UNIT 1 CONCEPT AND NEED FOR INFORMATION

Structure

1.0 OBJECTIVES

This Unit introduces you to the concept of information, the way information gets generated and the need for it in various human activities. After reading this Unit, you will be able to:

- explain the variant nature of information;
- distinguish between seemingly synonymous words, such as information, news, data, knowledge, facts, intelligence, advice and wisdom;
- describe how human activities result in the generation of information; and
- identify the information needs of different groups of users.

1.1 INTRODUCTION

In this Unit, we shall look at the meaning, of information as also the meaning of other related words such as data, facts, intelligence, advice, knowledge and wisdom. Although often these words are often used synonymously, each one is different from the other in meaning and use. Some of them are explained here with examples with special reference to library and information science.

Information emanates from all human activities and achievements; both individuals and corporate bodies are involved in the creation of information for some purpose or the other. Research and Development activities, for instance, generate new information which, in turn, is used as a basis for bringing forth more information. Some organisations are entrusted with the task of collecting and organising statistical information through census and surveys. A state with its organs of executive, legislature; judiciary, business and industry generates vast amount of information and contributes substantially to its growth.

We shall also study in this Unit why information gets generated at all. This is explained by taking typical examples of information needs of a wide cross-section of people; viz., students, teachers, medical and legal practitioners, engineers, technologists, business managers, industrialists, government officials, legislators, research workers, and other specialist groups.

This Unit also explains the pervasive nature of information in modern society. The facilities to store, retrieve, and access information for its full exploitation give a country economic, technological as well as political advantages over other countries. Information, therefore, is considered today a commodity and a source of power.

1.2 INFORMATION AND OTHER RELATED CONCEPTS - THEIR MEANING AND CHARACTERISTICS

You may often hear or read in newspapers and other popular magazines about "exponential growth of information" or "explosion of information" and computers are to be used for handling such large mass of information and for quick retrieval of the desired items from it. We talk about the "growth" or "explosion" because we see around us, large bookshops, libraries and news stands, a wide array of publications - books, periodicals, newspapers and news magazines. The much talked about information is recorded in these publications. The term "information" is used very loosely. It is therefore necessary, in the context of library and information science, to know its more precise meaning.

Let us begin with the definitions as provided in two well-known dictionaries and a definition given by UNESCO.

1) "News or intelligence communicated by word or in writing; facts or data; knowledge derived from reading or instruction gathered in any way". (New Webster Dictionary of the English Language, 1984).

2) "Knowledge communicated or received concerning a particular fact or circumstances; any knowledge gained through communication, research, instruction". (Random House Dictionary of the English Language, 1983) .

3) The definition of information, according to a UNESCO document (Inter-governmental Conference on Scientific and Technological Information for Development, UNISIST II 1979), is as follows:

"Information is made up of symbolic elements, communicating scientific and technical knowledge, irrespective of their nature (numerical, textual, graphic, etc.), material carriers (paper-print, microform or machine readable form), form of presentation, etc. It refers both to the substance or contents of documents and to the physical existence; the term is also used to designate both the message (substance and form) and its communication (act)."

The Random House Dictionary has also listed two sets of words that are used synonymously with the term "information". These are;

i) Data, Facts, Intelligence, Advice.

ii) Information, Knowledge, Wisdom.

The terms, "news", "data", and "knowledge" contained in the above definitions of information, are relevant in the context of library and information science. According to the three definitions:

i) these terms are related to the concept of information and thus are nearly synonymous with the term information;

ii) information is communicated by word of mouth or in writing; and

iii) information is derived from reading or instruction or gathered in any other way.

Further, the last two statements imply that some people communicate information while some others acquire, derive or gather and use information. Information is, thus, generated, communicated and used. There are then generators, communicators and users.

Although in this Block, we shall use "news", "information", "data", and "knowledge" interchangeably as if they are synonymous terms, it is necessary to point out that they are not strictly so. Each is a shade different from the other.

1.2.1   News

Concise Oxford Dictionary defines News as "new or interesting information" or "fresh events reported"'. In short, all that a newspaper contains is not news. Only episodic information in it is news.

These may pertain to current political affairs, sports and games, economic and commercial activities, arts and culture and socio-political engagements. These are all episodes or events and, therefore, it is said that news is episodic information that is ephemeral in character having, however, historical value.

1.2.2   Data and Information

The term "data" (plural form of datum) refers to "an individual fact, statistic, or a piece of information or a group or a body of facts, statistics or the like" (Random House Dictionary of the English language, College Edition, 1975). Thus, data may be described as discrete and unorganised pieces of information. Data become "information" when these pieces are processed, interpreted and presented in an organised or logical form to facilitate a better comprehension of the concerned topic or issue. In other words, data become information when processed and presented to form an intelligible context.

The following examples will be helpful in bringing out the difference between the two:

i)   The Meteorological Department is responsible for the daily collection of atmospheric data on weather. These data are presented in quantitative terms, e.g., tables containing rainfall or temperature figures over a period relating to different regions. The pilot of an aircraft needs weather data relating to the region over which he/she would fly. He/She would rather prefer a brief forecast note on the weather conditions based on these tables which would tell him/her whether he/she would face air turbulence on the route. These processed and interpreted data then become information.

ii)   Reserve Bank of India Bulletin regularly publishes notifications on exchange control regulations as and when some existing regulations are amended or new ones introduced. We may say that each notification contains discrete pieces of facts or information. If, however, these notifications, at a later stage, are organised or consolidated in such a manner that all the related pieces are brought together, (e.g. those dealing with the foreign exchange regulation relating to business travel), then such a consolidation becomes information.

iii) A scientist studying the behavior of a chemical compound under different physical conditions would observe and record the relevant data provided by the experiments. These data or raw facts would not convey any meaning unless he filters; analyses and integrates them and finally interprets his findings. The resultant product-then becomes information.

Usage in the Context of Library and Information Services

In library and information science, there is, however, no need for making such distinction between data and information, because many users would consider data and facts as information. For example, data on national income (i.e., national income statistics) presented in a tabular form would enable an economist to make an assessment of the health of the national economy. To him/her, it is "statistical information". He/She may like to interpret the data and publish a paper on the topic. A reader who is not adequately conversant with national income statistics or who is interested in getting a quick grasp of the national economy would find this paper more useful. This paper, rather than the statistical tables, provides him/her the necessary "information". However, a conscious awareness of the distinction between the two is helpful in providing information services to different types of users having different kinds of information needs.

Categories of Information in Social Sciences

It would be useful, particularly in social sciences, to group information into three categories:

- Statistical Information
- Descriptive Information
- Analytical or Interpretative Information

Let us go back to the example of national income statistics mentioned earlier. The table showing the data about national income over a period is statistical information. If someone merely describes the changes that had taken place during those years, we may call it descriptive information. In Unit 5 of the Block 2 we shall refer to review literature. This type of document contains primarily descriptive information. When an author analyses and interprets the data within the framework of economic theory and his/her views on the subject, we would call it analytical or interpretative information. Analytical information is, thus, essentially based on statistical as well as descriptive information, data and facts being interpreted to arrive at a conclusion.

1.2.3 Knowledge

The dictionary definition of knowledge is 'organised body of information or the comprehension and understanding, consequent on having acquired an organised body of facts' **(Random House Dictionary of English Language, 1983). In** common usage of the word, we say 'a knowledge of French is desirable for the post' which means that a person having reasonable acquaintance with French is eligible for the position. A book of knowledge is the title of a book which contains data and information about selected topics which would be useful to students appearing for competitive examinations. Similarly, we often refer to a library as a storehouse of knowledge, meaning thereby, that a library stores documents which contain information and knowledge. Therefore, in common parlance, we use information and knowledge more or less synonymously, without making any distinction between them. But, we must understand the usage of these words a little more precisely in our professional studies.

Data are sets of facts or observations and they are turned into useful information after sorting, compressing and organising them into a meaningful guide to form a basis for further study and research.

Patterns of such information are then built into a coherent body of knowledge. Knowledge, hence, consists of an organised body of information. This interpretative knowledge forms the

The following example may make these ideas a little more clear: basis of insights and judgements.

Data	Cotton
Information	Yarn
Knowledge	Cloth

Cotton can be loomed into yarns which in turn can be weaved into cloth. So also data can weaved into information which can be used to form an organised body of knowledge. In general, both data and information are the building blocks of knowledge and all three are handled in libraries offering different types of services.

Self Check Exercise

l)   Distinguish between information, data and knowledge. State the other words synonymous with information.

Note: i) Write your answer in the space given below

ii) Check your answer with the answers given at the end of this Unit.

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1.3   INFORMATION GENERATION PROCESS

Information is the product of different human activities and events. Activities are undertaken by individuals or by organisations in pursuance of certain objectives. Events are things that happen, occur or take place. If there has been no activity or an event taking place, there would be no information. Imagine a situation when, on a day, the entire population of the world goes into a slumber. Next day, there would be no news (although subsequently this would be news which would hit newspaper headlines).

1.3.1   Research and Development

All intellectual activities consciously pursued and systematically completed generate useful information. Research (also Research and Development) is such an activity. Research organisations in science, technology, social sciences and humanities have been established specifically for this purpose. Research is a creative work contributing to the growth of knowledge for the benefit of man and society. It is a highly organised activity throughout the world which continuously creates a large mass of new information.There has been a dramatic increase of both research institutions and researchers in all branches of knowledge. More 'and more funds are now allocated for conducting research. The progress of a nation is often judged by the percentage of national income that is spent on R&D. The output of research constitutes a major part of information handled by the library and information centres. Since the industrial revolution in the late 18th century, there has been a large-scale growth in this organised body of information and to this is continuously added the output of current research activities. This phenomenon is characterised' by the term "information explosion".

Research activities are not restricted to research institutions alone. Academic institutions - colleges and universities also undertake research and consider it as one of their major tasks, besides imparting formal education.

1.3.2   Surveys and Censuses

There are also organisations which have been set up specifically to gather statistical information through censuses and surveys. This may be considered an auxiliary research activity. One of the most important examples in India is the Office of the Registrar General which was established to conduct decennial censuses to collect population data which form the basic information about the demographic characteristics of the country.

1.3.3   Government Activities

Information is also generated as a by-product from the activities undertaken by different governmental and non-governmental organisations. The most important organisations in this class are the governments themselves and their agencies. They perform their tasks as a matter of routine. For example, the police department has been set up for the maintenance of law and order. It is their routine administrative task. The activities of these departments, in turn, generate information about such burning topics as dowry deaths, terrorism, corruption and the like. The stupendous development planning exercise undertaken in the successive Five Year Plans by the Planning Commission and State Planning Departments of the Government has generated an enormous amount of information on almost all dimensions of socio-economic issues. A major part of the information (both statistical and descriptive) needed by the social science researchers in academic institutions and decision-makers in governments, business and industry, emanates from the governmental sources. The reasons are obvious. There is no area of activity in the life of a nation in which the government is not involved.

Besides these administrative organs of the government, the legislative and judicial bodies also contribute to the growth of information, e.g., the basic sources of legal information are the legislatures which enact various laws and the judiciary which interprets the laws when disputes arise in their implementation and enforcement.

1.3.4 Other Activities

Another source of by-product information is the business and industrial organisations whose activities throw up business and industrial information.

Exercise 2 asks and provides a simple list of Indian organisations which contribute to the generation of information. We should also note the contribution of individuals involved in information generation. They are historians, critics and political commentators. Their writings are replete with a vast amount of socio-political information. They mirror the social condition of specific periods.

Self Check Exercise

2)   List a few organisations and institutions that generate information. Give at least one example of the type of information generated by each of them.

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

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1.4   NEED FOR INFORMATION

Everybody needs information for some purpose or the other. When you want to travel, you need information about routes, timings of the transport services, hotel facilities, and the like. You may gather this information from a friend or from a travel agency. You may also go to a library and collect this information from some formal reference sources like tourist guides and railway time-tables. The discussion in this section would be limited to information which is recorded in various types of documents.

People seek information -for various reasons, Consider the following typical examples of information needs of a wide cross-section of people:

1.4.1   Education and Research

i)   Students need information relating to their academic pursuits.

ii)   Teachers need information for imparting education students to their students

iii)   Rsearches(or scientists) need continuing basis and are considered the biggest consumers of information.

While the information needs of all types of users are important in varying degrees, the systems services researchers have unique information needs which distinguish them from other user groups.We have also mentioned in Section 1.3 that the output of research constitutes the major part of information handled by the library and information services. Thus, the researchers have unique 'distinction of being both consumers (i.e., users) and producers (generators and creators) of information We shall, therefore, discuss their information needs in detail.

A researcher needs information for three purposes.

a)   To keep up with new developments in his area of interest;

b)   To get acquainted with the state-of -the-art of the subject;

c)   To gather specific pieces of data and information needed at different stages of his work.

Keeping up with current developments is one of the key factors for success in the career of a researcher. This activity not only updates his knowledge but also stimulates his thought process and often may suggest new ideas and methods of experiments.

Before a researcher decides on a new project, he needs to undertake a thorough literature search, i.e., he examines the various documents containing information on the topic. He does this to:

a)   get acquainted with the state of knowledge in the area (i.e., state-of-art);

b)   identify whether there are shortcomings and gaps in the existing knowledge and thus to assess further scope of work in the area; and

c)   avoid the possible duplication of work and thus to save time, effort and money.

Even while conducting research, he might need some data on, say, properties of a chemical compound, production of a commodity or information about a technique.

Thus, research requires information all the time. Though the nature of information required varies from time to time.'

1.4.2   Professionals

Professionals, like medical and legal practitioners, need information to pursue their vocations. The physicians cannot afford to ignore new developments in the medical sciences. Theft ignorance would be fatal to the patients. Similarly, legal practitioners must keep in touch with the case law and judicial verdicts to ensure fair justice. Judges need access to earlier verdicts or case precedents before pronouncing judgments.

Engineers and technologists need information for solving technical snags faced by them on the shop floor.

Managers (or executives) in business and industrial organisations need information to enable them to take appropriate decisions relating to issues having both short-term and long-term implications. They need more information for taking decisions involving managerial issues.

1.4.3   Government Activities

i)   Government officials (who are also managers) similarly need information for decision-making.

ii)   Legislators need information for arguing a point on the floor of the house or legislatures.

The above examples show that information is a vital input in different types of activities carried by different groups of people.

Self Check Exercise

3) List the different groups of users of information, stating the purpose for which they need information.

Note: i) Write your answer in the space given below

ii) Check your answer with the answers given at the end of this Unit.

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1.5   GENERAL OBSERVATIONS

Large scale use of information in all countries by a wide cross section of people has resulted in the coming of terms like `information age and information society', which signify the pervasive nature of information in modern society. Information today is regarded as a valuable resource which helps in transforming nutural resources of a country into finished products. The availability of information and facilities to store and exploit it gives a country economic, technological as well as political advantages over other countries. The political power of a few big nations is derived from information. Information has, thus, an economic value and is a tradable commodity, which gets produced sold and consumed, involving increasingly a large number of people. Information handling in this sense is an industry (information industry).

Futurologists say that we are entering an era in which trade will consist largely of information exchange. Even when, trade involves commodities other than information, like raw materials, intermediate and finished products or services, it will be dependent on information exchange systems.

Self Check Exercise

4)   Information is power'. Elucidate this statement. Give your answer in five sentences.

Note: i) Write your answer in the space given below

ii) Check your answer with the answers given at the end of this Unit.

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1.6   SUMMARY

In this Unit, we have:

i)   given the meaning of information and related words in the context of library and information science;

ii)   explained the variant nature of information with examples;

iii)   indicated how information gets generated and by whom;

iv)   explained the groups of users and the specific purpose for which they need information; and

v)   highlighted-the importance of information as an economic resource which transforms every other natural resource into an economic product, and hence a source of power.

1.7   ANSWER TO SELF CHECK EXERCISES

1) Information is made up of symbolic as well as descriptive elements,
    communicating knowledge. It refers both to the substance or contents of
    documents and to the physical existence; the term is also used to designate both
    the message (substance and form) and its communication.

    A distinction is made between raw information (facts, concepts, representation)
    and the documents in which it is recorded.

    Data, as discrete and unorganized pieces of information, become information
    when these pieces are processed, interpreted and presented in an organized or
    logical form to facilitate a better comprehension of the concerned topic or issue.

    Knowledge is an organized body of information that can be used as the basis of
    further knowledge. Information that removes uncertainty and alters concepts is
    knowledge.

    The other synonymous words for information are: facts, intelligence, advice and
    wisdom.

2)

SI. No.	Organizations and Institutions	Information Generated	Type of Information Generated
i)	The Meteorological Department	Atmospheric data on weather and other related phenomena	Statistical information in the form of tables
ii)	Reserve Bank of India	Notifications on exchange control regulations	Descriptive and textual
iii)	Research Organisations like the National Chemical Laboratory	Experimental information	Textual and numerical in the form of journal articles or research reports

3)

Groups of Users	Purpose
Students	For pursuing academic studies
Teachers	For imparting education
Professionals (medical, legal, judicial, etc.)	To pursue their vocation
Engineers and technologists	For solving technical snags on industrial shop-floor
Business managers, top executives of government	For decision making
Legislators	For arguing a point on the floor of the legislatures
Researchers	For their research work on a continuing basis

4) Information has an economic value in transforming all the natural resources of a
    country into finished products and is treated as a tradable commodity which gets
    produced, sold and consumed. In this sense, information handling is to be
    regarded as an industry.

    Information is, therefore, a resource which can enrich a country to provide a high
    quality of life to its people. The country that has this wealth, decidedly gets an
    advantage over other countries. Information is also used as a powerful political
    weapon and hence regarded as power.

1.8   KEY WORDS

Explosion of information   : Growth of information beyond a manageable limit.

Exponential   : Quantitative growth of a thing at a particular rate of growth; for example, chemical literature doubles every seven years.

Futurologists   : Specialists in social forecasting.

Information Age   : A period predominantly centred on information activities

Information Society   : A society in which all activities are centred on information as a basic input.

1.9   REFERENCES AND FURTHER READING

McGarry, K. (1981). *The Changing Context of Information: An Introductory Analysis.* London: Clive Bingley.

Vickery, B.C. and Vickery, A, (1987). *Information Science in Theory and Practice.* London: Butterworth. Chapter 1, pp. 1-12.