of the people of a community. It is an indispensable element of the
absolute well-being of the citizens and that of the nation is dependent upon a library, a centre of wholesome education and the quencher of thirst for concrete, fathomless and ultimate knowledge.

2.4 Profiles of Manonmaniam Sundaranar University and Sri Venkateswara University

2.4.1 Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu

Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu is accredited by NAAC with B++ grade equivalent to 5 star status with a mission in pursuit of Excellence by providing quality education, especially for the rural and the un-reached, through innovation in teaching, research and extension activities and promoting human values for social harmony. The University offers 31 regular courses in Social Sciences, Humanities and Science discipline. The strength of students in Arts and Sciences are 2760. In addition, it offers distance education courses through Directorate of Distance and Continuing Education.
The Manonmaniam Sundaranar University Library holds an impressive collection of recent and rare books and current periodicals which are of immense use to Students, Research Scholars, Teachers and Scientists. The quality and quantity of the collections and the information resources have earned all-round appreciation from users and visitors. The staff of the library includes five professionals, while non-technical staff includes three members.

The newly-built University Library Building was opened at a special function at Abhisekpatti campus on 23.06.2002 at 3.00 p.m. by Dr.M.Thambidurai, Hon'ble Minister for Education, Govt. of Tamil Nadu. Thiru.N.Nainar Nagendran, Hon'ble Minister for Electricity and Industry, Govt. of Tamil Nadu, presided over the function. The approximate cost of the building was Rs.85 lakhs. The building has been constructed under UGC 9th plan.
The M.S. University Library is kept open from 9 A.M. to 7 P.M. on all working days. On Saturdays and Summer Vacation the Library is kept open from 10 AM to 5.45 PM. The holdings include resources on a wide range of disciplines like English, Computer Science, Mathematics, Physics, Chemistry, Statistics, Operation Research, Environmental Science, History, Sociology, Communication, Education, Tamil etc. The collection also includes Surveys, Annual reports, Dissertations and Corporate Publications.

During the report year, around 6000 books have been added to the collection. Total collection has risen to nearly 80,000. The Library subscribes 180 periodicals, both Foreign and Indian, including newspapers and popular magazines.

The M.S. University library adopts Dewey Decimal Classification and Classified Catalogue Code for organizing the information resources in the library. The automation work in the library was launched with the help of INFLIBNET Centre, Ahmedabad. The Library Software – SOUL (Software for University Libraries) is used for in-house automation of the library. The database has been created consisting of 25,000 book records, 800 research reports, 103 Ph.D., Theses, 45 experts database and a serials database.

2.4.2 Sri Venkateswara University, Tirupati, Andhra Pradesh

Sri Venkateswara University, named after the Lord of the Seven Hills, came into existence as a teaching and affiliating University on the 2nd September, 1954, for the encouragement of higher education and research in all branches of learning. It was intended to fulfill the long felt need of the
people of Rayalaseema for their educational advancement. The strength of students of S.V.U. College of Arts and Sciences is 3210, students of S.V.U. College of Engineering are 1804, and the Research Scholars and M.Phil students of S.V.U. College and S.V.U. College of Engineering are 2096. The strength of Teaching Staff is 475 and Non-Teaching Staff is 446.

The S.V. University Library was started in the year 1955 with a small collection of 6,700 books taken from the Sri Venkateswara College, Tirupati, administered by Tirumala Tirupati Devasthanams (TTD). Initially the library was housed in one portion of the college main building. Later, it was shifted to the present building which was declared open in July 1964, by Late Dr. S. Radhakrishnan, the then President of India, who described it as the "Taj Mahal of the South".
The Sri Venkateswara University Library, centrally situated and easily accessible to all the departments on the campus has steadily grown over the years and it has 3,32,072 documents as on 31.03.2005. The Library subscribes to about 265 current journals of National and International importance by spending Rs.2.25 lakhs per year.

The library serves the information needs of the Students, Research Scholars and Teaching Faculty of eight constituent colleges of S.V.University including S.V.U. College of Engineering; Non-Teaching Staff of the University and Deposit Borrowers numbering around 8,000. As of today, fourteen professionals, one semi-professional and fifty one non-professionals are working in the library. In order to provide better service to the users of the library, the huge and perennial growth of its collection has been arranged in such a manner that books and back volumes of journals on
Science and Technology are housed in newly constructed extension building and books and back volumes of journals on Social Sciences, Arts and Humanities are housed in three floors of the stack area of the library building, so that readers may not find any difficulty in locating the documents of their choice.

In order to achieve functional efficiency, the library is organized into twelve different sections. They are Circulation Section, Book Acquisitions Section, Periodicals Section, Technical Section, Binding Section, Stack Area (Arts, Humanities & Social Sciences), Stock Area (Science & Technology), and Text Book section, Reference - cum - Documentation Section, Competitive Examinations Cell, Data Processing Section, and Administrative Section.

The library is kept open for readers between 8-00 AM and 8-00 PM on all working days with transactions at the circulation counter except on Sundays and Holidays, on which days the library functions from 10-00 AM to 5-00 PM for study and consultation purpose only. The Library follows Open Access system in all the wings of the Library. The Books are classified using Dewey Decimal Classification Scheme and Catalogued using Anglo-American Cataloguing Rules. The Library maintains three types of Catalogues viz., Classified Catalogue, Author Catalogue and Title Catalogue.