

Unit- I**NATURE OF INFORMATION****1.0 AIMS AND OBJECTIVES**

In this unit you will be learning the concept of information, meaning, characteristics etc., and the relation between knowledge, information and data are included. An attempt is made to explain the types of information and approaches to information. The approach to information is also covered. After reading this lesson, you will be able to understand the meaning and definition of information, data, knowledge and communication. The nature and characteristics of information are explained.

Structure

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1.1 INTRODUCTION

Information or knowledge is a key element for development of society. Information is a source to take appropriate decisions which may mar the development of society. Therefore, information is considered as an important and essential item for the development of any society. It is a fact that human beings learn most of the things from nature by observation, perception etc. Through these practices man learns knowledge from nature. It is nature of the human beings to share the acquired knowledge with others. Therefore, a kind of mechanism is necessary to pass the acquired knowledge known as 'communication'. So there is a close relation between knowledge and communication. Based on these observations, at times knowledge is generated. Often, this is referred as information and data. It is necessary to understand the meaning and scope of knowledge, information and data and the relation between them.

1.2 MEANING AND DEFINITION OF TERMS

1.2.1. Information

Information is derived from two Latin words 'Formatio' and 'Formis', which imply giving shape to something and of forming a pattern. Information refers to fact, news, data intelligence and knowledge, which can be used, transferred and communicated. Information is the product of brain, may be abstract or concrete. It is a stimulus, which we receive through our senses.

Information, in its most restricted technical sense, is a sequence of symbols that can be interpreted as a message. Information can be recorded as signs, or transmitted as signals. Information is any kind of event that affects the state of a dynamic system. Conceptually, information is the message (utterance or expression) being conveyed. The meaning of this concept varies in different contexts. Moreover, the concepts of information is closely related to notions of constraint, communication, control, data, form instruction, knowledge, meaning, understanding, mental stimuli, pattern, perception, representation, and entropy.

Definition:

According to Webster's Third New International English Dictionary 'Information' is defined as the "process by which the form of an object of knowledge is improved upon the apprehending mind so as to bring about the status of knowing".

Shera defines information as 'Information is a fact, it may be a single isolate fact, it may be whole clusters of facts but it is still a unit, a unit of thought'.

Information is defined by UNISIST Guide to Teachers (prepared by UNESCO) as "a sensible statement, opinion, fact, concept or idea or an association of statements, opinions and ideas".

In the words of Shannon 'Information is the unit which carries a message'.

Davies views information as 'data that has been processed into a form that is meaningful to the recipient. Brillowin says 'Information is the raw material and consists of a mere collection of data'. Balkin defines information as that which is capable of transforming structure. Information is knowledge, intelligence and facts, which is the result of experience, observation, interaction and reading.

C.S. Peirce's theory of information was embedded in his wider theory of symbolic communication he called the semeiotic, now a major part of semiotics. For Peirce, information integrates the aspects of signs and expressions separately covered by the concepts of denotation and extension, on the one hand, and by connotation and comprehension on the other.

Claude E. Shannon, for his part, was very cautious: "The word 'information' has been given different meanings by various writers in the general field of information theory. It is likely that at least a number of these will prove sufficiently useful in certain applications to deserve further study and permanent recognition. It is hardly to be expected that a single concept of information would satisfactorily account for the numerous possible applications of this general field." Thus, following Shannon, Weaver supported a tripartite analysis of information in terms of (1) technical problems concerning the quantification of information and dealt with by Shannon's theory; (2) semantic problems relating to meaning and truth; and (3) what he called "influential" problems concerning the impact and effectiveness of information on human behaviour, which he thought had to play an equally important role.

Floridi, states four kinds of mutually compatible phenomena are commonly referred to as "information":

- Information about something (e.g. a train timetable)
- Information as something (e.g. DNA, or fingerprints)
- Information for something (e.g. algorithms or instructions)
- Information in something (e.g. a pattern or a constraint).

Beynon-Davies explains the multi-faceted concept of information in terms of signs and signal-sign systems. Signs themselves can be considered in terms of four inter-dependent levels, layers or branches of semiotics: pragmatics, semantics, syntax, and empirics. These four layers serve to connect the social world on the one hand with the physical or technical world on the other.

Pragmatics is concerned with the purpose of communication. Pragmatics links the issue of signs with the context within which signs are used. The focus of pragmatics is on the intentions of living agents underlying communicative behaviour. In other words, pragmatics link language to action.

Semantics is concerned with the meaning of a message conveyed in a communicative act. Semantics considers the content of communication. Semantics is the study of the meaning of signs - the association between signs and behaviour. Semantics can be considered as the study of the link between symbols and their referents or concepts – particularly the way in which signs relate to human behavior.

Syntax is concerned with the formalism used to represent a message. Syntax as an area studies the form of communication in terms of the logic and grammar of sign systems. Syntax is devoted to the study of the form rather than the content of signs and sign-systems.

Empirics is the study of the signals used to carry a message; the physical characteristics of the medium of communication. Empirics is devoted to the study of communication channels and their characteristics, e.g., sound, light, electronic transmission etc..

Communication normally exists within the context of some social situation. The social situation sets the context for the intentions conveyed (pragmatics) and the form in which communication takes place. In a communicative situation intentions are expressed through messages which comprise collections of inter-related signs taken from a language which is mutually understood by the agents involved in the communication. Mutual understanding implies

that agents involved understand the chosen language in terms of its agreed syntax (syntactics) and semantics. The sender codes the message in the language and sends the message as signals along some communication channel (empirics). The chosen communication channel will have inherent properties which determine outcomes such as the speed with which communication can take place and over what distance.

1.2.2 Data

The word 'data' is Latin in origin, and literally, it means anything that is given. According to Robert Hayes 'Data' is that which is recorded as symbols from which other symbols may be produced. The data may represent 'facts' as a statement of truth but generally, it is anything recorded in the form which can be processed.

Webster's Third New International Dictionary defines data as something given or admitted; facts or principles granted or presented; that upon which an inference or argument is based, or from which an ideal system of any sort is constructed.

According to Oxford Encyclopedic English Dictionary, Data are 'known facts or things used as a basis for inference or reckoning'.

Shuman defines data as 'Quantitative facts derived from experimentation, calculations, or direct observation'. According to him data is the symbolization of knowledge'.

UNESCO defines data as 'facts concepts or instructions in a formalized manner suitable for communication, interpretation or processing by human or automatic means'.

1.2.3 Knowledge

The Oxford Concise Dictionary defines knowledge as "Familiarity gained by experience; persons range of information".

According to S.R. Ranganathan, when knower and knowee are brought in relation, the knower knows the knowee and knowledge emerges. It implies that there are three entities involved in knowledge, the subject which knows, the object which is known and the process of knowing. Knowledge cannot emerge unless the knowee and the knower are brought together or came in contact.

Ladd says that in knowledge, the knower appears to himself as an active and sensitive intellect.

1.2.4 Communication

According to Oxford English Dictionary 'communication' means 'the imparting, conveying, or exchange of ideas and knowledge whether by speech, writing or signs.

The Encyclopedia of Library and Information Science says "Communication is the continuous pervasive and comprehensive, collecting of all mechanizing, organizations and the physical universe".

In the words of Shera, 'Communication is essentials a social phenomenon, because of its importance to the structure, organization and behavior of the society as well as the character of the individual'.

1.3 NATURE AND CHARACTERISTICS OF INFORMATION

The philosophy of information (PI) is the area of research that studies conceptual issues arising at the intersection of computer science, information technology, and philosophy.

It includes:

1. The critical investigation of the conceptual nature and basic principles of information, including its dynamics, utilization and sciences.
2. the elaboration and application of information-theoretic and computational methodologies to philosophical problems

1.3.1 Nature of Information

Information as a resource has been a topic of discussion of academics and practitioners in various subject fields - especially in the field of economics. Economists such as Machlup, Porat and Bell pioneered the ideas of information economy with information as the transforming resource for postindustrial society. Authors such as Horton pioneered the view of information as a corporate resource, which like other resources such as people, money, raw materials, equipment and energy should be managed to give a competitive edge. These authors helped to develop both the ideas of information as a resource and the idea of information-resources management technologies. Hawkins (1987) confirmed that information has become a commodity. Yet requirements for economic enhancement are not necessarily requirements for development in rural communities when it comes to the basic survival of people.

This immediately raises the question of what prerequisites a resource should comply with in order to be useful for development purposes. Of course, many other resources are needed for developing people in rural communities with which information as a resource should favorably compare - for example, farming practices in rural communities will require input resources (seed, fertiliser), farming implements (tractors, ploughs), credit, markets, infrastructure, and natural resources (soil, water, climatic conditions). At first glance, when comparing information with these resources, it seems that most of them are tangible in nature, while information is not. And yet, many view information as one of the most important resources needed for rural development. Although information is recognized as an important, yet still under-utilized, development resource, one needs to look critically at the attributes of information to determine whether they could aggravate the problem of under-utilization.

1.3.2 Characteristics of Information

Good information is that which is used and which creates value. Experience and research shows that good information has numerous qualities. Good information is relevant for its purpose, sufficiently accurate for its purpose, completes enough for the problem, reliable and targeted to the right person. It is also communicated in time for its purpose, contains the right level of details and is communicated by an appropriate channel, i.e. one that is understandable to the user.

Further details of these characteristics related to organizational information for decision-making follows.

Availability/accessibility

Information should be easy to obtain or access. Information kept in a book of some kind is only available and easy to access, if you have the book to hand. A good example of availability is a telephone directory, as every home has one for its local area. It is probably the first place you look for a local number. But nobody keeps the whole country's telephone directories and to make a call, one has to seek the assistance from directory of enquiry number. For business premises, say for a hotel in London, you would probably use the Internet.

Businesses used to keep customer details on a card-index system at the customer's branch. If the customer visited a different branch a telephone call would be needed to check details. Now, with centralised computer systems, businesses like banks and building societies can access any customer's data from any branch.

Accuracy

Information needs to be accurate enough for the use to which it is going to be put. To obtain information that is 100% accurate is usually unrealistic as it is likely to be too expensive to produce on time. The degree of accuracy depends upon the circumstances. At operational levels information may need to be accurate to the nearest penny – on a supermarket till receipt, for example. At tactical level department heads may see weekly summaries correct to the nearest £100, whereas at strategic level directors may look at comparing stores' performances over several months to the nearest £100,000 per month.

Accuracy is important. As an example, if government statistics based on the last census wrongly show an increase in births within an area, plans may be made to build schools and construction companies may invest in new housing developments. In these cases any investment may not be recouped.

Reliability or Objectivity

Reliability deals with the truth of information or the objectivity with which it is presented. You can only really use information confidently if you are sure of its reliability and objectivity. When researching for an essay in any subject, we might make straight for the library to find a suitable book. We are reasonably confident that the information found in a book, especially one that the library has purchased, is reliable and (in the case of factual information) objective. The book has been written and the author's name is usually printed for all to see. The publisher should have employed an editor and an expert in the field to edit the book and question any factual doubts they may have. In short, much time and energy goes into publishing a book and for that reason we can be reasonably confident that the information is reliable and objective.

Compare that to finding information on the Internet where anybody can write unedited and unverified material and 'publish' it on the web. Unless you know who the author is, or a reputable university or government agency backs up the research, then you cannot be sure that the information is reliable. Some Internet websites are like vanity publishing, where anyone can write a book and pay certain (vanity) publishers to publish it.

Relevance/Appropriateness

Information should be relevant to the purpose for which it is required. It must be suitable. What is relevant for one manager may not be relevant for another. The user will become frustrated if information contains data irrelevant to the task in hand.

For example, a market research company may give information on users' perceptions of the quality of a product. This is not relevant for the manager who wants to know opinions on relative prices of the product and its rivals. The information gained would not be relevant to the purpose.

Completeness

Information should contain all the details required by the user. Otherwise, it may not be useful as the basis for making a decision. For example, if an organisation is supplied with information regarding the costs of supplying a fleet of cars for the sales force, and servicing and maintenance costs are not included, then a costing based on the information supplied will be considerably underestimated.

Ideally all the information needed for a particular decision should be available. However, this rarely happens; good information is often incomplete. To meet all the needs of the situation, you often have to collect it from a variety of sources.

Level of detail/conciseness

Information should be in a form that is short enough to allow for its examination and use. There should be no extraneous information. For example, it is very common practice to summarise financial data and present this information, both in the form of figures and by using a chart or graph. We would say that the graph is more concise than the tables of figures as there is little or no extraneous information in the graph or chart. Clearly there is a trade-off between level of detail and conciseness.

Presentation

The presentation of information is important to the user. Information can be more easily assimilated if it is aesthetically pleasing. For example, a marketing report that includes graphs of statistics will be more concise as well as more aesthetically pleasing to the users within the organisation. Many organisations use presentation software and show summary information via a data projector. These presentations have usually been well thought out to be visually attractive and to convey the correct amount of detail.

Timing

Information must be on time for the purpose for which it is required. Information received too late will be irrelevant. For example, if you receive a brochure from a theatre and notice there was a concert by your favourite band yesterday, then the information is too late to be of use.

Value of Information

The relative importance of information for decision-making can increase or decrease its value to an organisation. For example, an organisation requires information on a competitor's performance that is critical to their own decision on whether to invest in new machinery for their factory. The value of this information would be high. Always keep in mind that information should be available on time, within cost constraints and be legally obtained.

Cost of Information

Information should be available within set cost levels that may vary dependent on situation. If costs are too high to obtain information an organisation may decide to seek slightly less comprehensive information elsewhere. For example, an organisation wants to commission a market survey on a new product. The survey could cost more than the forecast initial profit from the product. In that situation, the organisation would probably decide that a less costly source of information should be used, even if it may give inferior information.

The difference between value and cost

Many students in the past few years have confused the definitions of value and cost. Information gained or used by an organisation may have a great deal of value even if it may not have cost a lot. An example would be bookshops, who have used technology for many years now, with microfiche giving way to computers in the mid to late 1990s. Microfiche was quite expensive and what the bookshops received was essentially a list of books in print. By searching their microfiche by publisher they could tell you if a particular book was in print. Eventually this information became available on CD-ROM. Obviously this information has value to the bookshops in that they can tell you whether or not you can get the book. The cost of subscribing to microfiche was fairly high; subscribing to the CD-ROM version only slightly less so.

Much more valuable is a stock system which can tell you instantly whether or not the book is in stock, linked to an on-line system which can tell you if the book exists, where it is available from, the cost and delivery time. This information has far more value than the other two systems, but probably actually costs quite a bit less. It is always up-to-date and stock levels are accurate.

We are so used to this system that we cannot envisage what frustrations and inconvenience the older systems gave. The new system is certainly value for money.

1.3.4 Types of Information:

Jesse Shera categorized information into six types:

- 1) Conceptual information
- 2) Empirical information
- 3) Procedural information
- 4) Stimulating information
- 5) Directive information
- 6) Policy information

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| Information Communication | 1.9 | Nature of Information |
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Conceptual information: to understand a problem or a research area suitable idea, theories, hypothesis and relation between these variables would help.

Empirical information: this information gained by experience, collected data for research and communication with others.

Procedural information: This information is gained through a series of steps. In research the university reader has to collect data and manipulates the data in order to establish a scientific theory.

Stimulating information: Usually individual acquires information either by experience or from environment. The information acquired in this form would be transmitted by direct communication to others. At times, verification of this kind of information is big difficult.

Directive information: To co-ordinate among group, a leader is necessary. So also, the leader and the information given is accepted to move further.

Policy information: This kind of information is usually in decision making.

Confidential – specific data elements subject to more stringent security requirements

Restricted – unless otherwise classified, all information used in the. Conduct of university business is restricted, and not open to the general public.

Public – University data that has been explicitly made available to the public, with no authentication required for network access.

1.3.4. Types of information available.

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| <u>Books&E-Books</u> | <u>Newspapers & online newspapers</u> | <u>Journals, E-journals &magazines</u> |
| <u>Specialist reference material (directories, market reports...)</u> | <u>Statistics and data</u> | <u>Statutes and Statutory instruments</u> |
| <u>Official Publications (Green Paper, Command Paper, Departmental papers)</u> | <u>Dissertations and Theses</u> | <u>Conference papers</u> |
| <u>Television & radio broadcasts, podcasts & screencasts</u> | <u>Lecture notes</u> | <u>Communications and social media (phone calls, emails, text messages, blogs, Facebook and wikis.)</u> |

1.4 INFORMATION ARCHITECTURE

Information architecture (IA) is the art and science of organizing and labeling data including : websites, intranets, online communities, software, books and other mediums of information, to support usability. It is an emerging discipline and *community of practice* focused on bringing together principles of design and architecture, primarily to the *digital landscape*. Typically, it involves a model or concept of information which is used and applied to activities that require explicit details of complex information systems. These activities include library systems and database development.

Historically the term "information architect" is attributed to Richard Saul Wurman and now there is a growing network of active IA specialists who comprise the Information Architecture Institute.

Attributes of information

While investigating the validity of information as a resource, the natural approach would be to compare attributes of information with those of other resources, in order to find some commonality. A comparison of this nature necessitates a closer look at the attributes of the different resources. To this end, Burk and Horton give nine basic similarities between information and other *traditional* resources to fit into a resource-management framework, namely:

- Information is acquired at a definite, measurable cost.
- Information has a definite value, which may be quantified and treated as an accountable asset.
- Information consumption can be quantified.
- Cost-accounting techniques can be applied to help control the costs of information.
- Information has a clear life cycle: definition of requirements, collection, transmission, processing, storage, dissemination, use, and disposal.
- Information may be processed and refined, so that raw materials (e.g., databases) are converted into finished products (e.g., published directories).
- Substitutes for any specific item or collection of information are available, and may be quantified as more expensive, or less expensive.
- Choices are available to management in making trade-offs between different grades, types and costs of information.

1.5 Let Us Sum Up

In this unit an attempt is made to introduce you the meaning and definition of information, data, knowledge and communication. The characteristic of information helps you to understand, the level of information to be communicated or share with others. The information architecture and attributes of information will help you to understand relation between various concepts.

1.5 REFERENCES AND RECOMMENDED BOOKS

Gupta, B.L. Knowledge Communication and Libraries, Jaipur: Print Well, 1987.

McGarrty, K.J. Communication, knowledge and the librarian. London: Clive Bingley. 1975.

Rowley, J.E. and C.M.D. Turner. The dissemination of Information. London: Andre Deutsch. 1976.

1.6 ASSIGNMENT

Write an account philosophy of information?

1.7 Self Assessment Questions

Essay questions:

1. Define information, discuss types of information?
2. Explain the terms of information, communication, Knowledge?

Short Notes:

1. Confidential information
2. Nature of Information
3. Information accuracy

Unit-2

INFORMATION GENERATION AND GROWTH

2.0. Aims and objectives

In this unit, you will be learning the need for information, information generations, Models of information, growth and obsolescence of information characteristics etc. The relation between knowledge, information and data is included. An attempt is made to explain the types of information and approaches to information. The approach to information is also covered. After reading this lesson, you will be able to understand the meaning and definition of information, data and knowledge.

Structure

- 2.1 Introduction
- 2.2 Need for information
- 2.3 Information Generation
 - 2.3.1 Modes of Information Generation
 - 2.3.2 Modes and forms
 - 2.3.2.1 Observation
 - 2.3.2.2 Thought process, Deliberation and imagination
- 2.4 Information Transfer- Models
 - 2.4.1 Technical Models of Information Transfer
 - 2.4.2 Semantic Models of Information Transfer
 - 2.4.3 General Models of Information Transfer
- 2.5 Growth of Information Society
 - 2.5.1 Growth of Information-Meaning
 - 2.5.2 Obsolescence of Information
 - 2.5.2.1 Consequences
 - 2.5.2.1.1 Technical Obsolescence
 - 2.5.2.1.2 Functional Obsolescence
 - 2.5.2.1.3 Planned Obsolescence
 - 2.5.2.1.4 Style Obsolescence
 - 2.5.2.1.5 Postponement Obsolescence
- 2.6 Information Explosion
- 2.7 Let Us Sum Up
- 2.8 Recommended Books

2.9 Assignment

2.10 Self Assessment Questions

2.1 Introduction

The human civilization has passed through different ages such as Stone Age, Iron Age, industrial age and so on. Now it has entered the information age. The countries rich in information are today in a much more advantageous position compared to those poor in information. In many cases the poor countries are obliged to purchase information from the vendor, sometimes at a very high cost. The advent of Internet has proved to be a great boon for accessing any information from any part of the world practically in no time. Even in many cases, we are to pay for obtaining information. In other words information has become a commodity. The generators of information are churning out various information products, marketing them, and earning profit. The information age has given birth to information industry. The society we are living in has already been termed as information society

2.2 Need for Information

The concept of information needs was coined by an American information scientist Robert S. Taylor in his article "The Process of Asking Questions" published in American Documentation. In this paper, Taylor attempted to describe how an inquirer obtains an answer from an information system by performing the process consciously or unconsciously. He also studied the reciprocal influence between the inquirer and a given system.

According to Taylor, information need has four levels:

1. The conscious and unconscious need for information not existing in the remembered experience of the investigator. In terms of the query range, this level might be called the "ideal question" — the question which would bring from the ideal system exactly what the inquirer, if he could state his need. It is the actual, but unexpressed need for information
2. The conscious mental description of an ill-defined area, the inquirer might talk to someone else in the field to get an answer.
3. A researcher forms a rational statement of his question. This statement is a rational and unambiguous description of the inquirer's doubts.
4. The question as presented to the information system.

There are variables within a system that influence the question and its formation. Taylor divided them into five groups:

- general aspects (physical and geographical factors)
- system input (What type of material is put into the system, and what is the unit item?)
- internal organization (classification, indexing, subject heading and similar access schemes)
- question input (what part do human operators play in the total system?)
- output (interim feedback).

Menzel investigated user study and defined information seeking behaviour from three angles:

1. When approached from the point of view of the scientist or technologists, these are studies of scientists' communication behaviour
2. When approached from the point of view of any communication medium, they are use studies
3. When approached from the science communication system, they are studies in the flow of information among scientists and technologists.

William J. Paisley studied the theories of information-processing behavior that will generate propositions concerning channel selection; amount of seeking; effects on productivity of information quality, quantity, currency, and diversity; the role of motivational and personality factors, etc. Further investigated, a concentric conceptual framework for user research where the user is at center:

1. The scientist within his culture.
2. The scientist within a political system.
3. The scientist within a membership group.
4. The scientist within a reference group.
5. The scientist within an invisible college.
6. The scientist within a formal organization.
7. The scientist within a work team.
8. The scientist within his own head.
9. The scientist within a legal/economical system.
10. The scientist within a formal.

The objectives of information needs:

1. The explanation of observed phenomena of information use or expressed need;
2. The prediction of instances of information uses;
3. The control and thereby improvement of the utilization of information manipulation of essential conditions.

Information needs are related to, but distinct from information requirements. eg. A need is hunger; the requirement is food.

2.3 Information Generation

All the while, information is being generated in the world, nay in the universe. The bursting of a supernova in a particular constellation, discovery of a planetary system around a star like the Sun, spotting of a river on the Mars, inundation of areas by a swelling river, eruption of a volcano, invention of a machine, successful testing of a drug, conquering of a deadly disease, birth of a child and millions of other events are generating information every moment. You may be interested to know whether the generation of information follows any well-defined rule or it generates at random without any regard to any rule. If you just take a newspaper and try to find out how the news have generated, you will notice that they have generated following certain modes. The HindustanTimes of 21 July 2004 contained the following headlines in its first page: i) HIV vaccine could come from AIIMS; ii) 'Soften Hurriat with foreign trips' iii) It's almost

clear, monsoon's a failure, iv) NCERT's recipe for confusion. On going through the news, it will be clear that the first news has resulted due to experimentation, the second news due to deliberation, the third news due to observation and the fourth news again due to deliberation. In many cases, generation of information involves more than one mode. For example, Newton saw the falling of an apple from a tree. This observation immediately switched his thought process on which ultimately resulted in his propounding the theory of gravitation. In this case, the combination of observation and thought process gave rise to information generation.

2.3.1 Modes of Information Generation

Information usually generates following modes such as Observation, Thought process, Deliberation or Imagination, Experimentation, Processing of data, Happening of various events and so on. In certain cases like language, information generates following the path of evolution.

2.3.2 Modes and Forms

Before declaring the dates of a general election, the Election Commission (EC) has to consider a number of factors like weather (usually rainy season is avoided), school and college examinations (because schools and colleges are used for setting up polling booths), availability of security personnel, dates suggested by various political parties and so on. After deliberating on all the factors, when the EC announces its decision, information is generated. In a parliament or a legislative assembly, after a lot of debates, decisions are taken up giving birth to plenty of information. An artist has to imagine about the art piece he is going to create, a chemical engineer has to visualise in his mind the chemical plant he is going to install, an architect is also picture the building in the canvass of his mind. Once the art piece is completed, the blue prints of the chemical plant or the building are ready and handed over to the persons concerned and thus information is generated.

2.3.2.1 Observation

By the word 'observation' here we mean not only seeing with eyes, but also hearing, smelling, tasting and feeling with skin. We can get information about the sky whether it is sunny, cloudy or hazy by looking at it. Many a time, an ornithologist can identify a bird just by hearing its call. Often chemists can recognize a chemical substance, e.g. phenol, by smelling it. Our tongue gives us information about the taste of a substance. A simple touch by the hand is enough to know whether a substance is hot, cold or warm. Observation may be termed as the most potent mode of generation of information. Charles Darwin observed nature for years together information for establishing the theory of evolution. Astronomers all over the world gathered information by observing the celestial bodies for centuries initially with naked.

Observation is a mode of information generation: Microbiologists gathered Information on all microbes observing them with microscopes. A police officer has to observe minutely every detail of the venue while investigating an accident, theft, etc. A scientist conducting an experiment has to observe very carefully the changes taking place in temperature, pressure, colour etc. and faithfully record the changes. A doctor has to observe the condition of a patient at regular intervals to see whether his condition is improving or deteriorating. Thus, we find, in every walk of life observation is a prerequisite for the generation of information.

2.3.2.2 Thought Process, Deliberation and Imagination

Thought process is the mother of generation of information. Be it observation, experimentation or data collection, thought process is involved in every case to generate information. Men have seen the solar and lunar eclipses for thousands of years and have tried to find out the underlying causes with his limited knowledge and generated information. The

ancients observed that during eclipse, the sun or the moon is gradually swallowed by something and again it comes out. Hence, the ancient Hindus reasoned that during an eclipse the sun or the moon is gradually gobbled by the beheaded Rahu. As it gobbles the celestial body through the mouth it comes out through the cutout throat. Considering the level of knowledge human beings possessed at that time, the reasoning was quite logical. After centuries of observation and reasoning, now we know the real cause of eclipse. The information we generate through our observation, experimentation, reasoning, etc may not always be absolutely true. In many cases, it is subject to correction at a later date. In Arthur Conan Doyle's novels we have seen both Dr. John Watson and Mr. Sherlock Holmes have visited together the site of the crime. It was always the superior thought process of Sherlock Holmes that was able to pinpoint the culprit. Be it a household, an office, an organisation or institution, the process of deliberation is encountered everywhere. While studying in class XII, many students are to appear in a number of entrance tests. When a student qualifies in more than one test, the student and the parents are to deliberate a lot to arrive at a decision as to the course the student is going to pursue. The moment the final decision is taken and is made known to others, thus information is generated.

2.4 INFORMATION TRANSFER - MODELS

The following are the models of information transfer:

- Technical Models of Information Transfer
- Semantic Models of Information Transfer
- General Models of Information Transfer

2.4.1 Technical Model of Information Transfer

To link the user and source of information the technical model is important. These kinds of models are more used by information specialists rather than librarians. Shannon and Weaver model of communication is the best example under this category. Their work is regarded as classic in the field of information study but which should be more accurately called communication theory. This theory uses advanced mathematics to analyse the effects of information transmission failure or noise on the accurate transmission of message.

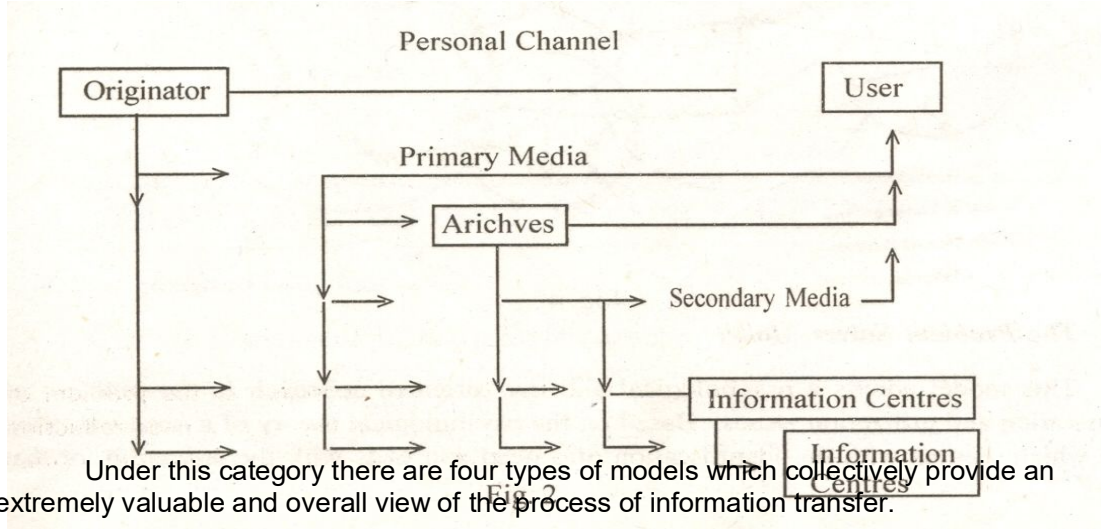
2.4.2 Semantic Models of Information Transfer

Bar-Hillel (1964) identified the semantic problems in information transfer. It helps to develop theoretical principles for the development of information science as a true science.

Yovits and Ernst evolved certain concepts and principles. Based on these developments Wittermore and Yovits made an attempt to define information. They found on quantifying information in terms of the minimum amount of data which will be required to change the state of the decision makers. Further they stated that this measure of information must be relative as the amount of information in a message will vary with the time, the situation and the individual decision makers.

2.4.3 General Models of Information Transfer

Murdock and Liston (1967) presented not only a general model based on the classic sender/channel/receiver model, but also a variety of channel for information transfer, including direct and indirect transfer, through various media over time.



- 1) Research, Development and Diffusion Model
- 2) The Social Interaction Model
- 3) The Problem Solver Model
- 4) Linkage Model

1) **Research, Development and Diffusion Model**

This model divides the information transfer process into research, developments production, dissemination, and consumer roles. These roles can exist separately within the different sub-cultures of research communities, product organizations, practitioners and consumer groups. This model is popular and appropriate for dealing with dissemination and utilization issues, whether these are concepts or products, at the policy and macro-system levels. This model is more research oriented rather than user-oriented.

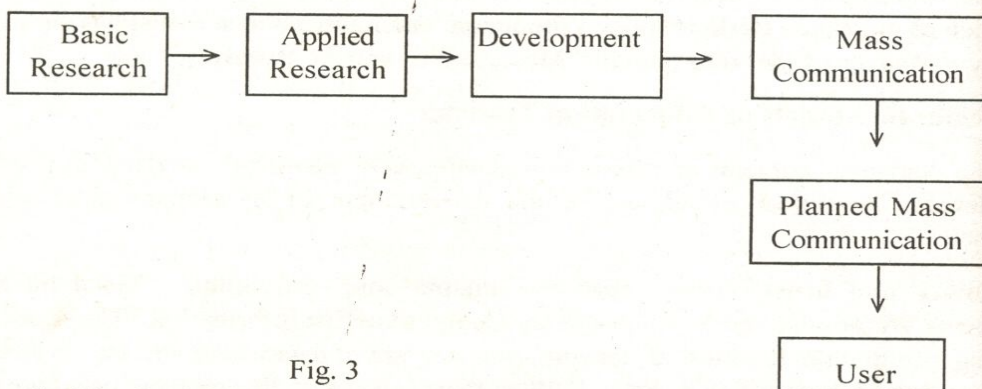


Fig. 3

2) The Social Interaction Model

The Social Interaction Model suggests that concepts, whether in the form of products or practices, are communicated from one individual to another over a period of time within the context of a social system and these concepts are adopted, adapted, or rejected

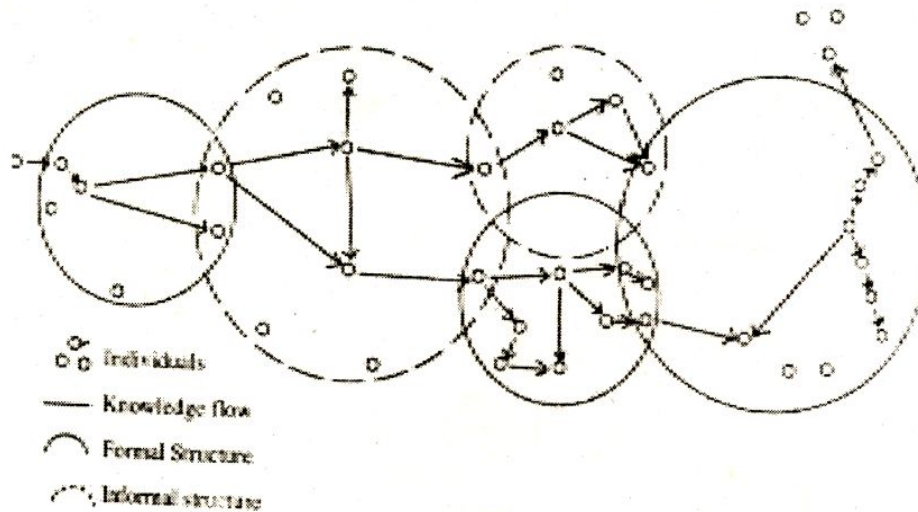


Fig. 4

3) The Problem Solver Model

This model adopts a psychological and user oriented approach to the problem of dissemination and utilization issues. Based on the psychological theory of a need reduction cycle, which begins with the identification of a need and ends with the reduction of that need, the model is a general one and can be applied to the process inside an individual, a group or an organization. An important limitation of this model stems from its emphasis on the user seeing a need, diagnosing a problem and making use of his internal knowledge and retrieval sources. As a result it tends to minimize the role of outside resources as well as the scope and diversity of these.

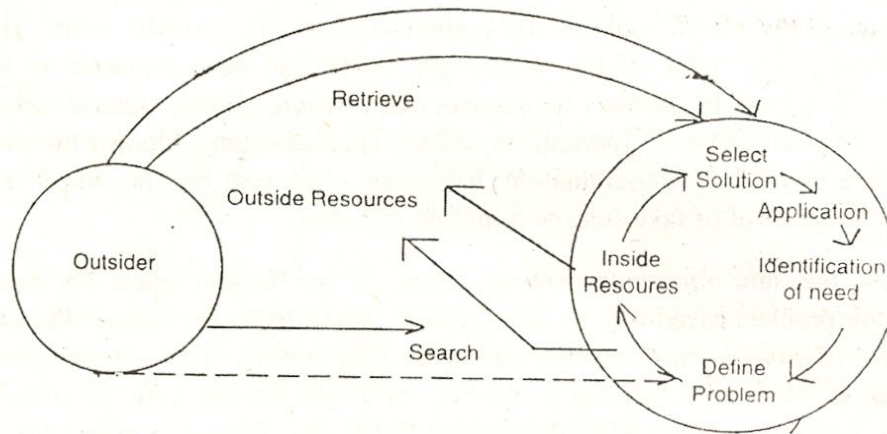
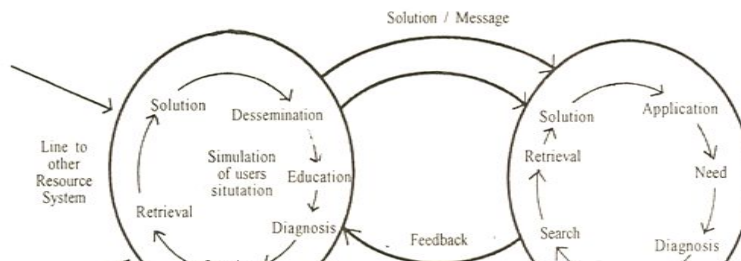


Fig : 5

4) Linkage Model

This model based on the internal problem solving cycle for the individual, also stresses the importance of the user being meaningfully related to resources outside his own knowledge and experiences. This model incorporates the features of the earlier three models. It attaches great value to the user and resource system, exchanging information in series of turn way interaction process, through which the user is connected with a variety of resource systems, including research, development, and practice, as well as library and information services.



2.5 GROWTH OF INFORMATION SOCIETY

An information society is a [society](#) where the creation, distribution, uses, integration and manipulation of [information](#) is a significant economic, political, and cultural activity. The aim of the information society is to gain competitive advantage internationally, through using [information technology](#) (IT) in a creative and productive way. The [knowledge economy](#) is its economic counterpart, whereby wealth is created through the economic exploitation of understanding. People who have the means to partake in this form of society are sometimes called [digital citizens](#). This is one of many dozen labels that have been identified to suggest that humans are entering a new phase of society.

2.5.1 Growth of Information-Meaning

Information society is seen as the successor to [industrial society](#). Closely related concepts to information society are the [post-industrial society](#) ([Daniel Bell](#)), [post-fordism](#), [post-modern](#) society, knowledge society, telematic society, [Information Revolution](#), [liquid modernity](#), and [network society](#) ([Manuel Castells](#)).

Definition:

There is currently no universally accepted concept of what exactly can be termed information society and what shall rather not so be termed. Most theoreticians agree that a transformation can be seen that started somewhere between the 1970s and today and is changing the way societies work fundamentally.

[Antonio Negri](#), characterize the information society as one in which people do immaterial labour. By this, they appear to refer to the production of knowledge or cultural artifacts. One problem with this model is that it ignores the material and essentially industrial basis of the society.

The growth of technologically mediated information has been quantified in different ways, including society's technological capacity to store information, to communicate information and to compute information. It is estimated that, the world's technological capacity to store information grew from 2.6 (optimally compressed) exabytes in 1986, which is the informational equivalent to less than one 730-MB CD-ROM per person in 1986 (539 MB per person), to 295 (optimally compressed) exabytes in 2007. This is the informational equivalent of 60 CD-ROM per person in 2007 and represents a sustained annual growth rate of some 25%. The world's combined technological capacity to receive information through one-way broadcast networks was the informational equivalent of 174 newspapers per person per day in 2007. The world's combined effective capacity to exchange information through two-way telecommunication networks was 281 petabytes of (optimally compressed) information in 1986, 471 petabytes in 1993, 2.2 (optimally compressed) exabytes in 2000, and 65 (optimally compressed) exabytes in 2007, which is the informational equivalent of 6 newspapers per person per day in 2007.^[7] The world's technological capacity to compute information with humanly guided general-purpose computers grew from 3.0×10^8 MIPS in 1986, to 6.4×10^{12} MIPS in 2007, experiencing the fastest growth rate of over 60% per year during the last two decades.

James Beniger describes the necessity of information in modern society in the following way:

“The need for sharply increased control that resulted from the industrialization of material processes through application of inanimate sources of energy probably accounts for the rapid development of automatic feedback technology in the early industrial period (1740-1830)”

“Even with enhanced feedback control, industry could not have developed without the enhanced means to process matter and energy, not only as inputs of the raw materials of production but also as outputs distributed to final consumption.”

As mentioned earlier an information society is the means of getting information from one place to another. As technology has become more advanced, sharing of information with each other came in sociological uses.

In [sociology](#), informational society refers to a [post-modern](#) type of society. Theoreticians like [Ulrich Beck](#), [Anthony Giddens](#) and [Manuel Castells](#) argue that since the 1970s a transformation from industrial society to informational society has happen on a global scale.

As steam power was the technology standing behind industrial society, so information technology is seen as the catalyst for the changes in work organizations, societal structure and politics occurring in the late 20th century.

A number of terms in current use emphasize related but different aspects of the emerging global economic order. The Information Society intends to be the most encompassing in that an economy is a subset of a society. The [Information Age](#) is somewhat limiting, in that it refers to a 30-year period between the widespread use of computers and the [knowledge economy](#), rather than an emerging economic order. The knowledge era is about the nature of the content, not the socioeconomic processes by which it will be traded. The [computer revolution](#), and knowledge revolution refer to specific revolutionary transitions, rather than the end state towards which we are evolving. The [Information Revolution](#) relates with the well known terms agricultural revolution and industrial revolution.

The [information economy](#) and the [knowledge economy](#) emphasize the [content](#) or [intellectual property](#) that is being traded through an information market or [knowledge market](#), respectively. [Electronic commerce](#) and [electronic business](#) emphasize the nature of transactions and running a business, respectively, using the [Internet](#) and [World-Wide Web](#). The [digital economy](#) focuses on trading bits in [cyberspace](#) rather than atoms in physical space. The network economy stresses that businesses will work collectively in webs or as part of business ecosystems rather than as stand-alone units. [Social networking](#) refers to the process of collaboration on massive, global scales. The [internet economy](#) focuses on the nature of markets that are enabled by the Internet. Knowledge services and knowledge values put content into an economic context. Knowledge services integrate [Knowledge management](#) within a [Knowledge organization](#) that trades in a [Knowledge market](#). In order for individuals to receive more knowledge, surveillance is used.

Intellectual Property Considerations

One of the central paradoxes of the information society is that it makes information easily reproducible, leading to a variety of freedom/control problems relating to [intellectual property](#). Essentially, business and capital, whose place becomes that of producing and selling information and knowledge, seems to require control over this new resource so that it can effectively be managed and sold as the basis of the information economy. However, such control can prove to be both technically and socially problematic. Technically because [copy protection](#) is often easily circumvented and socially rejected because the users and citizens of the information society can prove to be unwilling to accept such absolute co-modification of the facts and information that compose their environment. Information society is often used by politicians meaning something like "we all do internet now"; the sociological term information society (or informational society) has some deeper implications about change of societal structure.

2.5.2 OBSOLESCENCE OF INFORMATION

Obsolescence is the state of being which occurs when an object, service, or practice is no longer wanted even though it may still be in good working order. Obsolescence frequently occurs because a replacement has become available that has, in sum, more advantages than the inconvenience related to repurchasing the replacement. Obsolete refers to something that is already disused or discarded, or antiquated. Typically, obsolescence is preceded by a gradual decline in popularity.

2.5.2.1 Consequences

Driven by rapid technological changes, new components are developed and launched on the market with increasing speed. The result is a dramatic change in production methods of all components and their market availability. A growing industry sector is facing issues where life cycles of products are no longer fit together with life cycles of required components. This issue is known as obsolescence, the status given to a part when it is no longer available from its original manufacturer. The problem of obsolescence is most prevalent for electronics technology, wherein the procurement lifetimes for microelectronic parts are often significantly shorter than the manufacturing and support life cycles for the products that use the parts. However, obsolescence extends beyond electronic components to other items, such as materials, textiles, and mechanical parts. In addition, obsolescence has been shown to appear for software, specifications, standards, processes, and soft resources, such as human skills. It is highly important to implement and operate an active management of obsolescence to mitigate and avoid extreme costs.

2.5.2.1.1 Technical obsolescence

Technical obsolescence usually occurs when a new product or technology supersedes the old and it becomes preferred to use the new technology in place of the old, even if the old product is still functional. Historical examples of superseding technologies causing obsolescence include higher-quality multimedia [DVD](#) over [videocassette recorder](#) and the [telephone](#), with audio transmission, over the [telegraph](#)'s coded electrical signals. On a smaller scale, particular products may become obsolete due to replacement by a newer version of the product. Many products in the computer industry become obsolete in this manner; for example, [Central processing units](#) frequently become obsolete in favor of newer, faster units. Similarly, rapid obsolescence of [data](#) formats along with their supporting hardware and software can lead to loss of critical information, a process known as digital obsolescence.

Another complementary reason for obsolescence can be that supporting technologies may no longer be available to produce or even repair a product. For example many integrated circuits, including CPUs, memory and even some relatively simple logic chips may no longer be produced because the technology has been superseded, their original developer has gone out of business or a competitor has bought them out and effectively killed off their products to remove competition. It is rarely worth redeveloping a product to get around these issues since its overall functionality and price/performance ratio has usually been superseded by that time as well.

Some products are rendered technologically obsolete due to changes in complementary products which results in the function of the first product being made unnecessary. For example, [buggy whips](#) became obsolete when people started to travel in cars rather than in horse-drawn buggies.

2.5.2.1.2 Functional obsolescence

Particular items may become functionally obsolete when they do not function in the manner that they did when they were created. This may be due to natural wear, or due to some intervening act. For example, if a new [mobile phone](#) technology is adopted and there is no longer a provider who provides service based on the old technology, any mobile phone using that technology would be rendered obsolete due to the inability to access service

Products which naturally wear out or break down may become obsolete if replacement parts are no longer available, or when the cost of repairs or replacement parts is higher than the cost of a new item. A product may intentionally be designed to use a faster wearing component, a form of planned obsolescence.

2.5.2.1.3 Planned obsolescence

Sometimes [marketers](#) deliberately introduce obsolescence into their [product strategy](#), with the objective of generating long-term sales volume by reducing the time between repeat purchases. One example might be producing an appliance which is deliberately designed to wear out within five years of its purchase, pushing consumers to replace it within five years.

2.5.2.1.4 Style obsolescence

When a product is no longer desirable because it has gone out of the popular fashion, its style is obsolete. One example is [flared leg jeans](#); although this article of clothing may still be perfectly functional, it is no longer desirable because style trends have moved away from the flared leg cut.

Because of the "[fashion cycle](#)", stylistically obsolete products may eventually regain popularity and cease to be obsolete. A current example is "[acid-wash](#)" jeans, which were popular in the 1980s, became stylistically obsolete in the mid to late 1990s, and returned to popularity in the 2000's.

2.5.2.1.5 Postponement Obsolescence

Postponement obsolescence refers to a situation where technological improvements are not introduced to a product, even though they could be. One possible example is when an auto manufacturer develops a new feature for its line of cars, but chooses not to implement that feature in the production of the least expensive car in its product line.

2.6 Information Explosion

There has been a continuous revolution in the generation, transfer and communication of information since the invention of printing. Though information generation is a continuous process yet the two World Wars had a very great impact on the very fast development of various fields of knowledge. Since the 2nd World War information, in fact, has been growing at an exponential rate and it is often referred to as "information explosion".

According to American Educational Association, it had to wait till 1750 since the beginning of the Christian era for human knowledge to double. The second doubling was completed 150 years later in 1900. The third doubling of all man's knowledge took place in the decade of 1950s, but today it is even growing at a faster speed. Let us now discuss information explosion in terms of its definition, factors for information explosion, its impact and how it can be controlled. The following sections deal with these aspects-

- A. Definition: The term "information explosion" attempts to describe the exponential increase and diversification of published data and information. "Exponential" is a technical term meaning produced or expressed by multiplying a set of quantities by themselves. The exponent is the sign written above to the right of the number or letter in

mathematics to show how many times that quantity is to be multiplied. For example, in 5^3 , the number 3 is the exponent. In y^m the letter "m" is the exponent.

B. Factors that Lead to Information Explosion: There are many factors which directly contribute to information explosion. Some of them are –

- i) **Increased Literacy:** Creative contributions are born when a man or woman comes in contact with the light of education. Increased literacy is a prime factor for information explosion because individuals produce new information as he becomes
- ii) **Increased Number of Scholars:** The art of creativity is confined relatively to a very small proportion of the world's population, who could devise new methods, recognize the existing ideas and offer improved solutions to familiar problems. They set new standards in science and technology, literature, fine arts, business, industry and social leadership. When the society becomes devoid of nature's gift of talents, then it would begin to stagnate and will ultimately perish. In 1800, there were 1,000 scientists and engineers in the world which increased to 10,000 in 1850 and in 1900, to 100,000. In 1950s, the numbers swelled to one million. It is this ever increasing number of scientists that accounts for the rapid proliferation of published materials.
- iii) **Increased Research and Development:** The increase in research activities is also one of the factors of the exponential growth of information. Nowadays the scale and level of research funding have changed significantly as the research has become mission-oriented, multi-disciplinary and assumed a matrix managed character.
- iv) **Increased Literature:** Literature of a subject is its foundation. It represents a record of achievements of the human race. Literature is diverse, complex and multilingual in nature. It is becoming more and more interdisciplinary. It is growing at a fast pace. In science, it is almost doubling itself in every 5.5 years. In social sciences it is doubling at the rate of every eight to twelve years and in the documentary media book production more than double in a decade. According to Rider, American libraries which try to collect everything appearing on a given subject double their size in every 16 years,
- v) **Origin of Different Types of Information Sources:** Earlier information sources are only published media and handwritten manuscripts but today the sources of information are diversified from databases, microforms, online journals, CDROM, DVD, optical disk to hypermedia and hypertext.
- vi) **Growth of Technology:** Technology has multiplied by 10 times every 50 years for over 2800 years but now a days its growth is very fast. Advancement in the field of

communication and technology network has brought down the distances between the person, states, countries and continents throughout the world, Computer and telecommunication are converging very rapidly and its highest impact is felt fall in the information sector. Actually the need for creative achievement has never been more recognized and designed than it is today.

vii) Development of Society: Information has been stored in people's mind and it has been updated and modified through social contact and communication. As society has developed and become more complex large quantities of information have been generated, published and disseminated causing an information explosion.

viii) Development of Competition: We will continue to be confronted with competitive forces leading to creation as long as one person strives to advance, as long as one business attempts to increase its share of the total industrial output or to improve its profitability as long as one nation attempts to improve its position in the world. The competitive forces are leading to the demand for more information. As a result, more and more information is produced.

a) Impact of Information Explosion: The impact of Information Explosion can be summarized as follows-

Due to the explosion of information

- i) It has become difficult to keep pace with the proliferation of published materials.
- ii) It creates a great problem in the management of information
- iii) It is becoming difficult to locate & pull out specific information.
- iv) It is tremendously contributing towards duplication of information generation. In UK, the estimated cost of unintended duplication in scientific research in the 1960s was Rs. 21.6 million.
- v) It creates a great problem in bibliographic control

d) Controlling Information Explosion: The terrific rate of expanding of knowledge and information can not be slowed down. So, the control of information explosion does not mean the controlling of growth and development of information; rather, it means the development and maintenance of a system of adequate recording, and storing of all forms of information published and unpublished, printed and non printed that add to the sum of human knowledge. So, actually, the control of information explosion means the mastery over information generation.

The need to be aware of different information sources arises from the fact that even a voracious reader is unable to read all the literature on his/her chosen subject. The interdisciplinary nature of subject and the wide variety of their characteristics have added to the confusion. But, for any scholar, it is very essential to keep pace with the all information that is coming day by day in his/her field of specialization.

The design and development of different information system can be a probable measure of keeping an eye on the information explosion. It should be equipped with the necessary databases, indexing and abstracting services. The librarians also have to devise some sort of information service, which may result in bringing out a product which analyses, consolidates, evaluates & disseminates all the latest information.

New ideas are generated in each and every branch of human activity from time to time. Apart from new ideas, we give new interpretation to known ideas; we also borrow ideas from other disciplines and try to apply them in a new context. As a result, more and more information is produced in a variety of forms leading to information explosion.

2.7 Let Us Sum Up

Information Generation is an aspect which influences the development of society in all respects. Various modes of Information generation helps and suits to the needs of different walks of people. The concept of Information Society in the context of Information Technology should be understood in right perspective. Out datedness of information is a factor in all kinds of information generation. Information explosion is an area appearing due to information generation in society.

2.8 Recommended Books

1. DEBONS, Anthony and Cameron, William J. (Eds.): Perspectives in Information Science. Leyden: Noordhoff International Publishing, 1975.
2. GUPTA, B.L. Knowledge, Communication and Library. Jaipur: Butterworths, 1974.
3. ROWLEY, J.E. and C.M.D. Turner. The Dissemination of Information. London: Andre Deutsch, 1974.

2.9 Assignment

4. Information Transfer Models
5. Obsolescence of Information

2.10 Self Assessment Questions

6. Discuss Information Generation.
7. Write an account on modes of Information Generation

Unit- 3**KNOWLEDGE AND NATURE****3.0 Aims and Objectives**

In this unit you will learn the meaning of knowledge, definitions given by experts, classification of knowledge and social structure of knowledge. Now, you will be learning more about knowledge, its structure and development.

Structure**3.1 Introduction****3.2 Meaning and Definition****3.3 Characteristics of Knowledge****3.4 Sources of Knowledge****3.5 Acquisition of Knowledge****3.5.1 Cognition****3.5.2 Perception****3.5.3 Apperception****3.5.4 Idea****3.5.5 Knowledge****3.6 Classification of Knowledge****3.7 Private Knowledge and Social Knowledge****3.8 Social theory and Knowledge Utilization****3.9 Traditions in the Study of Knowledge Utilization****3.10 Models of Measuring Use****3.11 Theories of Science/History of Science, Social Structures of Knowledge****3.12 Let Us Sum up****3.13 References and Recommended Books****3.14 Assignment****3.15 Self Assessment Questions****3.1 Introduction**

Knowledge is a familiarity, awareness or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning. Knowledge can refer to a theoretical or practical understanding of a subject. It can be implicit or explicit; it can be more or less formal or

systematic. In philosophy, the study of knowledge is called epistemology; the philosopher Plato famously defined knowledge as "justified true belief", though "well-justified true belief". However, several definitions of knowledge and theories are available to understand its nature. Knowledge acquisition involves complex cognitive processes: perception, communication, and reasoning; while knowledge is also said to be related to the capacity of acknowledgment in human beings.

3.2 Meaning and Definitions

The totality of ideas, information and principles conserved through a civilization is known as 'knowledge'. Robert Hayes defines knowledge as "accumulated data which has been systematized, formulated and evaluated with reference to the discovery of general truths."

The Oxford concise Dictionary defines knowledge, as "familiarity gained by experience; persons range of information".

According to S. R. Ranganathan, when knower and knowee are brought in relation, the knower knows the knowee and knowledge emerges. It implies that there are three entities involved in knowledge, the subject which knows the object which is known and the process of knowing. Knowledge cannot emerge unless the knowee and the knower are brought together or came in contact.

Ladd says that in knowledge, the knower appears to himself as an active and sensitive intellect.

'Knowledge is justified true belief' is a widely accepted definition to knowledge. That is a kind of belief is supported by the fact that both knowledge and belief can have the same objects and that what is true of someone who believes something to be the case is also true, among other things, of one who knows it.

3.3 Characteristics of Knowledge

Several characteristics can be identified for knowledge. Knowledge is infinite, continuous, turbulently dynamic, multidimensional, cumulative, coherent and multidirectional.

Infinite: knowledge is an ever growing organism, Human mind's zeal to unveil the unknown makes it never to be contented with known. Through knowledge at any time may be finite, the things yet to be discovered are unlimited and infinite. Thus several disciplines have evolved and many are still evolving.

Eg: General Biology, Cellular Biology, Microbiology, Space Biology

Continuum: When a group of scientists work on a problem collectively we call it a 'team research'. With the existing scientific knowledge as base further research is undertaken by an individual or team. Ranganathan writes in this context "At present organized relay research is producing a continuous cascade of new micro subjects, each stimulating another in succession in every area of subjects. This cascade makes the universe subjects a growing and deepening continuum".

Turbulently Dynamic: Dynamism is an important characteristic of knowledge. A continuous flow of new micro thoughts are being produced by organized research makes universe of knowledge a dynamic continuum. Ranganathan is of the opinion that the dynamic nature of

knowledge may be measured by the rate of discoveries in a particular period and also by the growth of research expenditure in a given period.

Manifold and multidimensional: As a result of growing scholarship and team research and increased facilities for dissemination and utilization of new idea, the universe of knowledge has acquired manifold and multi dimensional characteristics. Manifold characteristic of universe of knowledge represents the quantitative growth of knowledge. The multidimensional nature can be explained using the different dimension in a classification system. They are facet dimension, phase dimension and array dimension.

1. Facet Dimension

| | | |
|-----------------------------------|---|-------------------|
| Zoology of Arthropod | - | one dimensional |
| Ecology of Arthropod | - | Two dimensional |
| Ecology of Arthropod of mountains | - | Three dimensional |

2. Array of Dimension

| | | |
|-----------------|---|-------------|
| Universe | - | Dimension 1 |
| Continent group | - | Dimension 2 |
| State | - | Dimension 3 |

Phase Dimension: Phase is component of complex subject. It can be a basic subject for e.g., Mathematics and Engineering. Normally phases are two dimensional. But interaction of subjects resulting three or four dimensional phases are also possible. Economics has a bias towards politics and sociology. This is three dimensional.

Cumulative: The universe of knowledge is increasing in amount by one addition after another. In other words it is creational. Even if earlier ideas may become obsolete after some time, it still exists as knowledge.

Coherent: By coherence we mean each and every element in universe of knowledge is interrelated and a change in one element will effect the denotation of the whole. For example, if the basic subject component is changed in a compound subject having a basic subject, the subject denoted by the totality of ideas in it would be completely different, eg.,

| | | |
|--------------------|---|-------------------|
| Medicine, Female | - | Female Medicine |
| Psychology, Female | - | Female Psychology |

3.4 Sources of Knowledge

The following are major sources of knowledge:

Centered mode of thinking: Most of the knowledge develops are breeds from the sources of authority. In this mode the individual receives knowledge from authoritative source. For e.g., knowledge from teacher to student or from religious leaders to public at large.

Speculative thinking: Speculative thinking can neither be true nor the certain. E.g., forecasting share prices in the market. It is based on conjectural thoughts, reflections and intuitions but not on scientific basis. For speculative thinking, the individual should have primary or basic knowledge on those areas.

Positivistic thinking: It is based on definite facts which can be proved. The positivistic thinking is in three levels.,

1. Perception stage
2. Meta physical stage
3. Positive stage

3.5 Acquisition of Knowledge

To acquire knowledge there are certain methods used by man throughout his life. Man learns of acquiring knowledge through different methods in various situation. Some of these methods are discussed below.

3.5.1 Cognition: The activity of knowing, the acquisition, organization and use of knowledge is cognition. The activity of process of knowing involves a complex process including thinking, sensation, problem solving, perception, recognition, imagination and recalling.

3.5.2 Perception: It is one of the processes of learning knowledge. The experience or feeling developed by it which is perceived. Through this method man learns many things and adds to existing knowledge. This is a process which enables the individual to learn many things. The perception is linked to five sensory organs. For e.g., by listening to a particular sound, the child could recognize the items - sound of aero plane, sound of rail engine etc. and by listening to the foot sounds, some of them recognize who is coming towards us. By experiencing with these five sensory organs, the individual learns himself and experience the observed phenomenon and the results become knowledge.

3.5.3 Apperception: According to Webster's students dictionary apperception means "perception characterized by clearness and the relating of what is newly presented to the mind with knowledge previously acquired". This is another kind of process of learning and usually follows the process of perception. In this process the acquired knowledge through perception will get clarity and refinement. For example while moving outside, if rain starts, we know that the rain makes one wet, but using umbrella or shade to escape from rain – is the knowledge from apperception.

3.5.4 Idea: An idea denotes a percept, which means, a meaningful impression gained through primary senses or a mental image formed out of association of several percepts. An idea also refers to a product of mental reflections and imagination. It can also be an entity of thought obtained by institution.

3.5.5 Knowledge: The totality of experiences gained by individuals in their life time can be called as knowledge. Some scholars give the meaning to knowledge as if we know 'what we don't know'. Knowledge denotes clear perception of facts: The communicated knowledge is often referred as information. So knowledge is gained by actual experience and practical skill.

3.6 Classification of Knowledge

Over time, many different classifications of knowledge have been put forward. One of the best known classifications is Schellerr's trichotomy between instrumental knowledge, intellectual knowledge, and spiritual knowledge, Machlup's classifications distinguishes five major classes:

- Practical Knowledge:** useful in the knower's work, his decisions, and actions; can be subdivided, according to his activities, into
- a. Professional Knowledge

- b. Business knowledge
- c. Workman's knowledge
- d. Political knowledge
- e. Household knowledge
- f. Other practical knowledge

Intellectual Knowledge: Satisfying the intellectual curiosity, regarded as part of liberal education, humanistic and scientific learning, and general culture; acquired, as rule, in problems and cultural values.

Small-talk and Pastime Knowledge: Satisfying the nonintellectual curiosity or his desire for light entertainment and emotional stimulation, including local gossip, news of crimes and accidents, light novels, stories, jokes, games, etc., acquired, as a rule, in passive relaxation from "serious" pursuits; apt to dull his sensitiveness.

Spiritual Knowledge: Related to his religious knowledge of god and of the ways to the salvation of the soul.

Unwanted Knowledge: Outside his interests, usually accidentally acquired, aimlessly retained.

Basic and Applied Knowledge

Theoretical and Historical Knowledge

General-Abstract and Particular-Concrete

Nomothetic and Ideographic Knowledge

Analytic and empirical knowledge

Enduring and Ephemeral Knowledge

Mundane knowledge

Scientific knowledge

Humanistic knowledge

Social science knowledge

Artistic knowledge

3.7 Private Knowledge and Social Knowledge

Knowledge can be classified or clubbed into different groups. By applying the characteristics 'question of accessibility of knowledge' it is grouped into two types:

- i. Private knowledge
- ii. Social knowledge

Knowledge

|
 Social or public ————— private or personal

The important difference between these two types of knowledge lies in the question of its availability. Social knowledge is made available to public through consultations of the records. The recorded knowledge is pooled at a place for public use and libraries are one of the important places in the context. The knowledge in the documents in a library is a part of social knowledge.

Personal (private) knowledge on the other hand is not available to all, for it to become social knowledge or public knowledge it has to be made available to public either by recording or publishing them.

Social knowledge is the prime source of personal knowledge. Main idea and perceptions to a great extent are influenced by the social system encircling him. Society or social systems provides an opportunity to the individuals and opportunity to the individuals to enrich the existing knowledge, i.e. personal knowledge. In this way, social knowledge influences private knowledge for its growth.

3.8 Social theory and Knowledge Utilization

It is often worth nothing that many significant social theories posit that knowledge, creating, diffusion, and utilization play important roles in explaining political, social, and economic behavior.

Each approach to theory has put forward a conception of what types of information are important, what significance they have to explain bureaucratic behavior and how they are used. In examining each of these theories, one is in the position of analyzing many different meanings of knowledge and knowledge utilization.

The bureaucratic literature of the weberian tradition identifies expertise as the primary source of bureaucratic power, "Weber contends that the power of executive officials is rooted in the technical or professional skills that distinguish administrators from amateur politicians. Bureaucratic power thus reflects the technological revolution and the growing influence of specialized in modern civilization"

Weber conceives of several distinct types of significant knowledge:

- 1) Training and skills that an individual brings to the bureaucracy .
- 2) That which confers the ability to produce and process information
- 3) That which confers the ability to apply information to problem-solving situations (this is a very general skill).

Having specified these different conceptions of knowledge, the Weberians go on to point out that expertise in the form of possessing knowledge has a served as the foundation for an independent/autonomous position of bureaucratic power.

In the case of bureaucratic theory, it is clear that the judgment of what constitutes "meaningful knowledge" is more closely related to questions of values and insulation of power than it is to science or the "objective, technical" quality of information. The usefulness of information has more to do with the characteristics of the person who possesses it (i.e., an expert) that it does with the substance of the message that is being conveyed.

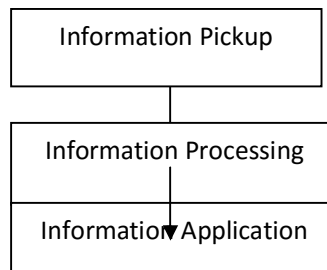
3.9 Traditions in the Study of Knowledge Utilization

Those who have studied knowledge utilization from an empirical perspective have tended to focus on how research-based knowledge affects decision making. These researchers have focused on a rather narrow set of questions:

- 1) What specific uses is information put to in decision making?
- 2) What types of information enter into the decision-making process? Are there some types which are selectively passed over or ignored?
- 3) Do research findings advance the decision-making process ?
- 4) To what extent do decision makers take research into account in their ?
- 5) From the time that information/knowledge enters into an organization (through some channel), what happens to it? What are the diffusions/dissemination patterns?
- 6) What patterns does information follow as it flows through an organization or through a specific decision-making channel?
- 7) To what extent do research findings confirm or legitimate decisions which are already taken or about to be taken? To what extent does research influence change from a position that a decision maker is already inclined toward ?
- 8) What is the rate of adoption of new information sources which are made available to decision makers?
- 9) "What are the characteristics of social science research that make it useful for decision making" ?
- 10) To what extent information does not benefit the decision maker or the decision-making process?
- 11) To what extent can one document levels of premature utilization, deliberate non-utilization, and/or selective utilization of information .

3.10 Models of Measuring Use

In measuring knowledge utilization, one is not examining a single discrete event at one point in time; it is a process consisting of several events.



Depending upon the individual an/or organization, this process may go on over a long period of time; on the other hand, it may occur within minutes. Within each stage or step there are several variations, of how the process maybe operating.

Information pickup refers to the process by which information is retrieved or received by the given user. It may be disseminated; it may be stored in a data bank or in a human mind; it may be on a library shelf; or it may be transmitted over a telephone or through a consultation session. In each case, it is essential that some information is being received.

Information processing encompasses several distinct sub processes, processing of information (one can receive) involves understanding the information, testing it for a validity and reliability, testing it against one's own that is usable. In relation to this stage, several points are worth underscoring:

- 1) Testing does not necessarily refer to formal experimental models; it may involve cognitive procedures.
- 2) Transformation into a usable form refers to what the preferences of an individual user are.

3.11 Theories of Science/History of Science, Social Structures of Knowledge

To understand history of knowledge, greater attention must be given to contemporary investigations of the social structure of knowledge and its relationship to larger social systems . Obviously, one may analyze any social system from a variety of points of view, each of which results in a different perspective on social structure. Since knowledge systems are best seen in the context of the larger social structure of which they are a part, studies of these systems must be sensitive to such issues as the divergence between material and ideal interests of individuals and the distributions of resources and rewards. Social structures, particularly those in the knowledge system, can be seen as frameworks for knowledge. Their legitimacy and perceived trustworthiness undoubtedly has a great deal to do with the trust in knowledge itself. We need to study the relationship between aspects of social structure and knowledge development. For example, uncertainty and instability of a social framework are hardly likely to promote knowledge development. Thus, we must continually ask: Knowledge for whom? By whom?From what?And in what context?

3.12 Let Us Sum up

In this unit an attempt was made to introduce you the meaning and definition of knowledge, characteristics of knowledge and sources of knowledge. The classification of knowledge helps you to understand types of knowledge and their sources.

3.13 References and Recommended Books

Rich F. Robert. Knowledge Cycle, London: Sage Publications, 1981.

Meadows. A. J. Knowledge and Communication, London: Library Association Publishing Ltd. 1991.

3.14 Assignment

Write an account on Private and Public Knowledge?

3.15 Self Assessment Questions

Essay questions:

1. Define knowledge. Discuss sources of knowledge?
2. Write an account classification of knowledge?

Short Notes:

1. Social knowledge.
2. Types of knowledge

Unit- 4**INFORMATION CYCLE****4.0 Aims and Objectives**

In this lesson, you will be learning the concept of information cycle, Information cycle and its Movements, evaluation of information cycle, management of information cycle etc. After going through this lesson, you will be able to understand the essentials of information cycle, evaluation and management of information cycle.

Structure

- 4.1 Introduction
- 4.2 Information cycles - Stages
- 4.3 Use of Information Cycle
 - 4.3.1. Relevance
 - 4.3.2 Information Cycle and its movement
 - 4.3.3 Information Cycle-Evaluation
- 4.4 Information Cycle – Practice
 - 4.4.1 Internet
 - 4.4.2 Broadcast Media
 - 4.4.3 Newspapers
 - 4.4.4 Magazines
 - 4.4.5 Journals
 - 4.4.6 Books
- 4.5 Information Cycle - Management
 - 4.5.1 Definition and Meaning
- 4.6 Information Transfer Cycle
- 4.7 Let Us Sum up
- 4.8 References and Recommended Books
- 4.9 Assignment
- 4.10 Model Examination Questions

4.1 Introduction:

The **Information cycle** is the progression of events over time as processed by the media. A news story goes through a series of stages as it evolves; it is presented first by the Internet, television, radio, newspapers, magazines and academic journals, eventually is published in books.

The Information Cycle is the progression of media coverage of a particular newsworthy event. Understanding the information cycle will help you better to know what information is available on your topic and better to evaluate information sources covering.

4.2 Information cycles - Stages

The **information cycle** is a model of the processing of information by news media and researchers, in which information goes through various stages of reporting and publication. In the cycle model, information about an event starts out as a news story, presented on the Internet, television, radio, newspapers; then magazines; then it moves on to scholarly research published in academic journals, conferences, or books. If the information is considered important enough, it ends in reference works such as handbooks and encyclopedias.

Information passes through various stages and its content and presentation changes along with time. The initial news coverage may take place as events take place and offers only basic information in terms of "who, what, where, when". News magazines will offer more background information, adding the fifth W, "why", especially in less frequently appearing specialized periodicals. After a period, scholars may use the information for their studies; they are more likely than journalists to be experts in the field to which the information pertains and will write detailed studies that take historical context and long-term meaning into account. Finally, after a few years, books may appear about the initial events.

The Information Cycle is the progression of events over a period, processed by media. In the moments after an event, the Information Cycle begins. This cycle continues in the hours, days, weeks, months, and years after the event. It includes information about the event over a period of time across all media formats.

4.3 Use of Information Cycle

4.3.1 Relevance:

It helps in understanding how information is created, how it is transmitted and how it changes over a period of time will help you become a better researcher and learner. The knowledge will help to understand what information is available and where to find it, making you a more effective in assessing and identifying relevant sources for your topic and area of research

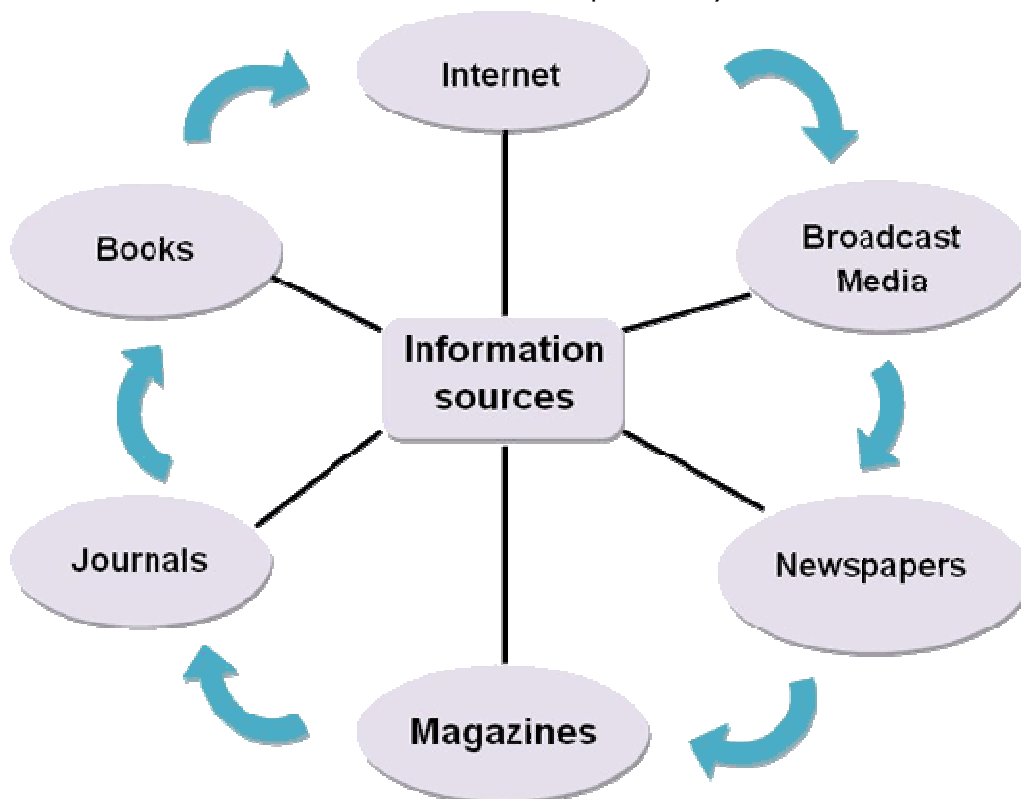
4.3.2 Information Cycle and its movement

- The first sources of information are released through online news sites, tv and radio stations, and increasingly through social media. These are often quick and short snapshots which provide a sketch of the event. Verified facts are limited at this stage of the Information Cycle.
- The Information Cycle moves forward the day after the event. Print and online articles provide a chronology and overview to provide how and why of the event. These sources are more factual and provide a deeper context of events.
- In the weeks after the event, long-form stories appear in weekly magazines that discuss the impact of an event on society, culture, economics, or public policy.
- Six months to a year after an event, this information becomes published in academic journals. In this turn of the Information Cycle, detailed analysis, empirical research reports, and learned commentary adds to previous publications. These information sources provide detailed analysis of the event that is often theoretical. Most importantly, these sources are peer-reviewed, assuring a high level of accuracy and intellectual rigor.

- In the months and years after the event, book publication contributes to the Information Cycle, detailing and often expanding themes, topics, subjects and analysis begun in academic research and published journals.

4.3.3 Information Cycle-Evaluation

A practical way of evaluating the information is to consider where information comes from and how it has been produced. Look at the diagram below the relationship between the different sources is clearly shown - this is the Information Cycle. The Information Cycle illustrates how information is published in set patterns. Information at the beginning of the cycle (Internet) is aimed at an audience wanting quick, up-to-date facts. As the information progresses around the Cycle it becomes more detailed but also more out of date. When deciding on the quality of the information you may have to balance reliability (accurate and proven facts) against currency (the period of time over which the information was written and produced).



4.4 Information Cycle – Practice

Information changes as it progresses along the Information Cycle from format to format:

4.4.1 Internet

The Internet is usually in the first place where information is posted. Information can appear almost instantaneously on the Internet, but this leaves little time for the author to write the information. As a result the information tends to be **descriptive**, explaining **what has happened** and **who was involved** – it is simply stating facts. There will also be a **lack of depth** and the information posted will be short.

4.4.2 Broadcast Media

Information is also likely to appear quickly on **television** and **radio**. Initially the information will be produced rapidly and is likely to be **descriptive**, explaining **what has happened** and **who was involved**. Professional journalists with expertise in a particular area may be able to provide some relevant background information and it is likely that **expert opinion** will also be sought. As time passes and more information becomes available, **longer pieces** and **documentary** features may be produced.

4.4.3 Newspapers

Newspapers are published frequently; usually daily or weekly. The articles will be written by **professional journalists**, who often have **expertise in a particular area**. The emphasis will be on **reporting facts**, and once the information appears in newspapers the author has had more time to research the information, so there may be **greater depth** such as **statistics**, **analysis** or **expert opinion**.

Newspaper articles **will not be correctly referenced** and they will **not provide a bibliography or list of sources**, so it will be difficult to identify where the author has found the information. The articles are aimed at the **general public** and so should use **accessible language**.

4.4.4 Magazines

Magazines are frequent publications in a 'glossy' format. Examples include The New Scientist, The Economist and Scientific American. The articles are written by **professional journalists** with **knowledge of a specific subject area**. There will be emphasis on **reporting facts** but usually with some analysis as the author has more time to reflect on the information and conduct some research.

Although articles in the professional press are likely to be longer than newspaper articles they are unlikely to be correctly **referenced** with no **bibliography** or **list of sources**, so it is difficult to tell what sources the author has used in their research. The articles are aimed at the **general public** or a **knowledgeable layperson** with an interest in the area of publication, and so should use **accessible language**.

4.4.5 Journals

Academic journals contain articles written by **scholars** and **specialist researchers**. The authors have had time to **conduct their own research** and **review the available literature**.

As a result the article will be a detailed examination of the subject with **analysis** and **primary research**. Research can take months to conduct, so the article will not be current. Before publication the articles are reviewed by an **editorial board** comprising of other scholars and experts – this is called **peer review**. The articles in academic journals are aimed at **scholars, experts in the field** and **university students**, therefore the articles tend to be detailed and written in **technical language**.

4.4.6 Books

It may take years for the books to be published and hence they are not good sources of up to date information. The strength of books as a resource lies in their authorship and they are usually written by **scholars and experts in the field**. Their content can be variable ranging from a simplified overview of a subject to an in depth piece of research. Books offer a great introduction to a new subject. Books include a list of the sources the author has used to research their book called a reference list. The reference list allows you to **review** the **original sources** of information used in the

book, which can be used in your assignments to strengthen your own research and arguments.

4.5 Information Cycle - Management

The following are the issues in information management

How the information is created

- Systemic
- Environmental
- Trial-and-error (or ad-hoc)

How the information is delivered

- One-to-many presentation
- White paper
- Web site FAQ
- Web site informational
- Web site directed (link sent with e-mail, and so on) to a specific Web site
- Application-based delivery via managed expert system
- One-to-one presentation:
 - Word of mouth
 - Ad-hoc communication

How the information is managed

- Complexity of the information
- Complexity of the creation process
- Complexity of the management system
- Financial impact of IP/IC creation

Type of information created

- Tacit (created and stored informally):
 - Human memory
 - Local hard drive of the computer
 - Expert system (moving tacit information into a formalized structure)
- Explicit (created and sorted formally):
 - Network share
 - Network Web site/intranet
 - Informal knowledge-management system
 - Document-management system
 - Formal KM system

Value of the source

- Age of the information
- Proximity of the information to the consumer

- Source of the information, and previous interactions with that specific source

4.5.1 Definition and Meaning

Information life cycle management (ILM) is a comprehensive approach to managing the flow of an information system's data and associated metadata from creation and initial storage to the time when it becomes obsolete and is deleted. Unlike earlier approaches to data storage management, ILM involves all aspects of dealing with data, starting with user practices, rather than just automating storage procedures- for example, hierarchical storage management (HSM) does. Also in contrast to older systems, ILM enables more complex criteria for storage management than data age and frequency of access.

ILM products automate the processes involved typically organizing data into separate tiers according to specified policies and automating data migration from one tier to another based on those criteria. As a rule, newer data, and data that must be accessed more frequently is stored on faster, but more expensive storage media, while less critical data is stored on cheaper, but slower media. However, the ILM approach recognizes that the importance of any data does not rely solely on its age or how often it's accessed. Users can specify different policies for data that declines in value at different rates or that retains its value throughout its life span

ILM is often considered a more complex subset of data life cycle management (DLM). A DLM product would allow you to search stored data for a certain file type of a certain age, for example, while an ILM product would let you search various types of stored files for instances of a specific piece of data, such as a customer number.

4.6 Information Transfer Cycle

Information transfer is the process of moving messages or information from a source to a sink via a Communication channel. Beesman propounded the term Information Transfer. Cycle means a series of events that are regularly repeated in the same order. Transfer of information from its generation to its end user becomes possible through many processes. These processes are also regularly repeated in the same order. These processes complete a cycle, which is called Information Transfer Cycle (ITC). The ITC comprises generation, collection, storage, communication and retrieval.

1. Information Creation / Generation: Information is created with the happening of incidents and activities of humans. If an activity or an incident does not happen, no information is created. Information is mostly created by research and development programmes, government activities, surveys and census of population, business and industrial organizations etc. and presented in a format by author, scientist, researcher, editor, writer, poets, novelists, dramatists, etc. Over the web, information is produced by the general people irrespective of their background and is not restricted only to academics such as scholars, scientists, etc.

2 Information Production and Dissemination: It is the mass production of knowledge through publishing companies or others that will help the mass distribution of knowledge in some physical or electronic form. Previously the information had been disseminated in the form of book. Many conventional and non conventional, printed and non printed sources of information are nowadays available which are different in shape, size, type and format. Over the web, the

production is accelerated by posting the information electronically over some kind of websites. It speeds up the transfer of information globally at a rapid rate instead of taking months or years to get published on paper.

3. Information Storage, Organization, Retrieval and Communication: The storage is the process by which the information described and presented in the documents are stored. Information is collected and stored by libraries, documentation centers, information analysis centers, data banks, data centres, etc. Computer has been accepted as a boon for storing of information. It can store a huge amount of information in the form of database. Besides, the computer, disks and CDROMs are the newly developed and very significant tools of storing information.

a) Organization is how that representation of knowledge is found among others of its kind. In the library environment, the classification and catalogue, shelf list, various kinds of guides, etc facilitate the retrieval function. All these tools are equipped with controlled vocabulary. In the computer environment, organization is facilitated by databases, search engines, etc. Knowledge is individual and the users determine its usefulness; so keyword and natural language searching in computer environment is more attractive.

b) Retrieval is a process of getting information from the collection of a library, for providing answer to the queries of the users, etc.

c) Communication is the process of transmission of information from one place to another, from the creator of information to its users. It is necessary for the best use of the same. It is the process of social exchange. In the library environment, communication of information can be made through telephone, CAS services, SDI services, teleconferencing, e-mail, etc. Sometimes the publisher also brings different kinds of information sources to the notice of the user community.

4. Information Diffusion and Utilization: Diffusion is viewed as a more targeted flow of information to a particular segment of society. The diffusion of information should find its way to people who actually need it instead of targeting the people who will use it for their own benefit.

Utilization is the adoption and implementation of the knowledge by the user. Information is needed by each and every person of modern society for some purpose or the other. When information is consumed by one person it gives new dimension to his knowledge. This knowledge when he applied to some other purposes it gives birth to new information. Thus the information cycle is continuum in nature.

5. Information Preservation and Destruction: The different kinds of libraries, archives are trying to preserve information in different formats. Over web, the Internet archive and the cached page of search engines are serving some purpose in this regard.

The information that is less frequently accessed or has met its assigned retention periods may be considered for relocation to an archive. Then from the archive, it needs to be weeded at some time or other by means of appropriate procedure for the content.

4.7 Let Us Sum up

The meaning of information cycle relates to that unit of knowledge from where the information is generated and then transmitted to the users with the state of various processes. The whole process of information from its creation to its use is called the information cycle. During these days, Internet is serving as the primary publisher, secondary publisher and primary distributor. The knowledge management is the core activity of information transfer. If knowledge is not managed properly, then the ITC will not be a complete one.

4.8 References and Recommended Books

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4.9 Assignment

Information cycle process.
Information cycle management.

4.10 Self Assessment Questions

1. write an account on information cycle practice.
2. what is information cycle? Discuss use and stages of information Cycle.

Unit- 5**Communication****5.0 Aims and Objectives**

The concept of communication and its meanings are explained. The ingredients of communication are dealt in detail to make you understand the purpose and functioning of communication. After going to this unit you will be able to understand functions of communication, types of communication and communication process etc.

Structure

- 5.1 Introduction**
- 5.2 Communication – Meaning**
 - 5.2.1 Definition**
 - 5.2.2 Communication Process**
- 5.3 Information and Meaning**
- 5.4 Ingredients of Communication**
- 5.5 Nature of Communication**
- 5.6 Functions of Communication**
- 5.7 Types of Communication**
 - 5.7.1 Verbal Communication**
 - 5.7.1.1 Oral Communication**
 - 5.7.1.2 Written Communication**
 - 5.7.2 Nonverbal Communication**
- 5.8 Types of Communication Based on Purpose and Style**
 - 5.8.1 Formal Communication**
 - 5.8.2 Informal Communication**
- 5.9 Let Us Sum Up**
- 5.10 References and Recommended Books**
- 5.11 Assignment**
- 5.12 Self Assessment Questions**

5.1 Introduction

The basic idea of communication is transfer of information, knowledge, data and the information which are important and inevitable aspects of human life. If these items are to be transmitted from individual to individuals(s), man to himself, a sound communication mechanism is essential. For various reasons different communication systems have to come to interlink people. The value of either data or information or knowledge will be based on the communication system that is being used.

5.2 Communication – Meaning

The word itself is derived from the Latin verb '*communicare*', which means "to *share*" or "to *make common*". That derivation provides one half of the English meaning of communication. The other half of the meaning of communication has to do with *information* and *meaning*. These are related, but not identical concepts. However, in simple definitions like the three shown below, information is far more likely to be mentioned, than meaning.

5.2.1 Definitions

Communication is defined in many ways and some of the definitions are discussed here which are suitable to the field of library and information science.

The Oxford Dictionary gives the meaning of communication as "the imparting, conveying or exchanging of ideas and knowledge whether by speech, writing or signs". In the words of Peter Drucker communication is "the ability of various groups within the enterprise to understand each others functions and concerns".

According to Dr. S.R. Ranganathan "Communication is the transmitting, conveying, or exchanging of ideas, knowledge or information etc., whether by speech, writing, signs or other symbols expressed audibly, visually or graphically or in any other manner.

Columbia encyclopedia defines it as the transfer of the thoughts and messages as contrasted with the transportation of goods and persons. The basic forms of communication are by signs(signals) and sounds (hearing).

Three Simple Definitions

- Communication is the sharing of information
- Communication is the giving and receiving of messages
- Communication is the transfer of information from one or more people to one or more other people

The first of these three definitions is the simplest, and also the broadest. Because of those qualities, it is also a little nonspecific. The second definition reminds us that information, here called a message, must be received, as well as sent, to complete the process. For example, a message launched in a bottle might achieve communication, but it also might not.

None of the above definitions requires information to flow in more than one direction (though the first two do rather imply this). Two-way communication is certainly more common, and is often preferable, but one-way delivery of information, such as advice or instructions, still constitutes communication.

The last definition above only applies to communication between *people*. Animals, plants and machines are also capable of various sorts of communication, but they are not included in this definition. This last definition is perfectly satisfactory for our purposes, though, as this is a book about communication between people. That implies at least two people – one at each "end" of the process. It can, of course, involve many more than two people.

5.2.2 Communication Process

The sender, who has a message, somehow puts it in a form which can be sent, and somehow sends it in the direction of the receiver. The receiver then somehow receives it, somehow gets it into their brain, and somehow attributes meaning to it.

The complex version of the communication process is either utterly fascinating, or incredibly boring, depending on your point of view. Many thousands of pages have been written about it, and agreement between the authors of those pages is far from complete.

5.3 Information and Meaning

The meaning attributed to any message by the receiver can never be exactly the same as the meaning intended by the sender, because they are different people, with different sense organs and different cognitive function. There are also many other factors which influence the degree to which the receiver's meaning differs from the sender's meaning.

In the case of a word or phrase, the surrounding words or phrases usually provide useful clues. Language features (such as formal, informal and idiomatic language) and sentence structure (sometimes called syntactical grammar) also provide extra information. In the case of speech, factors such as timing, stress and intonation are very significant.

The overall structure and organization of the communication (sometimes called textual grammar) must also be considered, as should the individual characteristics of the sender and the receiver. Any concurrent messages, especially non-verbal ones, will also exert an influence, as will other factors such as the pre-existing knowledge of each communicator and the relationship between the communicators.

The method by which a message is delivered, and the form in which it arrives, will inevitably have an impact on the receiver. The purpose of the communication and the audience to which it is directed are also very relevant. The overall situation in which the communication occurs, and the local – and more distant – events surrounding it, also play their part.

These various things which influence the meaning attributed to an instance of communication are often referred to as the *context* of that communication. However, context is not always applied in such a broad way. Sometimes it is used to refer to particular aspects of the influences surrounding a message.

Do the preceding paragraphs mean that communication is doomed to constant failure? There is more than one answer to that question. One could argue that the transfer of a representation of some information to the mind of the receiver is all that can be *expected* of the communication process. From that viewpoint, the process might be considered successful, even if the meaning attributed is not the meaning intended.

However, that view of communication will not satisfy everybody. Many will wish to share their intended meanings as closely as possible with their target audiences, no matter how small or large those audiences may be. In order to do that, communication must become an art as well as a science.

5.4 Ingredients of Communication

In spite of the fact that each type of communications suitable in a particular situation still certain entities are common in all types. These are known as ingredients or essentials of communication.

- 1) The act of communication has to originate from a source.
- 2) The communication or the idea of communication is to be encoded –use of symbols. The process of translating, ideas, feelings and information into a code is called encoding.
- 3) The idea, now represented by asset of by symbols / code is the source message. The message is another important ingredient of communication.
- 4) The method used to carryout the message is called channel. The success and failure of a communication is mainly depends on the channel used.
- 5) The last ingredient of communication is receiver.

5.5 Nature of Communication

The nature of communication is the exchange of information between two people. It is required that there be both a sender and a receiver for communication to take place. Communication is reciprocal. So at any time the sender is sending a message and the receiver is also sending

Effective communication entails the sender encoding a message and transmitting it to the receiver where the receiver successfully decodes the message.

In your mind, you know what you want to say by using a language. So you put in into words in a language you know and you “send it” to your receiver. You can send it through talking, posting it one message board, sending an e-mail, etc. This goes through a channel which can have “noise” which interferes with the message. Your receiver gets the message and “decodes” it. If this is done successfully they will understand your message. Things that might hinder this would be if the other person doesn’t speak the same language as you.

The following are the nature of communication

- 1) It is dynamic: this is because it is not static. also it is ongoing.
- 2) It is behavioral interaction
- 3) It is receiver's phenomenon

- 4) It elicits responses
- 5) It is complex

5.6 Functions of communication

Communication caters to 'change'. It is through the involvement with and the development of communication that, along the periods of ages, human beings evolved from the caves of the stone age to the present world of sophistication and glamour. The changes brought about by communication to the human society can be explained with reference to the functions of communication propounded by Seal MacBride.

Information: The accessibility to the information brought about by communication helps in changing the society. When people are informed about the on-going problems of the world, the society can change to make themselves stronger to fight those menaces.

Socialization: Communication can help people to socialize and come together in a common platform understanding and helping one another in times of need realizing the common ground of similarity that we share. Socialization can be possible only through communication.

Motivation: Societies can change for the better, if the change is brought about by the motivation that we get through communication. The motivation is for betterment, for achievement and harmony.

Discussion and Debate: The fact that communication allows us to discuss and debate an issue holds extremely important, for, by doing so we can resolve any political or social issue for the betterment of the society.

Education: Education is the backbone of the society. The development and the social and economic status is very much determined by the level of education that the citizens of the country have been able to receive. This can pave the way to the social advancement and economic self-sufficiency.

Cultural Promotion: Communication also helps people to be informed about the different cultural varieties that countries and the world enjoys. Knowing and understanding them can help us understand one another in the common frame of reference as humans and live with peace and prosperity. Communication, thus, is an exclusive ladder to reach the ultimate destination, the destination being, the societal harmony and peace.

i) Information function:

The basic requirement of adapting and adjusting oneself to the environment is information. There must be some information about what is going on in the environment which concerns the people. The receiving or giving of information underlines all communication functions, either directly or indirectly.

ii) Command or instructive function:

Those who are hierarchically superior in the family, society or organization, often initiate communication either for the purpose of informing their subordinates or for the purpose of telling them, what to do, how to do when to do etc.

The command and instructive functions of communication are more observable in formal organizations than in informal organizations.

iii) Influence or persuasive function:

According to Berlo (1960), the sole purpose of communication is to influence people. Persuasive function of communication i.e. to induce people is extremely important for extension in changing their behaviour in the desirable direction.

iv) Integrative function:

A major function of communication is integration or of continuously offsetting any disintegration at the interpersonal or at the organizational level. This helps in maintaining individual, societal or organizational stability and identity.

5.7 Types of Communication

Communication is a process of exchanging information, ideas, thoughts, feelings and emotions through speech, signals, writing, or behavior. In communication process, a sender(encoder) encodes a message and then using a medium/channel sends it to the receiver (decoder) who decodes the message and after processing information, sends back appropriate feedback/reply using a medium/channel.

People communicate with each other in a number of ways that depend upon the message and its context in which it is being sent. Choice of communication channel and your style of communicating also affect the quality of communication process. So, there are variety of types of communication.

Types of communication based on the communication channels used are:

1. Verbal Communication
2. Nonverbal Communication

5.7.1 Verbal Communication

Verbal communication refers to the form of communication in which message is transmitted verbally; communication is done by word of mouth and a piece of writing. Objective of every communication is people to understand what we are trying to convey.

When we talk to others, we assume that others understand what we are saying because we know what we are saying. But this is not the case. Usually people bring their own attitude, perception, emotions and thoughts about the topic and hence creates barrier in delivering the right meaning.

So in order to deliver the right message, you must put yourself on the other side of the table and think from your receiver's point of view. Would he understand the message? how it would sound on the other side of the table?

Verbal Communication is further divided into:

- Oral Communication
- Written Communication

5.7.1.1 Oral Communication

In oral communication, Spoken words are used. It includes face-to-face conversations, speech, telephonic conversation, video, radio, television, voice over internet. In oral communication it is influenced by pitch, volume, speed and clarity of speaking.

Advantages of Oral communication:

It brings quick feedback. In a face-to-face conversation, by reading facial expression and body language one can guess whether he/she should trust what's being said or not.

Disadvantage of oral communication

In face-to-face discussion, user is unable to deeply think about what he is delivering,

5.7.1.2 Written Communication

In written communication, written signs or symbols are used to communicate. A written message may be printed or hand written. In written communication message can be transmitted via email, letter, report, memo etc. Message, in written communication, is influenced by the vocabulary & grammar used, writing style, precision and clarity of the language used.

Written Communication is most common form of communication being used in business. So, it is considered core among business skills. Memos, reports, bulletins, job descriptions, employee manuals, and electronic mail are the types of written communication used for internal communication. For communicating with external environment in writing, electronic mail, Internet Web sites, letters, proposals, telegrams, faxes, postcards, contracts, advertisements, brochures, and news releases are used.

Advantages of written communication:

Messages can be edited and revised many time before it is actually sent. Written communication provide record for every message sent and can be saved for later study. A written message enables receiver to fully understand it and send appropriate feedback.

Disadvantages of written communication includes:

Unlike oral communication, Written communication doesn't bring instant feedback. It takes more time in composing a written message as compared to word-of-mouth and number of people struggles for writing ability.

5.7.2 Nonverbal Communication

Nonverbal communication is the sending or receiving of wordless messages. We can say that communication other than oral and written, such as gesture, body language, posture, tone of voice or facial expressions, is called nonverbal communication. Nonverbal communication is all about the body language of speaker.

Nonverbal communication helps receiver in interpreting the message received. Often, nonverbal signals reflects the situation more accurately than verbal messages. Sometimes nonverbal

responses contradicts with verbal communication and hence affect the effectiveness of message.

Nonverbal communication have the following three elements:

Appearance: Speaker clothing, hairstyle, neatness, use of cosmetics

Surrounding: room size, lighting, decorations, furnishings, Body Language, facial expressions, gestures, postures

Sounds: Voice Tone, Volume, Speech rate

5.8 Types of Communication Based on Purpose and Style

Based on style and purpose, there are two main categories of communication and they both bears their own characteristics. Communication types based on style and purpose are:

1. Formal Communication
2. Informal Communication

5.8.1 Formal Communication

In formal communication, certain rules, conventions and principles are followed while communicating message. Formal communication occurs in formal and official style. Usually professional settings, corporate meetings, conferences undergoes in formal pattern.

In formal communication, use of slang and foul language is avoided and correct pronunciation is required. Authority lines are needed to be followed in formal communication.

5.8.2 Informal Communication

Informal communication is done using channels that are in contrast with formal communication channels. It's just a casual talk. It is established for societal affiliations of members in an organization and face-to-face discussions. It happens among friends and family. In informal communication use of slang words, foul language is not restricted. Usually, informal communication is done orally and using gestures.

Informal communication, Unlike formal communication, doesn't follow authority lines. In an organization, it helps in finding out staff grievances as people express more when talking informally. Informal communication helps in building relationships.

5.9 Let Us Sum Up

The idea of communication, the meaning, definition and process of communication are discussed. Information meaning, ingredients of communication, nature of communication and function of communication are dealt with briefly. Several of functions are given.

5.10 References and Recommended Books

1. Gupta, B.L. Knowledge, communication and library. Jaipur: print well 1987.
2. Dr.NageshwarRao&Dr.RajendraP.Das, Communication skills ,Himalaya publishing house.
3. [Daniel Chandler](#), "The Transmission Model of Communication",

4. Berlo, D. K. *The process of communication*. New York, New York: Holt, Rinehart, & Winston 1960.

5.9 Assignment

Write an account on Ingredients of communication.

5.10 Self Assessment Questions

Discuss types of communication and functions of communication.

Write an account on verbal and nonverbal communication

Short notes:

Ingredients of Communication.

Formal communication.

Unit-6**Communication Channels****6.0 Aims and Objects**

In this unit you will be learning the importance of communication channels. Discussed various types of communication channels in detail. After going through this unit you will be able to understand the communication channel that will be useful to apply based on level of users.

Structure

- 6.1 Introduction
- 6.2 Communication Channels - Working
- 6.3 Communication Channels- Importance
- 6.4 Communication Channels- Types
- 6.5 Formal Communication Channels
 - 6.6 Informal Communication Channels
- 6.7 Unofficial Communication Channels
- 6.8 Communication Theory Framework
 - 6.8.1 Mechanistic
 - 6.8.2 Psychological
 - 6.8.3 Social Constructionist (Symbolic Interactions)
 - 6.8.4 Systemic
 - 6.8.5 Critical
- 6.9 Epistemology
- 6.10 Axiology
- 6.11 Mapping the theoretical Landscape
- 6.12 Contexts
- 6.13 The Constitutive Metamodel & Communication Theory as a Field
 - 6.13.1 Rhetorical
 - 6.13.2 Semiotic
 - 6.13.3 Phenomenological
 - 6.13.4 Cybernetic
 - 6.13.5 Socio-psychological
 - 6.13.6 Socio-cultural
 - 6.13.7 Critical

- 6.14 Let Us Sum Up**
- 6.15 References and Recommended Books**
- 6.16 Assignment**
- 6.17 Model Examination Questions**

6.1 Introduction

In an organization, information flows forward, backwards and sideways. This information flow is referred to as communication. Communication channels refer to the way this information flows within the organization and with other organizations.

In this web known as communication, a manager becomes a link. Decisions and directions flow upwards or downwards or sideways depending on the position of the manager in the communication web.

For example, reports from lower level manager will flow upwards. A good manager has to inspire, steer and organize his employees efficiently and for all this, the tools in his possession are spoken and written words.

For the flow of information and for a manager to handle his employees, it is important for an effectual communication channel to be in place.

6.2 Communication Channels -Working

Through a medium of communication, be a face to face conversations or an inter-department memo, information is transmitted from a manager to a subordinate or vice versa.

An important element of the communication process is the feedback mechanism between the management and employees.

In this mechanism, employees inform managers that they have understood the task at hand while managers provide employees with comments and directions on employee's work.

6.3 Communication Channel- Importance

A breakdown in the communication channel leads to an inefficient flow in information. Employees are unaware of what the company expects of them. They are uninformed of what is going on in the company.

This will cause them to become suspicious of motives and any changes in the company. Without effective communication, employees become department minded rather than company minded, and this affects their decision making and productivity in the workplace.

Eventually, this harms the overall organizational objectives as well. Hence in order for an organization to be run effectively, a good manager should be able to communicate to his/her employees what is expected of them, make sure they are fully aware of company policies and any upcoming changes.

Therefore, an effective communication channel should be implemented by managers to optimize worker productivity to ensure the smooth running of the organization.

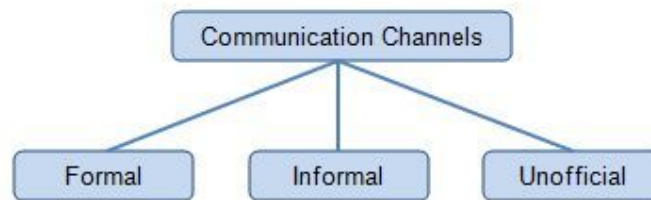
6.4 Communication Channels -Types

The number of communication channels available to a manager has increased over the last 20 odd years. Video conferencing, mobile technology, electronic bulletin boards and fax machines are some of the new possibilities.

As organizations grow in size, managers cannot rely on face to face communication alone to get their message across.

A challenge the manager's face today is to determine what type of communication channel should they opt for in order to carryout effective communication.

In order to make a manager's task easier, the types of communication channels are grouped into three main groups: formal, informal and unofficial.



6.5 Formal Communication Channels

A formal communication channel transmits information such as the goals, policies, and procedures of an organization. Messages in this type of communication channel follow a chain of command. This means information flows from a manager to his subordinates and they in turn pass on the information to the next level of staff.

An example of a formal communication channel is a company's newsletter which gives employees as well as the clients a clear idea of a company's goals and vision. It also includes the transfer of information with regard to memoranda, reports, directions, and scheduled meetings in the chain of command.

A business plan, customer satisfaction survey, annual reports, employer's manual, review meetings are all formal communication channels.

6.6 Informal Communication Channels

Within a formal working environment, there always exists an informal communication network. The strict hierarchical web of communication cannot function efficiently on its own and hence there exists a communication channel outside of this web. While this type of communication channel may disrupt the chain of command, a good manager needs to find the fine balance between the formal and informal communication channel.

An example of an informal communication channel is lunchtime at the organization's cafeteria/canteen. Here, in a relaxed atmosphere, discussions among employees are

encouraged. Also managers walking around, adopting a hands-on approach to handling employee queries is an example of an informal communication channel.

Quality circles, team work, different training programs are outside of the chain of command and so, fall under the category of informal communication channels.

6.7 Unofficial Communication Channels

Good managers will recognize the fact that sometimes, communication that takes place within an organization is interpersonal. While minutes of a meeting may be a topic of discussion among employees, sports, politics and TV shows also share the floor.

The unofficial communication channel in an organization is the organization's 'grapevine'. It is through the grapevine that rumors circulate. Also those engaging in 'grapevine' discussions, often form groups which translate into friendships outside of the organization. While the grapevine may have positive implications, more often than not information circulating in the grapevine is exaggerated and may cause unnecessary alarm to employees. A good manager should be privy to information circulating in this unofficial communication channel and should take positive measures to prevent the flow of false information.

An example of an unofficial communication channel is social gatherings among employees.

6.8 Communication Theory Framework

It is helpful to examine communication and communication theory through one of the following viewpoints:

6.8.1 Mechanistic: This view considers communication as a perfect transaction of a message from the sender to the receiver.

6.8.2 Psychological: This view considers communication as the act of sending a message to a receiver, and the feelings and thoughts of the receiver upon interpreting the message.

6.8.3 Social Constructionist (Symbolic Interactions): This view considers communication to be the product of the interactants sharing and creating meaning. The Constructionist View can also be defined as, how you say something determines what the message is. The Constructionist View assumes that "truth" and "ideas" are constructed or invented through the social process of communication. Robert T. Craig saw the Constructionist View or the constitutive view as it's called in his article, as "...an ongoing process that symbolically forms and re-forms our personal identities." The other view of communication, the Transmission Model sees communication as robotic and computer-like. The Transmission Model sees communication as a way of sending or receiving messages and the perfection of that. But, the Constructionist View sees communications as, "...in human life, info does not behave as simply as bits in an electronic stream. In human life, information flow is far more like an electric current running from one landmine to another". The Constructionist View is a more realistic view of communication because it involves the interacting of human beings and the free sharing of thoughts and ideas. Daniel Chandler looks to prove that the Transmission Model is a lesser way of communicating by saying "The

transmission model is not merely a gross over-simplification but a dangerously misleading representation of the nature of human communication". Humans do not communicate simply as computers or robots so that's why it's essential to truly understand the Constructionist View of Communication well. We do not simply send facts and data to one another, but we take facts and data and they acquire meaning through the process of communication, or through interaction with others.

6.8.4 Systemic: This view considers communication to be the new messages created via "through-put", or what happens as the message is being interpreted and re- interpreted as it travels through people.

6.8.5 Critical: This view considers communication as a source of power and oppression of individuals and social groups.

Inspection of a particular theory on this level will provide a framework on the nature of communication as seen within the confines of that theory.

Theories can also be studied and organized according to the ontological, epistemological, and axiological framework imposed by the theorist.

6.9 Epistemology

Epistemology is an examination of how the theorist studies the chosen phenomena. In studying epistemology, particularly from a positivist perspective, objective knowledge is said to be the result of a systematic look at the causal relationships of phenomena. This knowledge is usually attained through use of the scientific method. Scholars often think that empirical evidence collected in an objective manner is most likely to reflect truth in the findings. Theories of this kind are usually created to predict a phenomenon. Subjective theory holds that understanding is based on situated knowledge, typically found using interpretative methodology such as ethnography and also interviews. Subjective theories are typically developed to explain or understand phenomena in the social world.

6.10 Axiology

Axiology is concerned with how values inform research and theory development. Most communication theory is guided by one of three axiological approaches empty citation. The first interests but suggests that those values 'approach recognizes that values will influence theorists Outside replication of research findings is .must be set aside once actual research begins nt indparticularly important in this approach to preveividual researchers' values from contaminating their findings and interpretations. The second approach rejects the idea that values can be eliminated from any stage of theory development. Within this approach, theorists do not try to divorce their values from inquiry. Instead, they remain mindful of their values so that they understand how those values contextualize, influence or skew their findings. The third approach not only rejects the idea that values can be separated from research and theory, but rejects the idea that they should be separated. This approach is often adopted by critical theorists who believe that the role of communication theory is to identify oppression and produce social change. In this axiological approach, theorists embrace their values and work to reproduce those values in their research and theory development.

6.11 Mapping the theoretical Landscape

A discipline gets defined in large part by its theoretical structure. Communication studies often borrow theories from other social sciences. This theoretical variation makes it difficult to come to terms with the field as a whole. That said, some common taxonomies exist that serve to divide up the range of communication research. Two common mappings involve contexts and assumptions.

6.12 Contexts

Many authors and researchers divide communication by what they sometimes called "contexts" or "levels", but which more often represent institutional histories. The study of communication in the US, while occurring within departments of psychology, sociology, linguistics, and anthropology (among others), generally developed from schools of rhetoric and from schools of journalism. While many of these have become empty citation departments of "While many of these have become adhering largely to theories from speech, they often retain their historical roots," communication. The great divide between speech communication and mass communication becomes complicated by a number of smaller sub-areas of communication research, including intercultural and international communication, small group communication, communication technology, policy and legal studies of communication, telecommunication, and work done under a variety of other labels. Some of these departments take a largely social-scientific perspective, others tend more heavily toward the humanities, and still others gear themselves more toward production and professional preparation.

These "levels" of communication provide some way of grouping communication theories, but inevitably, some theories and concepts leak from one area to another, or fail to find a home at all.

6.13 The Constitutive Metamodel & Communication Theory as a Field

Another way of dividing up the communication field emphasizes the assumptions that undergird particular theories, models, and approaches. Robert T. Craig suggests that the field of communication as a whole can be understood as several different traditions who have a specific view on communication. By showing the similarities and differences between these traditions, Craig argues that the different traditions will be able to engage each other in dialogue rather than ignore each other. Craig proposes seven different traditions which are:

6.13.1 Rhetorical: views communication as the practical art of discourse.

6.13.2 Semiotic: views communication as the mediation by signs.

6.13.3 Phenomenological: communication is the experience of dialogue with others.

6.13.4 Cybernetic: communication is the flow of information.

6.13.5 Socio-psychological: communication is the interaction of individuals.

6.13.6 Socio-cultural: communication is the production and reproduction of the social order.

6.13.7 Critical: communication is the process in which all assumptions can be challenged.

Craig finds each of these clearly defined against the others, and remaining cohesive approaches to describing communicative behavior. As a taxonomic aid, these labels help to

organize theory by its assumptions, and help researchers to understand why some theories may seem incommensurable.

While communication theorists very commonly use these two approaches, theorists decentralize the place of language and machines as communicative technologies. The idea of communication as the primary tool of a species defined by its tools remains on the outskirts of communication theory. It finds some representation in the Toronto School of communication theory (alternatively sometimes called medium theory) as represented by the work of Innis, McLuhan, and others. It seems that the ways in which individuals and groups use the technologies of communication — and in some cases are used by them — remain central to what communication researchers do. The ideas that surround this, and in particular the place of persuasion, remain constants across both the "traditions" and "levels" of communication theory.

6.14 Let Us Sum Up

In transfer of information, communication plays an important role. The value of information or knowledge partially depends upon the process of communication. Therefore, suitable communication channels are used in libraries while disseminating information and knowledge.

6.15 References and Recommended Books

1. Gupta, B.L. Knowledge, communication and library, Jaipur: Printwell, 1987.
2. Prasher, R.G. information and its communication, New Delhi: Medallion Press, 1991.
3. Mc Garry, K.J. The changing context of information, London: Clive Bingley, 1981.

6.16 Assignment

Write an account on importance of communication channels.

6.17 Self Assessment Questions

1. Explain about communication theory framework.
2. Give an account on constructive metamodal.

Short notes:

Explain Axiology.

Unit- 7

Models of Communication

7.0 Aims and Objects

In this unit models of communication, psychology of communication and the terms of communication model are explained. In models of communication Shannon and Weaver model, Linear communication model, interactive model, transactional model, Lasswell's model and Schramm model are discussed. After going through this unit you will be able to understand various types of communication models and psychology of communication.

Structure

- 7.1 Introduction
- 7.2 Models of Communication
 - 7.2.1 Shannon and weaver Model of Communication
 - 7.2.1.1 Communication Major Dimensions Scheme
 - 7.2.1.2 Communication Code Scheme
 - 7.2.2 Linear Communication Model
 - 7.2.3 Interactive Model
 - 7.2.4 Transactional Model of Communication
 - 7.2.5 Lasswell's Model
 - 7.2.6 The Schramm Models
- 7.3 Psychology of Communication
- 7.4 Communication Model Terms
- 7.5 Let Us Sum Up
- 7.6 References and Recommended Books
- 7.7 Assignments
- 7.8 Model Examination Questions

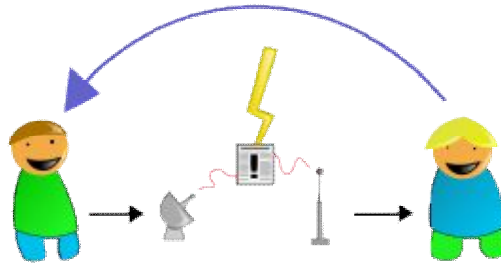
7.1 Introduction

To communicate information to other end successfully, a systematic procedure is needed, known as model. If the information is communicated systematically at different level, it would be easy to understand the process and problem to rectify. Therefore, various communication models given by experts are discussed in this unit. Out of all, Shannon and Weaver mathematical theory is a widely accepted model.

7.2 Models of Communication

A theoretical framework to make understand the concept is known as model. A model is not an explanatory device but it does play an important and suggestive role in the formulation of theory. Models help us to think systematically, visualize in right perspective and understand the structure thoroughly. In models the information flow would be studied systematically. The relation between the parts of system is also the important to understand the information flow.

7.2.1 Shannon and Weaver Model of Communication



The original model was designed to mirror the functioning of radio and telephone technologies. Their initial model consisted of three primary parts: sender, channel, and receiver. The sender was the part of a telephone a person spoke into, the channel was the telephone itself, and the receiver was the part of the phone where one could hear the other person. Shannon and Weaver also recognized that often there is static that interferes with one listening to a telephone conversation, which they deemed noise. The noise could also mean the absence of signal.

In a simple model, often referred to as *the transmission model* or *standard view of communication*, information or content (e.g. a message in natural language) is sent in some form (as spoken language) from an emisor/ sender/ encoder to a destination/ receiver/ decoder. This common conception of communication views communication as a means of sending and receiving information. The strengths of this model are simplicity, generality, and quantify ability. Social scientists Claude Shannon and Warren Weaver structured this model based on the following elements:

1. An information source, which produces a message.
2. A transmitter, which encodes the message into signals
3. A channel, to which signals are adapted for transmission
4. A receiver, which 'decodes' (reconstructs) the message from the signal.
5. A destination, where the message arrives.

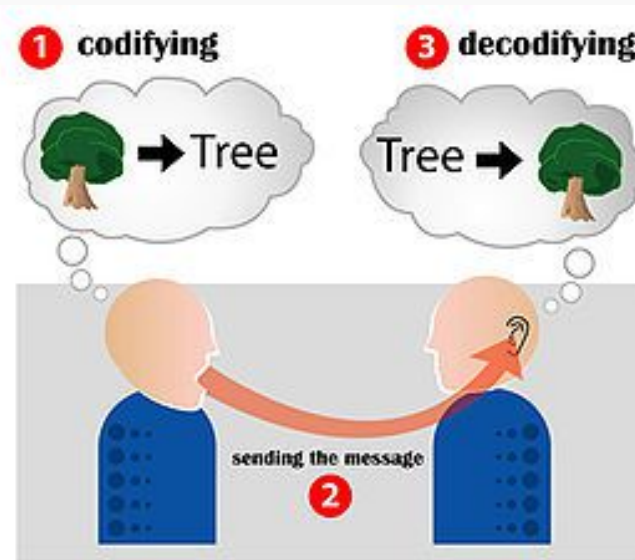
Shannon and Weaver argued that there were three levels of problems for communication within this theory.

The technical problem: how accurately can the message be transmitted?

The semantic problem: how precisely is the meaning 'conveyed'?

The effectiveness problem: how effectively does the received meaning affect behavior?

7.2.1.1 Communication major dimensions scheme



7.2.1.2 Communication Code Scheme



7.2.2 Linear Communication Model

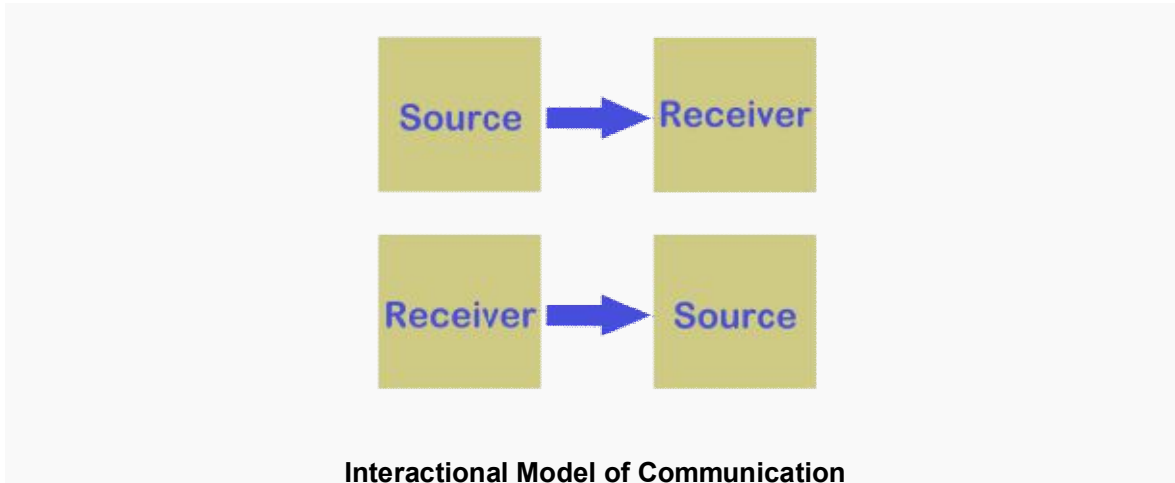
In 1960, David Berlo expanded on Shannon and Weaver's (1949) linear model of communication and created the SMCR Model of Communication. The Sender-Message-Channel-Receiver Model of communication separated the model into clear parts and has been expanded upon by other scholars.

Communication is usually described along a few major dimensions: Message (what type of things are communicated), source / emisor / sender / encoder (by whom), form (in which form), channel (through which medium), destination / receiver / target / decoder (to whom), and Receiver. Wilbur Schramm (1954) also indicated that we should also examine the impact that a message has (both desired and undesired) on the target of the message. Between parties, communication includes acts that confer knowledge and experiences, give advice and commands, and ask questions. These acts may take many forms, in one of the various manners of communication. The form depends on the abilities of the group communicating. Together, communication content and form make messages that are sent towards a destination. The target can be oneself, another person or being, another entity (such as a corporation or group of beings). Communication can be seen as processes of information transmission governed by three levels of semiotic rules:

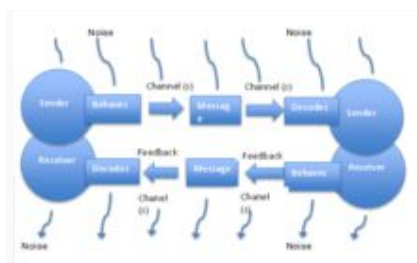
1. Syntactic (formal properties of signs and symbols),
2. Pragmatic (concerned with the relations between signs/expressions and their users) and
3. Semantic (study of relationships between signs and symbols and what they represent).

Therefore, communication is social interaction where at least two interacting agents share a common set of signs and a common set of semiotic rules. This commonly held rules in some sense ignores autocommunication, including intrapersonal communication via diaries or self-talk, both secondary phenomena that followed the primary acquisition of communicative competences within social interactions.

7.2.3 Interactive Model

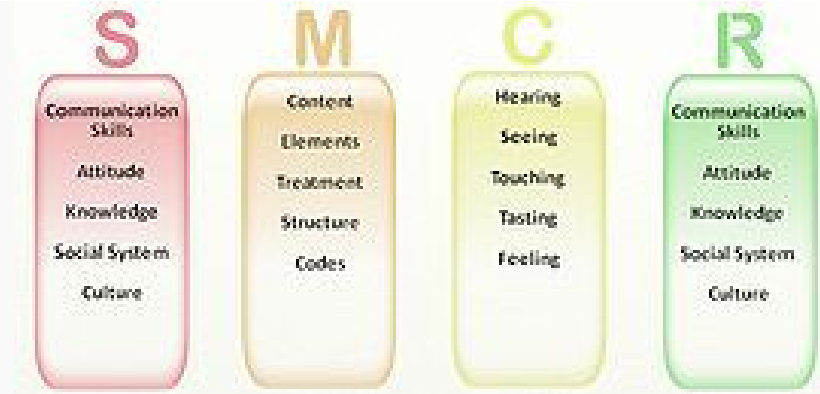


It is two linear models stacked on top of each other. The sender channels a message to the receiver and the receiver then becomes the sender and channels a message to the original sender. This model has added feedback, indicates that communication is not a one way but a two way process. It also has “field of experience” which includes our cultural background, ethnicity geographic location, extend of travel, and general personal experiences accumulated over the course of your lifetime. Draw backs – there is feedback but it is not simultaneous.

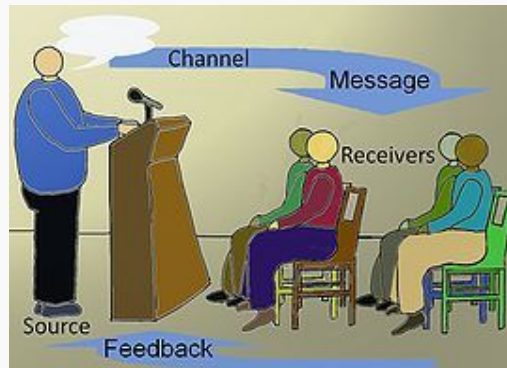


The Interactive Model.

For example – instant messaging. The sender sends an IM to the receiver, then the original sender has to wait for the IM from the original receiver to react. Or a question/answer session where you just ask a question then you get an answer..



Berlo's Sender-Message-Channel-Receiver Model of Communication



7.2.4 Transactional Model of Communication

Barnlund proposed a transactional model of communication in 1970. The basic premise of the transactional model of communication is that individuals are simultaneously engaging in the sending and receiving of messages.

In a slightly more complex form a sender and a receiver are linked reciprocally. This second attitude of communication, referred to as the constitutive model or constructionist view, focuses on how an individual communicates as the determining factor of the way the message will be interpreted. Communication is viewed as a conduit; a passage in which information travels from one individual to another and this information becomes separate from the communication itself. A particular instance of communication is called a speech act. The sender's personal filters and the receiver's personal filters may vary depending upon different regional traditions, cultures, or gender; which may alter the intended meaning of message contents. In the presence of "communication noise" on the transmission channel (air, in this case), reception and decoding of content may be faulty, and thus the speech act may not achieve the desired effect. One problem with this encode-transmit-receive-decode model is that the processes of encoding and decoding imply that the sender and receiver each possess something that functions as a code-book, and that these two code books are, at the very least, similar if not identical. Although something like code books is implied by the model, they are nowhere represented in the model, which creates many conceptual difficulties.

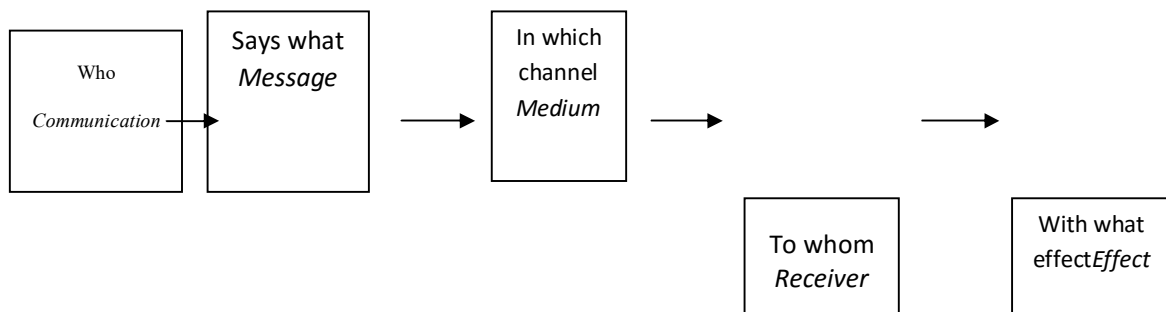
Theories of co-regulation describe communication as a creative and dynamic continuous process, rather than a discrete exchange of information. Canadian media scholar Harold

Innis had the theory that people use different types of media to communicate and which one they choose to use will offer different possibilities for the shape and durability of society. His famous example of this is using ancient Egypt and looking at the ways they built themselves out of media with very different properties stone and papyrus. Papyrus is what he called 'Space Binding'. It made possible the transmission of written orders across space, empires and enables the waging of distant military campaigns and colonial administration. The other is stone and 'Time Binding', through the construction of temples and the pyramids can sustain their authority generation to generation, through this media they can change and shape communication in their society.

Models of communication refer to the conceptual model used to explain the human communication process. The first major model for communication came in 1949 by Claude Elwood Shannon and Warren Weaver for Bell Laboratories following the basic concept, communication is the process of sending and receiving messages or transferring information from one part (sender) to another (receiver).

7.2.5 Lasswell's Model

Lasswell a U.S. Political Scientist developed a verbal model in 1948 as 'who says what in which channel to whom with what effect?' This model is very useful to split the communication process into various components. The value of this model lies in its use as a structuring device and in situations in which sender has a clear interest to influence the receiver.



The Lasswell's model of communication can be analysed in the context of library as follows:

Who? - Authors, publishers, research bodies, translators, professional bodies etc.

What? – Symbolic contents of knowledge, use of language notations, symbols

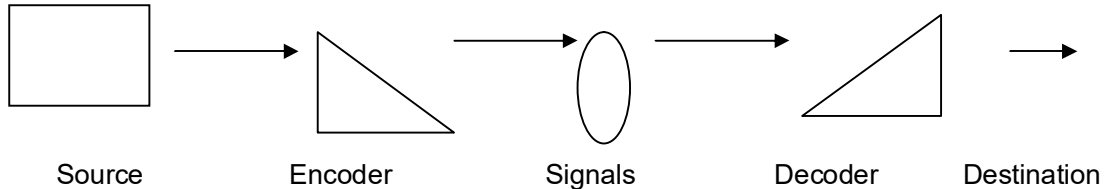
Which Channel? - Books, journals, manuscripts, reports, conference proceedings, A.V. materials, computer media, etc. Whom? – Library users or members of the society.

What effect? - Knowledge addition to individuals of society or users of library.

7.2.6 The Schramm Models

Schramm (1954) attempted to develop a human communication model giving emphasis to experiences of two individuals and the interaction between those two was later designed as models. He developed three models to explain the proposed concept or theory.

Model – 1: This is almost similar to Shannon's Model



Communication starts from source (i.e. 1st individual) and it is encoded, transmitted through signals. These signals are decoded either manually or mechanically and reach destination (i.e. 2nd individual).

7.3 Psychology of Communication

Bernard Luskin, UCLA, 1970, advanced computer assisted instruction and began to connect media and psychology into what is now the field of media psychology. In 1998, the American Association of Psychology, Media Psychology Division reported on psychology and new technologies combined media and communication as pictures, graphics and sound increasingly dominate modern communication. The Social Psychology of Communication is the first comprehensive introduction to social psychological perspectives on communication. This accessible guide provides an overview of key theoretical approaches from a variety of different disciplines (including cognitive, developmental and evolutionary psychology) as well as practical guidance on how to implement communication interventions in differing contexts.

Psychology of communication is divided into three parts covering 1.theoretical perspectives, 2.special topics in communication and 3.applied areas and practice.

Navigational tools providing a 'how to' guide to using the book most effectively • A list of key words at the beginning of each chapter which are highlighted throughout the chapter for easy reference • A thorough glossary of keywords and definitions • A section on Special Topics in Communication including identity and resistance, rumour and gossip, evolution and communication

7.4 Communication Model Terms:

Noise; interference with effective transmission and reception of a message.

For example;

Physical noise or external noise which are environmental distractions such as poorly heated rooms, startling sounds, appearances of things, music playing some where else, and someone talking really loudly near you. Physiological noise are biological influences that distract you from communicating competently such as sweaty palms, pounding heart, butterfly in the stomach, induced by speech anxiety, or feeling sick, exhausted at work, the ringing noise in your ear, being really hungry, and if you have a runny nose or a cough.

Psychological noise are the preconception bias and assumptions such as thinking someone who speaks like a valley girl is dumb, or someone from a foreign country can't speak English well so you speak loudly and slowly to them.

Semantic noise are word choices that are confusing and distracting such as using the word tri-syllabic instead of three syllables.

Sender, the initiator and encoder of a message

Receiver, the one that receives the message (the listener) and the decoder of a message

Decode; translates the senders spoken idea/message into something the receiver understands by using their knowledge of language from personal experience.

Encode; puts the idea into spoken language while putting their own meaning into the word/message.

Channel; the medium through which the message travels such as through oral communication (radio, television, phone, in person) or written communication (letters, email, text messages)

Feedback; the receivers verbal and nonverbal responses to a message such as a nod for understanding (nonverbal), a raised eyebrow for being confused (nonverbal), or asking a question to clarify the message (verbal).

Message; the verbal and nonverbal components of language that is sent to the receiver by the sender which conveys an idea.

7.5 Let Us Sum Up

Shannon and Weaver model of communication is based on five elements i.e. information source, transmitter, channel, received and destiny. Further explained three levels of problems, they are technical, semantic and effectiveness. The Laswell's model is analyzed in four stages they are who, whoms, which channel and what effect. In psychology of communication three theoretical perspectives are noted and they are special topics, applied areas and practice.

7.6 References and Recommended Books

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7.7 Assignments

Psychology of communication and communication terms.

7.8 Self Assessment Questions

Write an account on Shannon and Weaver model. Discuss Laswell's model .

Unit- 8

Communication Barriers

8.0 Aims and Objectives

In this unit you will be learning the barriers of communication, which influence the process of communication. Various types of communication barriers are discussed and possible solutions to overcome these barriers are also stated. After going through this unit, you will be able to understand the categories of barriers, those may come in the process of communication in the libraries and suitable solutions.

Structure

- 8.1 Introduction
- 8.2 Categorization of Barriers
 - 8.2.1 Semantic Barriers
 - 8.2.2 Organizational Barriers
 - 8.2.3 Inter-personal Barriers
 - 8.2.4 Individual / Psycho-sociological Barriers
 - 8.2.5 Cross-cultural / Geographic Barriers
 - 8.2.6 Physical/Channel/Media barriers
 - 8.2.7 Technological Barriers
- 8.3 Common Barriers - Effective Communication
- 8.4 Sender-Oriented Barriers
- 8.5 Overcoming Barriers
- 8.6 Let Us Sum Up
- 8.7 References and Recommended Books
- 8.8 Assignment
- 8.9 Model Examination Questions
- 8.1 Introduction

Communication Theory has one universal law, formulated by S. F. Scudder in 1980. The Universal Communication Law states that, "All living entities, beings and creatures communicate. In an unpublished interview, Scudder clarified the concept - all of the living

communicates through movements, sounds, reactions, physical changes, gestures, languages, breath, color transformations, etc. Communication is a means of survival, existence and being and does not need another to acknowledge its presence”.

Communication involves transmission of verbal and non-verbal messages. It consists of a sender, a receiver and channel of communication. In the process of transmitting messages, the clarity of the message may be interfered or distorted by what is often referred to as barriers.

Healthy communication seeks to increase knowledge gain. This is the minimum expectation and acceptable requirement to demonstrate that learning has taken place following an intervention using communication. Once knowledge gain is established, it is assumed that the individual will use the knowledge when the need arises or at an opportune time. There is evidence in several school-based healthy interventions demonstrating that young people who got exposed to specific information, e.g. against smoking or engaging in harmful practice, tended to possess decision or refusal skills.

Communication requires full understanding of behaviors associated with the sender and receiver and the possible barriers that are likely to exist. There are also challenges with establishing the source of what is to be communicated since this is a pre-requisite for program success. Often, communication (i.e. messages) originated from professionals or the government and ignore involving the intended beneficiaries. As a result, those communication activities seeking to impart knowledge and skills and/or behavior change often fail to realize the ultimate goal of behavior change because the beneficiaries find no relevancy in their activities.

Communication processes can be classified into two categories namely (i) mass media and (ii) Group media. Mass media focuses on reaching a wide audience while the group media reaches a specific group with clearly defined characteristics. Radio, television and Internet are examples of mass media channels while drama, storytelling, music and dance fall under group media.

Selecting a communication channel requires a complete understanding of the strengths, limitations and possible solutions related to each potential channel. Those entrusted with developing healthy education interventions require communication that need to be aware of the limitations in order to identify other complimentary activities to be able to achieve desired results. The context in which communication takes place is a major determinant to achieving the desired results. First, there should be a situational analysis which also includes an audience analysis and this could be a rapid or comprehensive assessment. The findings of a situational analysis are then fed into decisions regarding the appropriate messages and channels to be applied. The situational analysis presents opportunities for implementing multiple communications where necessary.

In order to succeed in establishing effective healthy interventions using communication, the participation of intended beneficiaries throughout the programme phases is a pre-requisite. In other words, the intended beneficiaries should participate in setting objectives, selecting activities as well as monitoring of the effectiveness of the activities and participate in the planning and implementation. The beneficiaries should also be a part of establishing an environment that is conducive to delivering effective communication activities. In order to realize this goal in programme terms, policies and legislations that promote communication are required at national level. In many countries, mass media outlets such as television, radio, internet and newspapers are either a State monopoly or are under the ownership of private companies thereby making it hard for public service organizations to easily access them. The

high fees levied for using these information outlets is quite prohibitive to most public health services organizations particularly those operating at community level.

Communication is not a panacea for all public health concerns and therefore expectations should be realistic. To guarantee that communication is being applied appropriately, the situational analysis findings should inform the next steps as discussed earlier. In this regard, it is essential to distinguish whether the problem or concern is not linked to lack of policy or legislation and not necessarily communication. Communication has been considered a failure in certain situations when, in fact, the problem required a policy or legislative remedies and not communication. The identification of predisposing, enabling and reinforcing factors to knowledge acquisition and behavior change should guide communication processes.

Communication that provide opportunities for interpersonal interaction that is likely to yield desired behavioral change. These interpersonal group communications include drama, song, story telling and debate among others. The interpersonal communication can take into consideration social, cultural and behavioral factors that influence health outcomes unlike with mass media.

Communication conveys complex, sensitive and controversial information. It is critical that those responsible for facilitating information dissemination receive training in handling sensitive or controversial issues in order not to diminish the possible gains from communication.

Ultimately, credibility of the source of information is highly correlated with achievement of desired behavior outcomes. Those involved in communicating vital health information should ascertain that they are credible sources of information among the public. All content to be communicated should be thoroughly verified in order to avoid misinformation or sending conflict misinformation or sending conflict messages because once something is communicated, it can not be recalled 'uncommunicated'. In other words, a retraction of a statement or any apology does not mean that communication did not take place or what was communicated has been erased. It remains as a record despite the retraction. Guarantee freedom to communicate by not allowing any form of put-down or unconstructive criticism before, during and after communication.

Last but not least, listening is part of communication. Unfortunately, it is rarely taught formally and also neither is it acknowledged during development of communication interventions. In order to listen effectively, it is a must that one does not appear to be impatient or in a hurry. Both persons should allow each other to freely communicate without interference.

8.2 Categorization of Barriers

1. Semantic Barriers
2. Organizational Barriers
3. Inter-personal Barriers
4. Individual Barriers
5. Cross- cultural (Geographic) Barriers
6. Physical / channel / and media Barriers
7. Technological Barriers

8.2.1 Semantic Barriers: Science of meaning - Phonetics science of sound. Semantics – coding /decoding

- Similar Pronunciation but multiple meaning.
- Badly expressed message – incoherence, poor sentence structuring and jargons
- Wrong interpretation - Pandit, raja / Rajah
- Unqualified assumption by sender / receiver
- Technical language / jargon

8.2.2 Organizational Barriers: Interference from relative status and power of participants, incompatible needs and expectations

- Organizational culture – impacts freedom and trust
- Organizational rules and regulations
- Status relationship
- Complexity in organizational structure
- Inadequate facilities and opportunities
- Lack of cooperation between senior and subordinate.

8.2.3 Inter-personal Barriers (Sender and receiver – different economic, educational and status level)

Barrier from Superior

- Shortage of time for employee
- Lack of trust
- Lack of trust for employee's needs and expectations
- Desire to capture authority by retaining information
- Fear of losing power of control
- Bypassing
- Information overload to employees – missing grain from chaff.

Barrier from Subordinate

- Lack of proper channel – how does he convey?
- No interest to communicate
- Lack of cooperation and mutual understanding
- Lack of trust and co-ordination
- Poor social relationship
- Fear of penalty. Individual / Psycho-sociology

8.2.4 Individual / Psycho-sociological Barriers

- Selective Perception – 'I know it syndrome', 'waste of time'
- Status relationship - – monologues by seniors
- Inattention
- Poor retention
- Undue importance of written words
- Defensiveness to a unpleasant message
- Closed minds – lack of background knowledge.
- State of health – lack of alertness.

- Filtering

8.2.5 Cross-cultural / Geographic Barriers

- Language
- Values and norms of behaviour
- Social relationship
- Concept of time
- Concept of space
- Non-verbal communication
- Perception
- National character / basic personality

8.2.6 Physical/Channel/Media barriers

- Distance
- Use electronic gadgets

8.2.7 Technological Barriers

- Lack of knowledge of technology
- Advancement in technology
- Noise
- Fear of lack of security

8.3 Common Barriers - Effective Communication

The use of jargon. Over-complicated, unfamiliar and/or technical terms.

Emotional barriers and taboos. Some people may find it difficult to express their emotions and some topics may be completely 'off-limits' or taboo.

Lack of attention, interest, distractions, or irrelevance to the receiver.

Differences in perception and viewpoint.

Physical disabilities such as hearing problems or speech difficulties.

Physical barriers to non-verbal communication. Not being able to see the non-verbal cues, gestures, posture and general body language can make communication less effective.

Language differences and the difficulty in understanding unfamiliar accents.

Expectations and prejudices which may lead to false assumptions or stereotyping. People often hear what they expect to hear rather than what is actually said and jump to incorrect conclusions.

Cultural differences. The norms of social interaction vary greatly in different cultures, as do the way in which emotions are expressed. For example, the concept of personal space varies between cultures and between different social settings.

8.4 Sender-Oriented Barriers

Badly expressed message:

Some times, the communication process hindered by bad expressions like speaking in angry mood speaking in depressed mood etc.

Rules for overcoming sender-oriented barriers:

When we sent information to other end, the sender would understand the convenience of the receiver particularly language, format, etc.

Plan and clarify ideas:

When something is to be communicated , and if it is to be understood a right way, the sender should have a plan to explain the concept the ideas should be listed in al logical and accepted sequence.

Discuss, collate and pre-plan:

To cultivate the interest among the receiver end the sender should have a knowledge to relate the conceptual ideas in a systematic way.

Create a climate of trust and confidence:

This is very important in process of communication. The sender should have credibility on a area which he wants to convey. This is very important aspect to confidence among the receivers. .

Empathize, win the trust:

In case of abstract concepts, explain the concept with great emphasis , give reasons there for, and thereby one can increase confidence among users.

Time your message carefully keep the when and where in mind:

Explaining the concepts or ideas or theories keeping in mind the environment, time and culture. The same method of communication should not be used for both literates and iliterates or learned people and common man.

Reinforce words with action harmonious words and actions:

In education institutions usage of new words in the language used communication is necessary and help the taught to learn new concepts from time to time.

Communicate efficiently solicit (request) feedback:

It is necessary item to understand the level of communication process is going on. It is useful for the sender to incorporate changes in the process of communication based on feedback from receivers.

8.5 Overcoming Barriers

Fostering good relationships

Purposeful and well directed /focused

Co-ordination between superior and subordinate

Avoid technical language

Feed back to avoid selective perception

Accuracy

Clarity in message

Communication of organizational philosophy

Flat organizational structure

Division of labour

Organizational policies

Reduction of semantic problems

Proper communication channels

Right feed back

8.6 Let Us Sum Up

Communication is necessary to transfer information one end to other. While transmitting communication, a kind of noise and limitations are common. Semantic barriers and psychological barriers should be understood in right perspective, so that the communication process would move smoothly. In interpersonal barriers the issues like economic, education and social status play a crucial role. The technological barriers are very important in contemporary society while transmitting information. To over come the barriers suitable remedies be taken from time to time.

8.7 References and Recommended Books

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4. Chandler. [Daniel](#), "The Transmission Model of Communication", [Aber.ac.uk](#)

Berko. Roy M., et al. 2010: Communicating. 11th ed. Boston, MA: Pearson Education, Inc., 2010. 9-12.

8.8 Assignment

Semantic Barriers.

Technological Barriers.

8.9 Model Examination Questions

Write an account on categories of Barriers.

Discuss the technological barriers in detail.

Unit- 9***Information Literacy*****9.0 Aims and Objects**

In this lesson you will be learning the meaning and concept of Information Literacy and its importance in modern libraries. Many libraries are using electronic information sources and services, in which case the Information Literacy Programme became an important activity. After going through this lesson you will be able to understand the importance of Information Literacy and the areas covered under this programme. The skills required for conducting Information Literacy Programme are also discussed.

Structure

- 9.1 Introduction**
- 9.2 Meaning and Concept of Information Literacy**
- 9.3 Definitions**
- 9.4 Need for Information Literacy**
- 9.5 Skills Required for Information Literacy**
- 9.6 Information for Life Long Learning**
- 9.7 Let Us Sum Up**
- 9.8 References and Recommended Books**
- 9.9 Assignment**
- 9.10 Self Assessment Questions**

9.1 Introduction – ILP

The term “information literacy” was first used by Paul G. Zurkowski, in the year 1974, while submitting a report to the national commission on Libraries and Information Science. Zurkowski used the phrase to describe the “Techniques and skills” known by the information literate “for utilizing the wide range of information tools as well as primary sources in modeling information solutions to their problems”.

A number of efforts were made better to define the concept and its relationship to other skills and forms of literacy. Although other educational goals, including traditional literacy, computer literacy, library skills and critical thinking skills were related to Information Literacy and important foundations for its development. Information Literacy itself was emerging as a distinct skill set and a necessary key to one’s social and economic well being in an increasingly complex information society.

A seminal event in the development of the concept of information literacy was the establishment of the American Library Association’s presidential committee on Information

Literacy and the importance of the concept was outlined in its report in the year 1989. The report defined information literacy as the ability to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information and highlighted information literacy as a skill essential for lifelong learning and the production of an informed and prosperous users. The committee outlined six principal recommendations,

- To reconsider the ways we have organized information institutionally, structured information access and defined information's role in our lives at home in the community and in the work place.
- To promote public awareness of the problems created by information illiteracy.
- To develop a national research agenda related to information and its use
- To ensure the existence of a climate conducive to students becoming information literate.
- To include information literacy concerns in teacher education; and
- To promote public awareness of the relationship between information literacy and the more general goals of literacy, productivity and democracy.

The essence of these recommendations is the libraries have to organize the information in all forms and made them available for access. Further, its impact on social development and research is stressed. In this context the librarians have to play a key role.

The recommendations of the presidential committee led to the creation of the National Forum on Information Literacy, a coalition of more than 90 National and International Organizations.

The American Association of School Librarians and the Association for Educational Communications and Technology(1988)published "Information Power: Building Partnership for Learning, which further established specific goals for information literacy education, defining some nine standards in the categories of "Information Literacy", "Independent Learning" and "Social Responsibility".

The National Forum on Information Literacy(2003), together with UNESCO and the National Commission on Libraries and Information Science, sponsored an International Conference in Prague with the representatives from 23 countries to discuss the importance of information literacy within a global context. The resulting Prague declaration described information literacy as a "Key to social, cultural and economic development of Nations and Communities, institutions and individuals in the 21st century" and declared its acquisition as part of the basic human right of life long learning.

The U.S California Governor Arnold Schwarzenegger (2009) signed an executive order for establishment a California ICT Digital Library Leadership council, which in turn, directed to establish an ICT Digital Literacy Advisory Committee, shall develop an ICT Digital Literacy Policy, to ensure that California residents are digitally literate. The idea of "ICT Digital Literacy" was to use digital technology, communication tools and/or networks to access, manage, integrate, evaluate, create and communicate information in order to develop a knowledge based economy and society.

Information Literacy rose to national consciousness in the U.S. with President Barak Obama's Proclamation designating October 2009 as National Information Literacy Awareness Month. President Obama's Proclamation stated that "Rather than merely possessing data, we must also learn the skills necessary to acquire, collate and evaluate information for any situation. Though we may know how to find the information we need, we must also know how to evaluate it.

9.2 Meaning and Concept of Information Literacy

According to Behrens (1994), by the end of the 1980's information literacy was no longer an embryonic concept. It had been defined with clarity and its realm comprehensively delineated by the identification of the actual skills and knowledge that are required for information handling in an information permeated technologically advanced society. Spitzer and others (1998) Conclude: "As a result of these developments in 1989 the process of defining and refining the term seemed at an end".

The meaning of information literacy by the early 1990's as proposed by the ALA was generally accepted. Information literacy was being considered as part of the wider literacy continuum. Many higher education institutions formed campus wide committees to work towards to include information literacy as a graduation outcome and several groups and individuals explored information literacy. Several attempts were made during 1990's to develop the definition further. Rader (1991) extends the definition adding that information literate people know how to be lifelong learners in an information society and becoming information literate is essential for survival in the future. She stressed that information literate citizens will be prepared to acquire and use information appropriate for any situation, within or beyond the library, locally and globally.

Bruce (1997) emphasized the importance of understanding the way, the concept of information literacy is conceived by information users themselves. She developed seven conceptions of information literacy. According to her definition, Information literacy is:

- The use of Information Technology
- The use of Information Sources
- Executing a Process
- Controlling Information for Retrieval
- Gaining Knowledge
- Extending Knowledge and
- Gaining Wisdom

Doyle and Bruce in 1997 discussed information literacy can be concluded that an information literate person combines the following qualities and abilities.

- Has values which promote information use

- Has knowledge of the world of information
- Recognizes that accurate information is a basis for intelligent decision making.
- Recognizes the need for information
- Formulates questions based on that need.
- Identifies potential and appropriate sources of information
- Develops successful search strategies
- Accesses a wide range of sources of information including computer-based and other technologies
- Evaluates information during all phases of information problem solving
- Organizes information for practical application
- Integrates new information into an existing body of knowledge
- Uses critical thinking in information problem solving
- Approaches information problem solving in a dynamic and reflective manner.
- Engages in independent, self directed learning
- Considers the information needs of other which communicating

Information literacy is the adoption of appropriate information behavior to identify through whatever channel or medium, information well fitted to information needs, leading to wise and ethical use of information in society (CILIP – 2005).

9.3 Definitions

According to American Library Association (1989) “To be information Literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information.”

Association of college and research libraries (2000) defines Information Literacy as it 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”.

Doyle (1992) defined information literacy as, one who

- “recognizes the need for information.
- recognizes that accurate and complete information is the basis for intelligent decision

making.

- identifies potential sources of information.
- develops successful search strategies.
- access the 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”.

Lenox and Walker (1993) also define information literacy by characterizing the information literate person: one who has the analytical and critical skills to formulate research questions and evaluate results and the skills to search for and access a variety of information types in order to meet his/her information need.

Shapiro and Hughes(1996) provide a broader vision in referring to: “a new liberal art that extends from knowing how to use computers and access information to critical reflection on the nature of information itself, its technical infrastructure and its social, cultural and even philosophical context and impact”

The Prague declaration(2003) included a definition of Information Literacy, positioning information literacy within lifelong learning, namely:

Information literacy, which encompasses knowledge of one's information needs and the ability to identify, locate, evaluate, organize and effectively use information to address issues or problems at hand, is a prerequisite for participating effectively in the information society and is part of the basic human right of lifelong learning.

The UK's Chartered Institute of Library and Information Professionals (2005) defined, “Information Literacy is knowing when and why you need information, where to find it and how to evaluate, use and communicate it in an ethical manner”.

The term information literacy (1992) was also added as a descriptor to the ERIC Thesaurus (Spitzer and others 1998). Library literacy is usually defined as the learning of the basic skills of finding information (Lubans 1978) and refers to competence in the use of libraries with a particular emphasis on being able to make informed decision about sources of information. Arp(1990); Rader(1991); Lenox and Walker(1992); Rader and Coorn(1992); Miller(1992); White(1992); Snavelly and Cooper(1997) have discussed the relations between the above mentioned terms.

Hamelink (1976) used the term to refer to the need for the general public and views information literacy as the ability to obtain an individual and independent view of news events. (Behrens (1994); Bawden(2001). In 1979 the Information Industry Association (IIA) designed information literate person as a person who knows the techniques and skills for using information tools in moulding solution to problems. Garfield (1979), Behrens (1994).

9.4 Need for Information Literacy

Today libraries are functioning in hybrid environment. Most of the libraries are providing traditional as well as ICT based services. Libraries process, organize, circulate and disseminate huge information resources they have acquired. Due to the availability of information and communication technology, a facility is made available for creating and putting information in the forms of books and journals in the public domain. For obvious reasons a variety of electronic resources are being appeared and the libraries are acquiring them. This information is equally useful and needed by the users in electronic format such as e-journals, e-books, CD-ROM and other databases need to be brought to the notice of the users and they need to be aware of the role of e-portals, information gateways and also need special skills to be developed for making use of such facilities with maximum benefit. Thus for maximum utilization of such a vast and huge information resources, the Information Literacy Programme (ILP) is the need of the hour. It makes the end users competent enough for retrieving precise and relevant information as per their need.

9.5 Skills Required for Information Literacy

- Knowing when there is a need for information
- Identifying the information, needed in order to address a problem.
- Finding the needed information
- Evaluating the located information.
- Organizing the information.
- Using the Information effectively to address the problem

9.6 Information for Life Long Learning

It is repeatedly stated that information has become a basic resource for every human activity. It is a key player for management, decision-making and in the organizational development. One of the areas where information is a fundamental input is the education that is considered as an essential component for the lifelong learning. Learning cannot bestopped with acquisition of a degree or a diploma; in fact, it enhances the urge for learning and thereby thirst for information persists. The concept of lifelong learning is though difficult to define, but it is a deliberate progression throughout the life of an individual where the initial acquisition of knowledge is reviewed and upgraded to meet the challenges of the ever-changing society. Hence information is essential for lifelong learning.

9.7 Let Us Sum Up

Due to various reasons, the information is now available in electronic format. Almost all the libraries are going for electronic information sources and services for the reasons of easy access and economic factors. These days are dominated by information and communication technology and these facilities are made available to all libraries. Along this, the information requirements of users and their needs are changing from time to time and forced the library professionals to electronic resources where the Information Literacy Programmes are necessary.

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9.9 Assignment

1. Discuss the meaning and concept of Information Literacy.

9.10 Self Assessment Questions

1. Write an account Skills Required for ILP.
2. Define Information Literacy, discuss the essentials of ILP.

Unit- 10**INFORMATION LITERACY MODELS AND STANDARDS****10.0 Aims and Objectives**

In this lesson you will be learning standards and models of Information Literacy. The standards are necessary for ILP's, for its acceptability at large. The information Literacy Models are also discussed. After going through this lesson you will be able to understand the need for Information Literacy Standards and models to be applied based on requirements.

STRUCTURE**10.1 Introduction****10.2 Models of Information Literacy****10.2.1 In marketing, information as****10.2.2 In English, information literacy as****10.2.3 In Chemistry, information literacy as****10.2.4 In Civil Engineering, information literacy as****10.3 Kuhlthau's Model (1993)****10.4 SCONUL Seven Pillar Model of Information Skills****10.5 The Big6 Eisenberg and Berkowitz****10.6 Information Search Process Kuhlthau's (1989)****10.7 Stripling and Pitts Research Model (1988)****10.8 Pathways to Knowledge Information Skills Model Pappas and Tepe (1995)****10.9 Information Literacy –Components****10.10 Information Literacy Standards****10.10.1 Information Literacy Competency Standards for Higher Education by ACRL****10.10.2 ACRL IL Standards -Standard One****10.10.3 ACRL IL Standards -Standard Two****10.10.4 ACRL IL Standards -Standard Three****10.10. 5 ACRL IL Standards -Standard Four****10.10. 6 ACRL IL Standards -Standard Five****10.11 IFLA Information Literacy Standards****10.11.1 Access**

10.11.2 Evaluation**10.11.3 Use****10.12 Let Us Sum Up****10.13 References and Recommended Books****10.14 Assignment****10.15 Self Assessment Questions****10.1 Introduction**

The nature, content and the structure of information literacy and its related programs have been extensively debated in the literature. Notwithstanding such extensive discussions on the term as well as the concept, there is some kind of agreement on what information literate person should like.

At the same time, the thrust of many information literacy programs is on skill development in the area of bibliographic instructions. Information literate person is one who experiences with information literacy in a wide range and is able to determine the nature of experience that is necessary to draw upon in new situations.

The information literacy programs are confined to supplying with bibliographic information and developing necessary skills to make use of electronic resources. In this way the user would learn some basics of information literacy. This kind of skills may not suitable to meet the changes occurring in information society. So, there is a need for the users of libraries to undergo a kind of process which will establish a link between new information and existing knowledge. This situation encourages to offer a course in information literacy for the users through which they can learn the skills in using the latest information resources particularly electronic resources. In this context development of IL Standards and Models became necessary.

10.2 Models of Information Literacy

Several models of information literacy were proposed in 1990's.

- Information problem solving model.
- Information meta course
- Information seeking process model
- Information seeking model.

The most frequently mentioned model is that of Christine Bruce (2000). She used the phenomena - graphic method (involving in-depth interviews focusing on a few key questions) to identify seven different ways of experiencing information literacy: "Seven faces of information literacy".

10.2.1 In marketing, information as

- Ascending information quickly and easily to be aware of what's going on;
- Using IT to work with information;
- Possessing a set of information skills and applying them to the task in hand
- Using information literacy to solve real world problems;
- Becoming a critical thinker; and
- Becoming a confident, independent practitioner.

10.2.2 In English, information literacy as

Accessing and retrieving textual information;

- Using IT to access and retrieve information;
- Possessing basic research skills and knowing how and when to use them;
and
- Becoming confident, autonomous learners and critical thinkers.

10.2.3 In Chemistry, information literacy as:

- Accessing and searching chemical information;
- Mastering a chemist's information skill set;
- An essential part of the constitution, creation and communication of knowledge.

10.2.4 In Civil Engineering, information literacy as:

- Accessing and retrieving data and information;
- Applying and using information;
- Analysis and sense making;
- Creating and incorporating information into, a professional knowledge base.

Many models of information seeking have been developed and these models attempts to describe an individual's strategy as they search for information requirements of individuals. The following are some important models that have been developed in the field of IL as:

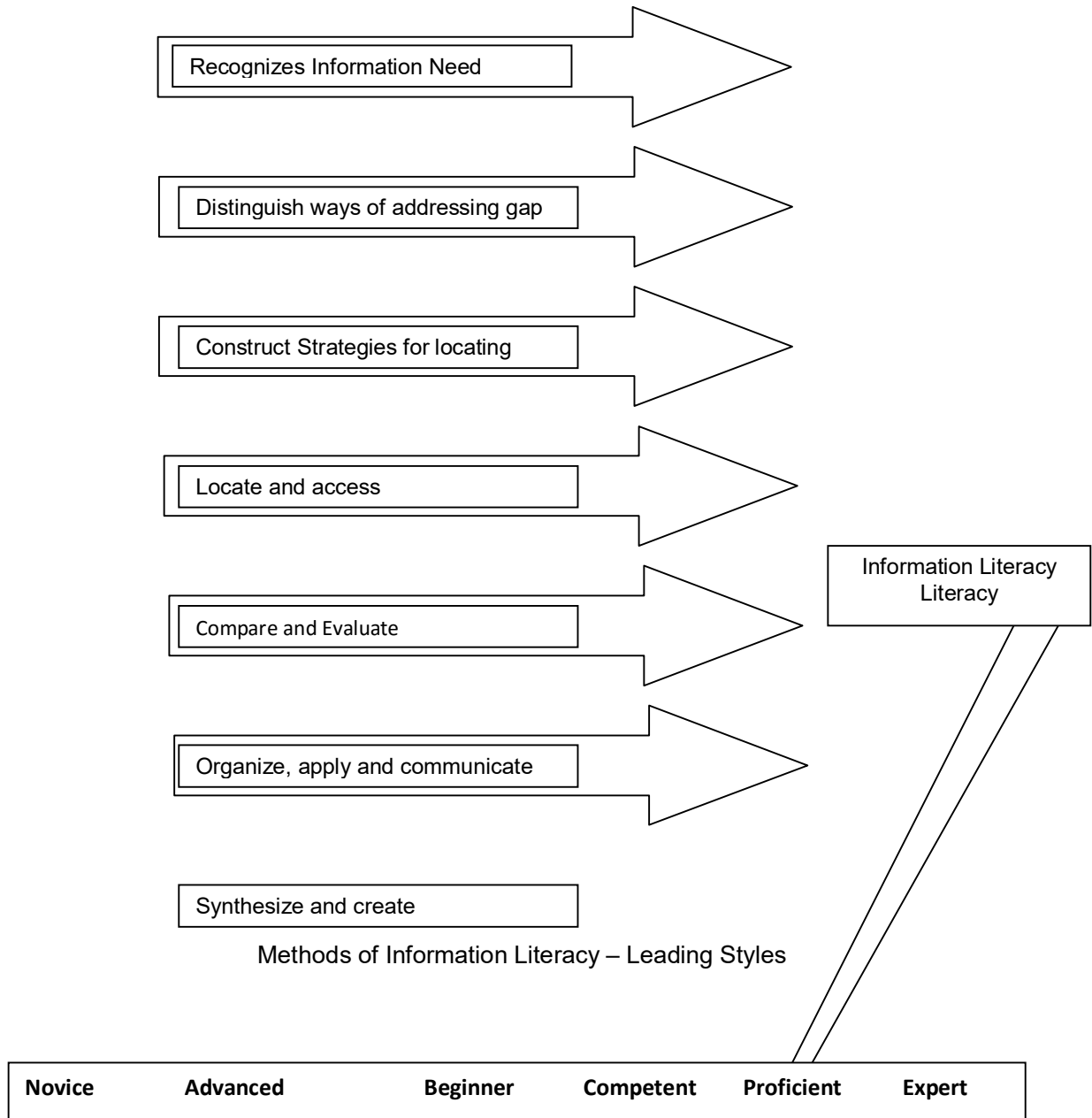
10.3 Kuhlthau's Model (1993)

Kuhlthau's states the intermediaries such as librarians can help the individual to define their information problem and goals during reference interviews. Kuhlthau's zone of intervention describes the point at which it is appropriate for librarians to intervene in the individual's information search process.

Initiation → Selection → Exploration → Collection → Presentation → Assessment

10.4 SCONUL Seven Pillar Model of Information Skills (1999)

The Society of College, National and University Libraries (SCONUL) Task Force on Information Skills was first convened in early 1990's. As a result of increased awareness of information skills, training is an important strategic issue in university and college libraries. IL should include the notion of an individual who is able to contribute to the synthesis of existing information, further to develop ideas building on that synthesis and ultimately create new knowledge in a particular subject discipline.



10.5 The Big6 Eisenberg and Berkowitz, (1990)

The big 6 Information Literacy model was developed by Mike Eisenberg, Professor of Information Science at Syracuse University and Bob Berkowitz, a practicing library media professional in Syracuse, New York.

It is considered among IL models, as one of the most well known models in the field and is being taught widely. For students, it is a guide for their research especially, at the K12 level. The 6 steps of this IL model are: task definition, information seeking strategies, location and access, use of information, synthesis and evaluation (www.big6.com).

10.6 Information Search Process Kuhlthau's (1989)

Carol Kuhlthau Professor of Library and Information Science at Rutgers University in New Jersey developed this model. This model shows how user approaches the research process and how a user's confidence increases at each stage.

The stages of IL model include initiation, selection, exploration, formulation, collection presentation and assessment.

10.7 Stripling and Pitts Research Model (1988)

This model guides users through the stages for a development of a research paper. The 10 steps begin with choosing a topic and end with creating and presenting the final topic. Thus it helps in research activity of users.

10.8 Pathways to Knowledge Information Skills Model Pappas and Tepe, (1995)

Teaming with the Follett Software Company, Professor Marjorie Pappas and Follett's Director of Curriculum Ann Tepe developed and elaborated the model of information literacy completely with recommended strategies, forms of expression and also methods of teaching and learning embedded in the model. The stages in this model include appreciation, pre-search, search, interpretation, communication and evaluation.

David Loertscher and Balance Woolls, both professors in the School of Information and Library Science at San Jose State University revived the IL research and in turn they wrote a very informative article updating the research regarding models information literacy which is online at:

10.9 Information Literacy –Components

A close relation is there between information literacy and communication technology. As a result the scope and area of information literacy is broadened. The following are some of the areas:

- Traditional : Traditional Literacy is the ability to read and write.

- Computer Literacy : The ability to use a computer and its software to accomplish practical tasks.
- Visual Literacy : The ability, though knowledge of the basic visual elements, to understand the meaning and components of the image.
- Media Literacy : the ability to comprehend and create images in a variety of media effectively.
- Digital Literacy : The ability to assess, collect, organizes; evaluate digital resources and services in an effective way.
- Tool Literacy : The ability to understand and use the practical and conceptual tools of current IT relevant to education and the areas of work and professional life that the individual expects to inhabit.
- Resources Literacy : The ability to understand the form, format, location and access methods of information resources, especially daily expanding networked information resources.
- Social Structural Literacy : The ability to know that now information is socially situated and produced.
- Research Literacy : The ability to understand and use the IT-based tools relevant to the work of today's researcher and scholar.
- Publishing Literacy : The ability to format and publish research and ideas electronically, in textual and multimedia forms (including via [www](#), [electronic](#) mail and distribution lists and CD-ROMs).
- Emerging Technology Literacy: The ability to on-goingly adopt to understand, evaluate and make use of IT, so as to be a prisoner of prior tools and resources and to make intelligent decisions about the adoption of new ones.
- Critical Literacy : The ability to evaluate critically the intellectual, human and social strengths and weaknesses, Potentials and limits, benefits and costs of information technologies.
- Web Literacy : The ability to access, search, utilize communicate and create information content on World Wide Web

10.10 Information Literacy Standards

The Information Literacy Standards for higher education approved by the ACRL and are translated for the benefit of other countries. For developments of standards for IL, the SCONUL model is considered by many countries.

There are some well known standards:

1. Information Literacy Standards for Student Learning published by the ASSL
2. IL Standards published by IFLA
3. ISTE's National Educational Technology Standards (NETS)

10.10.1 Information Literacy Competency Standards for Higher Education by ACRL

The ACRL standards are very popular and widely accepted and tested around the world. It includes the expected outcomes under each performance indicator, which are developed with the purpose of providing guidance in the development, assessment methods, instruments and strategies for measuring student's learning outcomes. These standards can be used to assess the IL skills of teachers, librarians etc. The standards focus upon the needs of students in higher education at all levels. The standards also list a range of outcomes for assessing student progress toward information literacy. In addition to assessing all students' on basic information literacy skills, faculty and librarians should also work together to develop assessment instruments and strategies in the context of particular disciplines, as information literacy manifests itself in the specific understanding of the knowledge creation, scholarly activity and publication process found in those disciplines. In implementing these standards, institutions need to recognize that different levels of thinking skills are associated with various learning outcomes--and therefore different instruments or methods are essential to assess those outcomes.

10.10.2 ACRL IL Standards -Standard One

The information literate student determines the nature and extent of the information needed.

Performance Indicators

- The information literate student defines and articulates the need for information
- The information literate student identifies a variety of types and formats of potential sources for information
- The information literate student considers the costs and benefits of acquiring the needed information
- The information literate student re-evaluates the nature and extent of the information need

10.10.3 ACRL IL Standards -Standard Two

The information literate student accesses needed information effectively and efficiently.

Performance Indicators

- The information literate student selects the most appropriate investigative methods or information retrieval systems for accessing the needed information.
- The information literate student constructs and implements effectively designed search strategies.
- The information literate student retrieves information online or in person using a variety of methods.
- The information literate student refines the search strategy if necessary.
- The information literate student extracts, records and manages the information and its sources.

10.10.4 ACRL IL Standards -Standard Three

The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.

Performance Indicators

- The information literate student summarizes the main ideas to be extracted from the information gathered.
- The information literate student articulates and applies initial criteria for evaluating both the information and its sources.
- The information literate student synthesizes main ideas to construct new concepts.
- The information literacy student compares new knowledge with prior knowledge to determine the value added, contradictions or other unique characteristics of the information.
- The information literate student determines whether the new knowledge has an impact on the individual's value system and takes steps to reconcile differences.
- The information literate student validates understanding and interpretation of the information through discourse with other individuals, subject-area experts and/or practitioners.

- The information literate student determines whether the initial query should be revised.

10.10. 5 ACRL IL Standards- Standard Four

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

Performance Indicator

- The information literate student applies new and prior information to the planning and creation of a particular product or performance.
- The information literate student revises the development process for the product or performance.
- The information literate student communicates the product or performance effectively to others.

10.10. 6 ACRL IL Standards- Standard Five

The information literate student understands many of the economic, legal and social issues surrounding the accesses and use of information to use information ethically and legally.

Performance Indicators

- The information literate student understands many of the ethical, legal and socio-economic issues surrounding information and information technology.
- The information literate student follows laws, regulations, institutional policies and etiquette related to the access and use of information resources.
- The information literate student acknowledges the use of information sources in communicating the product or performance.

10.11 IFLA Information Literacy Standards

The IFLA standards are grouped under the three basic IL components.

10.11.1 Access- The user access information effectively and efficiently.

*Definition and articulation of need

- Defines or recognizes the need for information
- Decides to do something to find the information
- Express and defines the information need

- Initiates the search process

* Location of Information

- Identifies and evaluate potential sources of information
- Develop search strategies
- Access the selected information sources
- Selects and retrieves the located information

10.11.2 Evaluation- The user evaluates information critically and competently

- Assessment of information
- Analyses and examines, extracting information
- Generalizes and interprets information
- Selects and Synthesizes information
- Evaluate accuracy and relevance of the retrieved information

* Organization of information

- Arrange and categorized information
- Groups and organizes the retrieved information
- Determines which is the best and most useful information

10.11.3 Use - The user applies/ uses information accurately and creatively

Use of Information

- Finds new ways to communicate, present and use information
- Applies the retrieved information
- Learn for personal knowledge
- Presents the information product
- Communication and ethical use of information
- Understands ethical use of information
- Respects the legal use of information

- Communicates the learning product with acknowledgement of intellectual property
- Uses the relevant acknowledgement style standards

10.12 Let Us Sum Up

As the electronic resources being used continuously in many libraries, a kind of standards would help to users to get benefit from these electronic resources. Several models are available in IL and suitable model be accepted and use in libraries according to their requirements in order to satisfy the information needs of users.

10.13 References and Recommended Books

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Homann, B: Difficulties and new approaches in user education in Germany. 2001. In proceedings of the 67th IFLA council and general conference, Aug 16-25, 2005, The Hague: International Federation of library Association, 2001. <http://www.ifla.org/iv/ifla67/papers/072-126epdf>

10.14 Assignment

SCONUL Seven Pillar Model of Information Literacy.

10.15 Model Examination Questions

1. Discuss the models of Information Literacy.
2. Discuss the components of Information Literacy.

Unit- 11

Information Society

11 .0 Aims and Objectives

In this lesson, you will be learning the idea of information society and growth of information society. The characteristics of information society are also discussed. After going through this lesson, you will be able to understand the importance of information society and its nature.

Structure

- 11 .1 Introduction**
- 11.2 Definition**
- 11.3 The growth of Information in Society**
- 11.4 Development of the Information society model**
- 11.5 Characteristics of Information Society**
- 11.6 Second and third nature**
- 11.7 Sociological Uses**
- 11.8 Intellectual Property Considerations**
- 11.9 Let Us Sum Up**
- 11.10 References and Recommended Books**
- 11.11 Assignment**
- 11.12 Model Examination Questions**

11 .1 Introduction

An information society is a society where the creation, distribution, uses, integration and manipulation of information is a significant economic, political, and cultural activity. The aim of the information society is to gain competitive advantage internationally, through using information technology (IT) in a creative and productive way. The knowledge economy is its economic counterpart, whereby wealth is created through the economic exploitation of understanding. People who have the means to partake in this form of society are sometimes called digital citizens. This is one of many dozen labels that have been identified to suggest that humans are entering a new phase of society.

The markers of this rapid change may be technological, economic, occupational, spatial, cultural, or some combination of all of these. Information society is seen as the successor to industrial society. Closely related concepts are the post-industrial society (Daniel Bell), post-fordism, post-modern society, knowledge society, telematic society, Information Revolution, liquid modernity, and network society (Manuel Castells).

11.2 Definition

There is currently no universally accepted concept of what exactly can be termed information society and what shall rather not so be termed. Most of the theoreticians agree that a transformation can be seen that started somewhere between the 1970s and today and is changing, the way societies work fundamentally.

In 2005, governments reaffirmed their dedication to the foundations of the Information Society in the Tunis Commitment and outlined the basis for implementation and follow-up in the Tunis Agenda for the Information Society. In particular, the Tunis Agenda addresses the issues of financing of ICTs for development and Internet governance that could not be resolved in the first phase.

Some people, such as Antonio Negri, characterize the information society as one in which people do immaterial labour. By this, they appear to refer to the production of knowledge or cultural artifacts. One problem with this model is that it ignores the material and essentially industrial basis of the society. However it does point to a problem for workers, namely how many creative people does this society need to function? For example, it may be that you only need a few star performers, rather than a plethora of non-celebrities, as the work of those performers can be easily distributed, forcing all secondary players to the bottom of the market. It is now common for publishers to promote only their best selling authors and to try to avoid the rest—even if they still sell steadily. Films are becoming more and more judged, in terms of distribution, by their first weekend's performance, in many cases cutting out opportunity for word-of-mouth development.

Considering that metaphors and technologies of information move forward in a reciprocal relationship, we can describe some societies (especially the Japanese society) as an information society because we think of it as such as letters.

Technological: The most common definition of the information society emphasizes spectacular technological innovation. The key idea is that breakthroughs in information processing, storage, and transmission have led to the application of information technologies (IT) in virtually all corners of society. The major concern is the astonishing reductions in the costs of computers,

their prodigious increases in power, and their consequent application anywhere and everywhere.

11.3 The growth of Information in Society

The growth of technologically mediated information has been quantified in different ways, including society's technological capacity to store information, to communicate information, and to compute information. It is estimated that, the world's technological capacity to store information grew from 2.6 exabytes in 1986, which is the informational equivalent to less than one 730-MBCD-ROM per person in 1986 (539 MB per person), to 295 (optimally compressed) exabytes in 2007. This is the informational equivalent of 60 CD-ROM per person in 2007 and represents a sustained annual growth rate of some 25%. The world's combined effective capacity to exchange information through two-way telecommunication networks was 281 petabytes of information in 1986, 471 petabytes in 1993, 2.2 exabytes in 2000, and 65 exabytes in 2007, which is the informational equivalent of 6 newspapers per person per day in 2007. The world's technological capacity to compute information with humanly guided general-purpose computers grew from 3.0×10^8 MIPS in 1986, to 6.4×10^{12} MIPS in 2007, experiencing the fastest growth rate of over 60% per year during the last two decades.

James Beniger describes the necessity of information in modern society in the following way: "The need for sharply increased control that resulted from the industrialization of material processes through application of inanimate sources of energy probably accounts for the rapid development of automatic feedback technology in the early industrial period (1740-1830)" "Even with enhanced feedback control, industry could not have developed without the enhanced means to process matter and energy, not only as inputs of the raw materials of production but also as outputs distributed to final consumption."

11.4 Development of the Information society model

One of the first people to develop the concept of the information society was the economist Fritz Machlup. In 1933, Fritz Machlup began studying the effect of patents on research. His work culminated in the study *The production and distribution of knowledge in the United States* in 1962. This book was widely regarded and was eventually translated into Russian and Japanese. The Japanese have also studied the information society.

The issues of technologies and their role in contemporary society have been discussed in the scientific literature using a range of labels and concepts. This section introduces some of them. Ideas of a knowledge or information economy, post-industrial society, postmodern society, network society, the information revolution, informational capitalism, network capitalism, and the like, have been debated over the last several decades.

Fritz Machlup (1962) introduced the concept of the knowledge industry. He distinguished five sectors of the knowledge sector: education, research and development, mass media, information technologies, information services. Based on this categorization, he calculated that in 1959 29% per cent of the GNP in the USA had been produced in knowledge industries.

Peter Drucker has argued that there is a transition from an economy based on material goods to one based on knowledge. Marc Porat distinguishes a primary (information goods and services that are directly used in the production, distribution or processing of information) and a secondary sector (information services produced for internal consumption by government and

non-information firms) of the information economy. Porat uses the total value added by the primary and secondary information sector to the GNP as an indicator for the information economy. The OECD has employed Porat's definition for calculating the share of the information economy in the total economy. Based on such indicators, the information society has been defined as a society where more than half of the GNP is produced and more than half of the employees are active in the information economy.

For Daniel Bell the number of employees producing services and information is an indicator for the informational character of a society. "A post-industrial society is based on services. (...) What counts is not raw muscle power, or energy, but information. (...) A post industrial society is one in which the majority of those employed are not involved in the production of tangible goods"

Alain Touraine already spoke in 1971 of the post-industrial society. "The passage to postindustrial society takes place when investment results in the production of symbolic goods that modify values, needs, representations, far more than in the production of material goods or even of 'services'. Industrial society had transformed the means of production: post-industrial society changes the ends of production, that is, culture. (...) The decisive point here is that in postindustrial society all of the economic system is the object of intervention of society upon itself. That is why we can call it the programmed society, because this phrase captures its capacity to create models of management, production, organization, distribution, and consumption, so that such a society appears, at all its functional levels, as the product of an action exercised by the society itself, and not as the outcome of natural laws or cultural specificities". In the programmed society also the area of cultural reproduction including aspects such as information, consumption, health, research, education would be industrialized. That modern society is increasing its capacity to act upon itself means for Touraine that society is reinvesting ever larger parts of production and so produces and transforms itself. This makes Touraine's concept substantially different from that of Daniel Bell who focused on the capacity to process and generate information for efficient society functioning.

Jean-François Lyotard has argued that "knowledge has become the principle force of production over the last few decades". Knowledge would be transformed into a commodity. Lyotard says that postindustrial society makes knowledge accessible to the layman because knowledge and information technologies would diffuse into society and break up Grand Narratives of centralized structures and groups. Lyotard denotes these changing circumstances as postmodern condition or postmodern society.

Similarly to Bell, Peter Otto and Philipp Sonntag say that an information society is a society where the majority of employees work in information jobs, i.e. they have to deal more with information, signals, symbols, and images than with energy and matter. Radovan Richta argues that society has been transformed into a scientific civilization based on services, education, and creative activities. This transformation would be the result of a scientific-technological transformation based on technological progress and the increasing importance of computer technology. Science and technology would become immediate forces of production.

Nico Stehr says that in the knowledge society a majority of jobs involves working with knowledge. "Contemporary society may be described as a knowledge society based on the extensive penetration of all its spheres of life and institutions by scientific and technological knowledge". For Stehr, knowledge is a capacity for social action. Science would become an immediate productive force, knowledge would no longer be primarily embodied in machines, but already appropriated nature that represents knowledge would be rearranged according to

certain designs and programs. For Stehr, the economy of a knowledge society is largely driven not by material inputs, but by symbolic or knowledge-based inputs, there would be a large number of professions that involve working with knowledge, and a declining number of jobs that demand low cognitive skills as well as in manufacturing

Also Alvin Toffler argues that knowledge is the central resource in the economy of the information society: "In a Third Wave economy, the central resource – a single word broadly encompassing data, information, images, symbols, culture, ideology, and values – is actionable knowledge".

At the end of the twentieth century, the concept of the network society gained importance in information society theory. For Manuel Castells, network logic is besides information, pervasiveness, flexibility, and convergence a central feature of the information technology paradigm. "One of the key features of informational society is the networking logic of its basic structure, which explains the use of the concept of 'network society'". "As an historical trend, dominant functions and processes in the Information Age are increasingly organized around networks. Networks constitute the new social morphology of our societies, and the diffusion of networking logic substantially modifies the operation and outcomes in processes of production, experience, power, and culture". For Castells the network society is the result of informationalism, a new technological paradigm. Jan Van Dijk defines the network society as a "social formation with an infrastructure of social and media networks enabling its prime mode of organization at all levels. Increasingly, these networks link all units or parts of this formation. For Van Dijk networks have become the nervous system of society, whereas Castells links the concept of the network society to capitalist transformation, Van Dijk sees it as the logical result of the increasing widening and thickening of networks in nature and society. Darin Barney uses the term for characterizing societies that exhibit two fundamental characteristics: "The first is the presence in those societies of sophisticated – almost exclusively digital – technologies of networked communication and information management/distribution, technologies which form the basic infrastructure mediating an increasing array of social, political and economic practices. The second, arguably more intriguing, characteristic of network societies is the reproduction and institutionalization throughout (and between) those societies of networks as the basic form of human organization and relationship across a wide range of social, political and economic configurations and associations".

The major critique of concepts such as information society, knowledge society, network society, postmodern society, postindustrial society, etc. that has mainly been voiced by critical scholars is that they create the impression that we have entered a completely new type of society. "If there is just more information then it is hard to understand why anyone should suggest that we have before us something radically new". Critics such as Frank Webster argue that these approaches stress discontinuity, as if contemporary society had nothing in common with society as it was 100 or 150 years ago. Such assumptions would have ideological character because they would fit with the view that we can do nothing about change and have to adopt to existing political realities. These critics argue that contemporary society first of all is still a capitalist society oriented towards accumulating economic, political, and cultural capital. They acknowledge that information society theories stress some important new qualities of society, but charge that they fail to show that these are attributes of overall capitalist structures. Critics such as Webster insist on the continuities that characterize change. In this way Webster distinguishes between different epochs of capitalism: laissez-faire capitalism of the 19th century, corporate capitalism in the 20th century, and informational capitalism for the 21st century.

For describing contemporary society based on dialectic of the old and the new, continuity and discontinuity, other critical scholars have suggested several terms like:

- transnational network capitalism, transnational informational capitalism: "Computer networks are the technological foundation that has allowed the emergence of global network capitalism, that is, regimes of accumulation, regulation and discipline that are helping to increasingly base the accumulation of economic, political and cultural capital on transnational network organizations that make use of cyberspace and other new technologies for global coordination and communication. The need to find new strategies for executing corporate and political domination has resulted in a restructuration of capitalism that is characterized by the emergence of transnational, networked spaces in the economic, political and cultural system and has been mediated by cyberspace as a tool of global coordination and communication. Economic, political and cultural space have been restructured; they have become more fluid and dynamic, have enlarged their borders to a transnational scale, and handle the inclusion and exclusion of nodes in flexible ways. These networks are complex due to the high number of nodes (individuals, enterprises, teams, political actors, etc.) that can be involved and the high speed at which a high number of resources is produced and transported within them. But global network capitalism is based on structural inequalities; it is made up of segmented spaces in which central hubs (transnational corporations, certain political actors, regions, countries, Western lifestyles, and worldviews) centralize the production, control and flows of economic, political, and cultural capital (property, power, definition capacities). This segmentation is an expression of the overall competitive character of contemporary society."
- digital capitalism "networks are directly generalizing the social and cultural range of the capitalist economy as never before"
- virtual capitalism: the "combination of marketing and the new information technology will enable certain firms to obtain higher profit margins and larger market shares, and will thereby promote greater concentration and centralization of capital"
- high-tech capitalism or informatic capitalism– to focus on the computer as a guiding technology that has transformed the productive forces of capitalism and has enabled a globalized economy.

Manuel Castells advocates informationalism as a new technological paradigm characterized by "information generation, processing and transmission" that have become "the fundamental sources of productivity and power". Castells has added to theories of the information society the idea that in contemporary society dominant functions and processes are increasingly organized around networks that constitute the new social morphology of society. Nicholas Garnham is critical of Castells and argues that the latter's account is technologically determinist because Castells points out that his approach is based on dialectic of technology and society in which technology embodies society and society uses technology. But Castells also makes clear that the rise of a new "mode of development" is shaped by capitalist production, i.e. by society, which implies that technology isn't the only driving force of society.

Antonio Negri and Michael Hardt argue that contemporary society is an Empire that is characterized by a singular global logic of capitalist domination that is based on immaterial labour. With the concept of immaterial labour Negri and Hardt introduce ideas of information society discourse into their Marxist account of contemporary capitalism. Immaterial labour would

be labour "that creates immaterial products, such as knowledge, information, communication, a relationship, or an emotional response"), or services, cultural products, knowledge. There would be two forms: intellectual labour that produces ideas, symbols, codes, texts, linguistic figures, images, etc.; and affective labour that produces and manipulates affects such as a feeling of ease, well-being, satisfaction, excitement, passion, joy, sadness, etc.

Overall, neo-Marxist accounts of the information society have in common that they stress that knowledge, information technologies, and computer networks have played a role in the restructuring and globalization of capitalism and the emergence of a flexible regime of accumulation. They warn that new technologies are embedded into societal antagonisms that cause structural unemployment, rising poverty, social exclusion, the deregulation of the welfare state and of labour rights, the lowering of wages, welfare, etc.

Concepts such as knowledge society, information society, network society, informational capitalism, postindustrial society, transnational network capitalism, postmodern society, etc. show that there is a vivid discussion in contemporary sociology on the character of contemporary society and the role that technologies, information, communication, and co-operation play in it. Information society theory discusses the role of information and information technology in society, the question which key concepts shall be used for characterizing contemporary society, and how to define such concepts. It has become a specific branch of contemporary sociology.

11.5 Characteristics of Information Society

Information societies have three main characteristics.

First, information is used as an economic resource. Organizations make greater use of information to increase their efficiency, to stimulate innovation and to increase their effectiveness and competitive position, often through improvements in the quality of the goods and services that they produce. There is also a trend towards the development of more information-intensive organizations that add greater amounts of value and thus benefit a country's overall economy.

Secondly, it is possible to identify greater use of information among the general public. People use information more intensively in their activities as consumers: to inform their choices between different products, to explore their entitlements to public services, and to take greater control over their own lives. They also use information as citizens to exercise their civil rights and responsibilities. In addition, information systems are being developed that will greatly extend public access to educational and cultural provision.

The third characteristic of information societies is the development of an information sector within the economy. The function of the information sector is to satisfy the general demand for information facilities and services. A significant part of the sector is concerned with the technological infrastructure: the networks of telecommunications and computers. Increasingly, however, the necessity is also being recognized to develop the industry generating the information that flows around the networks: the information-content providers. In nearly all information societies, this information sector is growing much faster than the overall economy. The International Telecommunications Union (ITU) estimates that in 1994 the global information sector grew by over 5% while the overall world economy grew by less than 3%. The creation of individual information societies is taking place within a much greater, international

process of change. Partly, this is because of the developing information systems are global or at least inter-national level, in their reach: satellite broadcasting systems do not recognize national boundaries; telecommunication networks provide connections between countries and continents, while the Internet is perhaps the ultimate example of a global system.

Both developed and developing countries are being transformed into information societies. Most of them are concerned to use information to improve their relative competitiveness or at least, to retain their position in an increasingly competitive global market. As part of this, countries of all kinds, from Australia to Zimbabwe, are actively developing their local information industries so that they can participate in the growing international market for information. But it goes beyond international trade. The development of information societies represents a series of attempts to achieve more general economic and social advance.

11.6 Second and third nature

As mentioned earlier an information society is the means of getting information from one place to another. As technology has become more advanced over a period and has the way we have adapted in sharing this information with each other.

"Second nature" refers a group of experiences that get made over by culture. They then get remade into something else that can then take on a new meaning. As a society, we transform this process so it becomes something natural to us, i.e. second nature. So, by following a particular pattern created by culture we are able to recognise how we use and move information in different ways. From sharing information via different time zones (such as talking online) to information ending up in a different location (sending a letter overseas) this has all become a habitual process that we as a society take it for granted.

However, through the process of sharing information vectors have enabled us to spread information even further. Through the use of these vectors information is able to move and then separate from the initial things that enabled them to move. From here, something called "third nature" has developed. An extension of second nature, third nature is in control of second nature. It expands on what second nature is limited by. It has the ability to mould information in new and different ways. So, third nature is able to 'speed up, proliferate, divide, mutate, and beam in on us from else where. It aims to create a balance between the boundaries of space and time (see second nature). This can be seen through the telegraph, it was the first successful technology that could send and receive information faster than a human being could move an object. As a result different vectors of people have the ability to not only shape culture but create new possibilities that will ultimately shape society.

Therefore, through the use of second nature and third nature society is able to use and explore new vectors of possibility where information can be moulded to create new forms of interaction.

11.7 Sociological Uses

In sociology, *informational society* refers to a post-modern type of society. Theoreticians like Ulrich Beck, Anthony Giddens and Manuel Castells argue that since the 1970s a transformation from industrial society to informational society has happened on a global scale.

As steam power was the technology standing behind industrial society, so information technology is seen as the catalyst for the changes in work organisation, societal structure and politics occurring in the late 20th century.

11.8 Intellectual Property Considerations

One of the central paradoxes of the information society is that it makes information easily reproducible, leading to a variety of freedom/control problems relating to intellectual property. Essentially, business and capital, whose place becomes that of producing and selling information and knowledge, seems to require control over this new resource so that it can effectively be managed and sold as the basis of the information economy. However, such control can prove to be both technically and socially problematic. Technically because copy protection is often easily circumvented and socially *rejected* because the users and citizens of the information society can prove to be unwilling to accept such absolute co-modification of the facts and information that compose their environment.

Responses to this concern range from the Digital Millennium Copyright Act in the United States which make copy protection circumvention illegal, to the free software, open source and copyleft movements, which seek to encourage and disseminate the "freedom" of various information products

Caveat: Information society is often used by politicians meaning something like "we all do internet now"; the sociological term information society (or informational society) has some deeper implications about change of societal structure.

11.9 Let Us Sum Up

Information consider as basic source for development of society. Information transfer is necessary following certain guidelines. Due to the availability of information technology, the transfer of information became easy and simple. For prosperity of any country ,the information should be made available to the ultimate user.

11.10 References and Recommended Books

<http://www.unesco.org/webworld/wirerpt/wirenglish/chap20.pdf>

<http://www.artefaktum.hu/it/Webster.htm>

11.11 Assignment

Mention the Characteristics of Information Society.

11.12 Self Assessment Questions

Write an account on information society model.

Unit- 12**KNOWLEDGE SOCIETY****12 .0 Aims and Objectives**

In this lesson, you will be learning the knowledge society and its importance in the spread of information and knowledge among people. The issues involved in knowledge society are stated. After going through this lesson you will be able to understand the role of information and communication technology in the creation of dissemination of knowledge. Issues like politics, education and society with their relations with knowledge society are discussed.

STRUCTURE**12 .1 Introduction****12.2 Definition****12.3 Framework of Knowledge****12.4 Information and Communication Technology****12.5 Social Theory****12.6 Politics****12.7 Education****12.8 Let Us Sum Up****12.9 References and Recommended Books****12.10 Assignment****12.11 Model Examination Questions****12 .1 Introduction**

The knowledge society generates, processes, shares and makes available to all members that may be used to improve the human conditions. A knowledge society differs from an information society that the former serves to transform information into resources that allow society to take effective action while the latter only creates and disseminates the raw data. The capacity to gather and analyze information has existed throughout human history. However, the idea of the present-day knowledge society is based on the vast increase in data creation and information dissemination that results from the innovation of information technologies. The UNESCO World Report addresses the definition, content and future of knowledge societies.

The emergence of the knowledge society, building on the pervasive influence of modern information and communication technologies, is bringing about a fundamental reshaping of the global economy. Its significance goes well beyond the hyping of the Internet. What is underway is a transformation of our economy and society.

Knowledge has always been a factor of production, and a driver of economic and social development. Earlier economies depended, for example, on knowledge about how to farm, how to build and how to manufacture. However, the capacity to manipulate, store and transmit large quantities of information cheaply has increased at a staggering rate over recent years.

The digitisation of information and the associated pervasiveness of the Internet are facilitating a new intensity in the application of knowledge to economic activity, to the extent that it has become the predominant factor in the creation of wealth. As much as 70 to 80 percent of economic growth is now said to be due to new and better knowledge. Information and communication technologies (ICTs) are also facilitating a rapid globalisation of economic activity.

In an increasing global economy, where knowledge about how to excel competitively and information about who excels are both responsible for the effective creation, use and dissemination of knowledge. This is the key to success and sustainable economic and social development that benefits us. Innovation, which fuels new job creation and economic growth, is quickly becoming the key factor in global competitiveness. Innovation fundamentally means coming up with new ideas about how to do things better or faster.

It is about making a product or offering a service that no one had thought of before. And it is about putting new ideas to work in enterprise and having a skilled work force that can use those new ideas. It is a further feature of the knowledge economy that it increasingly relies on the diffusion and use of information and knowledge, as well as its creation.

The success of enterprises, and of national economies, becomes increasingly dependent on the information infrastructure that is necessary for the gathering and utilisation of knowledge. The importance of broadband telecommunications infrastructure in this context must be recognised as no less significant than the importance of electricity to 20th century industrial development.

Knowledge has become the key resource. Creating value is about creating new knowledge and capturing its value. The most important property is now intellectual property, not physical property. And it is the hearts and minds of people, rather than traditional labour, that are essential to growth and prosperity. Workers at all levels in the 21st century knowledge society will need to be lifelong learners, adapting continuously to changed opportunities, work practices, business models and forms of economic and social organisation.

12.2 Definition

The “Knowledge society” is an extract taken from Abdul Kalam’s popular and famous book “Ignited Minds”. He tells that poverty can be rooted out by striking a balance between the past heritage and present day knowledge. He believes that India can reach the pinnacle and glory by following certain principles and applying modern technology.

Knowledge has always been the prime mover of prosperity and power. India is a land of knowledge and it must rediscover itself. The foreign invasions and the colonial rule weakened

India considerably. Knowledge has many forms and it is available at many places. It is acquired through education, information, intelligence and experience. It is manifested in artists, craftsmen, hakims, philosophers and saints. It plays a vital role.

India has been a country of great ancient heritage and culture. Knowledge acquisition has been thrust throughout the world. In addition, in Indian culture there has been the guru-shishya tradition and sharing of its knowledge even with the foreign travellers and students.

During the last century the world has been changed from being an agriculture society to an industrial society. Thus, Technology played a crucial role. In 21st century knowledge has become the primary production resource instead of capital and labour. The qualification of a nation as knowledge society goes concomitant with its creation and deployment of knowledge.

The knowledge society has two very important components driven by societal transformation and wealth generation. The societal transformation is in respect of education, health-care, agriculture and governance.

In order to emerge as a knowledge super power we should have tri-dimensional objects of societal transformation, wealth generation and knowledge protection. For this we have to protect our network and information generators from electronic attacks through surveillance and monitoring. Further use should protect one ancient knowledge and culture and focus attention on intellectual rights and related issues.

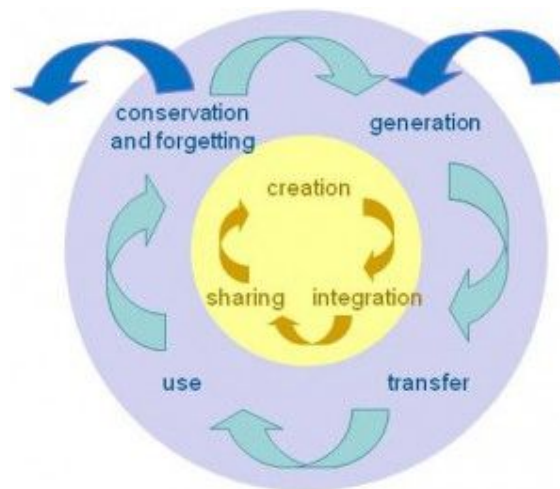
12.3 Framework of Knowledge

To summarize the various aspects of knowledge briefly, we can follow Wenger et al. who note that knowledge

- lives in the human act of knowing,
- is tacit as well as explicit,
- is social as well as individual,
- is dynamic.

Knowledge as understood here is a human act and it is socially constructed. "From the perspective of common sense, the world of everyday life is taken for granted as reality. It is simply, compelling, and self-evidently." From this perspective, knowledge cannot mean "the 'grasping' of reality itself", but only "the 'mapping' of experienced reality by some observer" and thus, "we are compelled to define 'knowledge' as the communicable mapping of some aspect of experienced reality by an observer in symbolic terms" . Frames of reference are defined as structures consisting of "taken-for-granted assumptions, preferences for symbol systems, and analytical devices within which an observer's inquiry proceeds" and can be "explicitly codified and articulated" or "remain tacit and lack specific symbolic articulation" . Whether specialized and articulated very precisely or not, every frame of reference "contains a limited set of rules for mapping alternative frames of reference" . This argumentation leads Holzner and Marx to describe social validation of knowledge as inter-subjective spaces within the context of shared frames of reference and through reality tests .

Different from the construction of everyday knowledge are the character and processes of the construction of intellectual objects in the social sciences. Following Berger and Luckmann, “the sociology of knowledge must concern itself with whatever passes for ‘knowledge’ in a society, regardless of the ultimate validity or invalidity (by whatever criteria) of such ‘knowledge’”. So far the subject of the sociology of knowledge is “all human ‘knowledge’ [that] is developed, transmitted and maintained in social situations” and the understanding of the processes involved. Exactly this conception of knowledge is contended to be a useful definition for the study of knowledge and the processes of knowledge generation, transfer and conservation within and between organizations. From our perspective, knowledge includes all human knowledge that is generated, transmitted, maintained and—important to add—forgotten within organizational situations.



Double-Layered Knowledge Life Cycle

Organizational situations that involve knowledge processes are always socially constituted. Weber introduced the prominent distinction between human behavior, action and social action in sociology. Following this distinction, knowledge communication in social networks is inevitably constituted as social knowledge communication. Action is human behavior to which the acting individual attaches subjective meaning, whereas social action is action when, by virtue of the subjective meaning attached to it by the acting individual, it takes account of the behavior of others and is thereby guided. From this perspective, knowledge communication in social networks is communication of knowledge between the social entities that are intentionally oriented towards each other. An acting individual attaches a subjective meaning to his or her communication of knowledge while he or she takes the behavior of others into account, and is thereby guided. This kind of social perspective on processes of knowledge communication takes into account the factors and prerequisites for mutual orientation of the acting individuals like shared language, common standards as well as social and situational norms.

12.4 Information and Communication Technology

The growth of information and communication technology (ICT) has significantly increased the world's capacity for creation of raw data and the speed at which it is produced.

The advent of the internet delivered unheard of quantities of information to people. The evolution of the internet from Web 1.0 to Web 2.0 offered individuals tools to connect with each other worldwide as well as become content users and producers. Innovation in digital technologies and mobile devices offers individuals a means to connect anywhere, anytime where digital technologies are accessible. Tools of ICT have the potential to transform education, training, employment and access to life-sustaining resources for all members of society.

However, this capacity for individuals to produce and use data on a global scale does not necessarily result in knowledge creation. Contemporary media delivers seemingly endless amounts of information and yet, the information alone does not create knowledge. For knowledge creation to take place, reflection is required to create awareness, meaning and understanding. The improvement of human circumstances requires critical analysis of information to develop the knowledge that assists humankind. Absent reflection and critical thinking, information can actually become “non-knowledge”, that which is false or inaccurate. The anticipated Semantic Web 3.0 and Ubiquitous Web 4.0 will move both information and knowledge creation forward in their capacities to use intelligence to digitally create meaning independent of user-driven ICT.

12.5 Social Theory

The social theory of a knowledge society explains how knowledge is fundamental to the politics, economics, and culture of modern society. Associated ideas include the knowledge economy created by economists and the learning society created by educators. Knowledge is a commodity to be traded for economic prosperity. In a knowledge society, individuals, communities and organizations produce knowledge-intensive work. Peter Drucker viewed knowledge as a key economic resource and coined the term knowledge worker in 1969. Fast forward to present-day, and in this knowledge-intensive environment, knowledge begets knowledge, new competencies develop, and the result is innovation.

A knowledge society promotes human rights and offers equal, inclusive, and universal access to all knowledge creation. The UNESCO World Report establishes four principles that are essential for development of an equitable knowledge society:

- Cultural diversity
- Equal access to education
- Universal access to information (in the public domain)
- Freedom of expression

However, they acknowledge that the digital divide is an obstacle to achievement of genuine knowledge societies. Access to the internet is available to 39 percent of the world's population. This statistics represent growth as well as a continued gap. Among the many challenges that contribute to a global digital divide are issues regarding economic resources, geography, age, gender, language, education, social and cultural background, employment and disabilities.

12.6 Politics

To reduce the span of the digital divide, leaders and policy makers worldwide must first develop and understand the knowledge societies and second, create and deploy initiatives that will universally benefit to all populations. The public expects politicians and public institutions to act rationally and rely on relevant knowledge for decision-making. Yet, in many cases, there are no definitive answers for some of the issues that impact humankind. Science is no longer viewed as the provider of unquestionable knowledge and sometimes raises more uncertainty in its search for knowledge. The very advancement of knowledge creates the existence of increased non-knowledge. This means that public policy must learn to manage doubt, probability, risk and uncertainty while making the best decisions possible.

To confront the uncertainty that comes from an increase in both knowledge and the resulting lack of knowledge, members of a society disagree and make decisions using justification and observation of consequences. Public policy may operate with the intent to prevent the worst possible outcome versus find the perfect solution. Democratization of expert knowledge occurs when a knowledge society produces and relies on more experts. Expert knowledge is no longer exclusive to certain individuals, professional or organizations. If in a knowledge society, knowledge is a public good to which all people have access, any individual may also serve as a creator of knowledge and receive credit as an expert. Since politicians rely on expert knowledge for decision making, the layperson who may lack specialized knowledge might hold a view that serves as expertise to the political process.

12.7 Education

As technologies are deployed to improve global information access, the role of education will continue to grow and change. Education is viewed as a basic human right. For a society where reading and counting are a requisite for daily living, skills in reading, writing, and basic arithmetic are critical for future learning. However, in a knowledge society, education is not restricted to schools. The advent of ICT allows learners to seek information and develop knowledge at any time and any place where access is available and unrestricted. In these circumstances, the skill of learning to learn is one of the most important tools to help people to acquire formal and informal education. In a knowledge society supported by ICT, the ability to locate, classify and sort information is essential. Equipped with this skill, the use of ICT becomes an active versus a passive endeavor and integral to literacy and lifelong learning.

One marker of a knowledge society is continuous innovation that demands lifelong learning, knowledge development and knowledge sharing. The institution of education will need to become responsive to changing demands. Education professionals will need to learn along with everyone else, and as leaders of changing designs in learning, they will serve as a bridge between technology and teaching. The ability to individually reflect on personal learning requirements and seek knowledge in whatever method is appropriate characterizes lifelong learning. One model that supports this type of learning is the W. Edwards Deming Plan-do-check-act cycle. That promotes continuous improvement. Educational professionals will need to prepare learners to be accountable for their own lifelong learning.

12.8 Let Us Sum Up

The knowledge society is mandatory for improvement and development of human conditions. For various reasons a great amount of data is been created and the same should

be reached the respective people to make themselves informative, further to led the society development. To spread education at great speed, access to information and knowledge is essential. In this context the role of communication and information technology is to be understood thoroughly.

12.9 References and Recommended Books

1. Stehr.Nico. 1994: Knowledge Societies , Sage publications.
2. Ghisi. Marc Luyckx. 2008: The Knowledge Society: a breakthrough toward sustainability.
3. Hargreaves. Andy. 2003: Teaching in the Knowledge Society, Teachers College Press, 2003

12.10 Assignment

Social and Political and Education issues in Knowledge Society.

12.11 Model Examination Questions

1. What is knowledge society? Define knowledge society.
2. Discuss the Role of Information and Communication Technology in Knowledge Society.

Unit- 13**RIGHT TO INFORMATION Act****13.0 Aims and Objectives**

In this lesson, you will be learning the importance of Right to Information legally. The provisions available to seek the Right Information Act are discussed. After going through this lesson, you will be able to file a complaint by following the procedure on any government establishment.

Structure

- 13.1 Introduction**
- 13.2 Right to Information movement**
 - 13.2.1 Object of the Right to Information Act**
- 13.3 Scope**
- 13.4 Freedom for Information Act 2002**
 - 13.4.1 State level RTI Acts**
- 13.5 Private Bodies**
- 13.6 Political Parties**
- 13.7 Process**
- 13.8 Exclusions**
 - 13.8.1 Information Exclusions**
- 13.9 Right to Information under the Act**
- 13.10 Information Seekers**
- 13.11 Information Providers**
- 13.12 Fee for Seeking Information**
- 13.13 Third Party Information**
 - 13.13.1 Disclosure of Third Party Information**
- 13.14. Public Information officers –RTI**
- 13.15 Let Us Sum Up**
- 13.16 References and Recommended Books**
- 13.17 Assignment**
- 13.18 Self Assessment Questions**

13.1 Introduction

The Freedom of Information Act (FOIA) provides for the disclosure of information held by administrative agencies to the public, unless the documents requested fall into one of the specific exemptions set forth in the statute. FOIA was implemented to prevent federal agencies from abusing their discretionary powers by forcing them to make certain information about their work available to the public. The law was regarded as a great milestone because it guarantees the right of people to learn about the internal workings of their government. Almost all agencies of the Executive Branch of the federal government have issued regulations implementing FOIA. These regulations inform the public, where certain types of information are kept, how the information may be obtained on request and what appeals are available, if a member of the public is denied requested information.

A person requesting information under FOIA must generally send a letter to the head of the agency maintaining the documents that are sought, identifying the records as clearly as possible. If the request for information is denied, a letter of appeal may be filed, citing, if possible the court rulings explaining why the agency's decision to withhold the information is inappropriate. If the agency denies the appeal, the individual may seek Judicial Review of the agency's action.

13.2 Right to Information movement

In early 1990, MazdoorKisan Shakti Sangathana began a movement to bring in transparency in village accounts. Initially, MKSS lobbied government to obtain information such as master rolls (employment and payment records) and bills and vouchers relating to purchase and transportation of materials. This information was then crosschecked at Jan Sunwais (public hearings) against actual testimonies of workers. The public hearings were incredibly successful in drawing attention to corruption and exposing leakages in the system. Success of MKSS became a source of inspiration for activists in India and led to the genesis of a broader discourse on the right to information in India.

In 1993, a first draft RTI law was proposed by the Consumer Education and Research Council, Ahmedabad (CERC). In 1996, the Press Council of India headed by Justice P B Sawant presented a draft model law on the right to information to the Government of India. The draft model law was later updated and renamed the PCI-NIRD Freedom of Information Bill 1997. MKSS's advocacy gave rise to the National Campaign on People's Right to Information (NCPRI), which was formed to advocate for the right to information at the national level. In 1997, efforts to legislate for the right to information, at both the State and National level, quickened. A working group under the chairmanship of Mr. H D Shourie (the Shourie Committee) was set up by the Central Government and given the mandate to prepare draft legislation on freedom of information. The Shourie Committee's Report and draft law were published in 1997. The Shourie Committee draft law was passed through two successive governments, but was never introduced in Parliament. In 1999, NDA minister Mr Ram Jethmalani, the then Union Minister for Urban Development, issued an administrative order enabling citizens to inspect and receive photocopies of files. Shourie Committee draft law was reworked into the Freedom of Information Bill 2000. It was passed in December 2002 and received Presidential assent on January 2003, as the Freedom of Information Act 2002. In 1998, during the Rajasthan State elections, the Congress Party promised in its election manifesto to enact a law on right to information if it

came to power. Following their election, the Party appointed a committee of bureaucrats to draft a bill on the right to information. As the Committee was comprised only bureaucrats, strong objections were raised by civil society organisations, following which the members of MKSS and National Campaign for Peoples Right to Information were invited to assist in drafting the bill. MKSS and NCPRI conducted a host of consultations in each divisional headquarters of the State. Drawing on the input from these consultations, a draft civil society Right to Information Bill was prepared, which was then submitted to the Committee. The Committee drew on the citizens draft Bill for its recommendations, but refused to accept. The Rajasthan Right to Information Act 2000 was eventually passed on 11 May 2000. The Act in its final form retained many of the suggestions of the RTI movement, but diluted others. In the early 2000, Anna Hazare led a movement in Maharashtra state which forced the state government to pass a stronger Maharashtra Right to Information Act. This Act was later considered as the base document for the Right to Information Act 2005 (RTI), enacted by the Union Government. It also ensured that the President of India assented to this new Act In 2004, under the leadership of Sonia Gandhi, the Congress party won the national elections and formed the central government. Aruna Roy was inducted into the National Advisory Committee (NAC), an extremely powerful but extra-constitutional quasi-governmental body headed by Sonia Gandhi which effectively supervises the working of the common minimum program of UPA II . Aruna Roy submitted a paper recommending amendments to the 2002 Freedom of Information Act to the NAC which in turn sent by it to the Prime Minister's Office. The Right to Information Bill 2004 (RTI Bill 2004) was tabled on 23 December during the winter session of the Lok Sabha. The RTI Bill 2004 was based largely on recommendations submitted to the Government by the NAC which was passed by the Indian parliament in 2005.¹ On 20 July 2006 the Union Cabinet amended the Right to Information Act 2005 to exclude the file noting by the government officials from its purview. Hazare began his fast unto death on 9 August 2006 in Alandi against the proposed amendment. He ended his fast on 19 August 2006, after the government agreed to change its earlier decision.

13.2.1 Object of the Right to Information Act

The basic object of the Right to Information Act is to empower the citizens, promote transparency and accountability in the working of the Government, contain corruption and make our democracy work for the people in real sense. It goes without saying that an informed citizen is better equipped to keep necessary vigil on the instruments of governance and make the government more accountable to the governed. The Act is a big step towards making the citizens informed about the activities of the Government.

13.3 Scope

The Act covers the whole of India except Jammu and Kashmir, where J&K Right to Information Act is in force. It is applicable to all constitutional authorities, including the executive, legislature and judiciary; any institution or body established or constituted by an act of Parliament or a state legislature. It is also defined in the Act that bodies or authorities established or constituted by order or notification of appropriate government including bodies "owned, controlled or substantially financed" by government, or non-Government organizations "substantially financed, directly or indirectly by funds" provided by the government are also covered in the Act.

13.4 Freedom of Information Act 2002

Passage of a national level law, however, proved to be a difficult task. Given the experience of state governments in passing practicable legislation, the Central Government appointed a working group under H. D. Shourie and assigned the task of drafting legislation. The Shourie draft, in an extremely diluted form, was the basis for the Freedom of Information Bill, 2000 which eventually became law under the Freedom of Information Act, 2002

13.4.1 State level RTI Acts

The state level RTI Acts were first successfully enacted by the state governments of Karnataka (2000), Goa (1997), Rajasthan (2000), Tamilnadu (1997), Delhi (2001), Maharashtra (2002), Assam (2002), Madhya Pradesh (2003), and Jammu and Kashmir (2004).

13.5 Private Bodies

Private bodies are not within the Act's ambit directly. In a landmark decision of Sarbajit Roy versus DERC, the Central Information Commission also reaffirmed that privatized public utility companies continue to be within the RTI Act- their privatization notwithstanding.

13.6 Political Parties

The Central Information Commission (CIC) has stated that the political parties are public authorities and answerable to citizens under RTI Act. The CIC, a quasi-judicial body, has said that six national parties:- Congress, BJP, NCP, CPI(M), CPI and BSP have been substantially funded indirectly by the central government and they have the character of public authority under the RTI Act as they perform public functions.

13.7 Process

Under the Act, all authorities covered, must appoint their Public Information Officer (PIO). Any person may submit a request to the PIO for information in writing. It is the PIO's obligation to provide information to citizens of India who request for information under the Act. If the request pertains to another public authority (in whole or part), it is the PIO's responsibility to transfer/forward the concerned portions of the request to a PIO of the other within 5 working days. In addition, every public authority is required to designate Assistant Public Information Officers (APIOs) to receive RTI requests and appeals for forwarding to the PIOs of their public authority. The applicant is not required to disclose any information or reasons other than his name and contact particulars to seek the information.

The Central Information Commission (CIC) acts upon complaints from those individuals who have not been able to submit information requests to a Central Public Information Officer or State Public Information Officer due to either the officer not having been appointed, or because the respective Central Assistant Public Information Officer or State Assistant Public Information Officer refused to receive the application for information.

The Act specifies time limits for replying to the request as follows:.

- If the request has been made to the PIO, the reply is to be given within 30 days of receipt.

- If the request has been made to an APIO, the reply is to be given within 35 days of receipt.
- If the PIO transfers the request to another public authority (better concerned with the information requested), the time allowed to reply is 30 days but computed from the day after it is received by the PIO of the transferee authority.
- Information concerning corruption and Human Rights violations by scheduled Security agencies (those listed in the Second Schedule of the Act) is to be provided within 45 days but with the prior approval of the Central Information Commission.
- However, if life or liberty of any person is involved, the PIO is expected to reply within 48 hours.

Since the information is to be paid for, the reply of the PIO is necessarily limited to either denying the request (in whole or part) and/or providing a computation of "further fees". The time between the reply of the PIO and the time taken to deposit the further fees for information is excluded from the time allowed. If information is not provided within this period, it is treated as deemed refusal. Refusal with or without reasons may be ground for appeal or complaint. Further, information not provided in the times prescribed is to be provided free of charge.

13.8 Exclusions

Central Intelligence and Security agencies specified in the Second Schedule like IB, Directorate General of Income tax(Investigation), RAW, Central Bureau of Investigation (CBI), Directorate of Revenue Intelligence, Central Economic Intelligence Bureau, Directorate of Enforcement, Narcotics Control Bureau, Aviation Research Centre, Special Frontier Force, BSF, CRPF, ITBP, CISF, NSG, Assam Rifles, Special Service Bureau, Special Branch (CID), Andaman and Nicobar, The Crime Branch-CID-CB, Dadra and Nagar Haveli and Special Branch, Lakshadweep Police. Agencies specified by the State Governments through a Notification will also be excluded. The exclusion, however, is not absolute and these organizations have an obligation to provide information pertaining to allegations of corruption and human rights violations. Further, information relating to allegations of human rights violation could be given but only with the approval of the Central or State Information Commission.

13.8.1 Information Exclusions

The following is exempt from disclosure under section 8 of the Act:-

- Information, disclosure of which would prejudicially affect the sovereignty and integrity of India, the security, "strategic, scientific or economic" interests of the State, relation with foreign State or lead to incitement of an offense;
- Information which has been expressly forbidden to be published by any court of law or tribunal or the disclosure of which may constitute contempt of court;
- Information, the disclosure of which would cause a breach of privilege of Parliament or the State Legislature;
- Information including commercial confidence, trade secrets or intellectual property, the disclosure of which would harm the competitive position of a third party, unless

the competent authority is satisfied that larger public interest warrants the disclosure of such information;

- Information available to a person in his fiduciary relationship, unless the competent authority is satisfied that the larger public interest warrants the disclosure of such information;
- Information received in confidence from foreign Government;
- Information, the disclosure of which would endanger the life or physical safety of any person or identify the source of information or assistance given in confidence for law enforcement or security purposes;
- Information which would impede the process of investigation or apprehension or prosecution of offenders;
- Cabinet papers including records of deliberations of the Council of Ministers, Secretaries and other officers;
- Information which relates to personal information the disclosure of which has no relationship to any public activity or interest, or which would cause unwarranted invasion of the privacy of the individual (but it is also provided that the information which cannot be denied to the Parliament or a State Legislature shall not be denied by this exemption);
- Notwithstanding any of the exemptions listed above, a public authority may allow access to information, if public interest in disclosure outweighs the harm to the protected interests. However, this does not apply to disclosure of "trade or commercial secrets protected by law".

13.9 Right to Information under the Act

A citizen has a right to seek such information from a public authority which is held by the public authority or which is held under its control. This right includes inspection of work, documents and records; taking notes, extracts or certified copies of documents or records; and taking certified samples of material held by the public authority or held under the control of the public authority. It is important to note that only such information can be supplied under the Act which already exists and is held by the public authority or held under the control of the public authority. The Public Information Officer is not supposed to create information; or to interpret information; or to solve the problems raised by the applicants; or to furnish replies to hypothetical questions.

The Act gives the citizens a right to information at par with the Members of Parliament and the Members of State Legislatures. According to the Act, the information which cannot be denied to the Parliament or a State Legislature, shall not be denied to any person.

A citizen has a right to obtain information from a public authority in the form of diskettes, floppies, tapes, video cassettes or in any other electronic mode or through print-outs provided such information is already stored in a computer or in any other device from which the information may be e-mailed or transferred to diskettes etc.

The information to the applicant should ordinarily be provided in the form in which it is sought. However, if the supply of information sought in a particular form would disproportionately divert the resources of the public authority or may cause harm to the safety or preservation of the records, supply of information in that form may be denied.

In some cases, the applicants expect the Public Information Officer to give information in some particular proforma devised by them on the plea that they have a right to get information in the form in which it is sought. It need be noted that the provision in the Act simply means that if the information is sought in the form of photocopy, it shall be provided in the form of photocopy, or if it is sought in the form of a floppy, it shall be provided in that form subject to the conditions given in the Act. It does not mean that the PIO shall re-shape the information. This is substantiated by the definition of the term 'right to information' as given in the Act, according to which, it includes right to obtaining information in the form of diskettes, floppies, tapes, video cassettes or in any other electronic mode or through print-outs provided such information is already stored in a computer or in any other device. Everywhere in the Act, the word 'form' has been used to represent this meaning.

Some Information Seekers request the Public Information Officers to call out information from some document(s) and give such extracted information to them. A citizen has a right to get 'material' from a public authority which is held by or under the control of that public authority. The Act, however, does not require the Public Information Officer to deduce some conclusion from the 'material' and supply the 'conclusion' so deduced to the applicant. It means that the Public Information Officer is required to supply the 'material' in the form as held by the public authority, but not to do research on behalf of the citizen to deduce anything from the material and then supply it to him.

13.10 Information seekers

Any citizen can request for information by making an application in writing or through electronic means in English / Hindi / official language of the area, in which the application is being made, together with the prescribed fees.

13.11 Information Providers

Any public authority would designate Central Assistant Public Information Officer (C.A.P.I.O.) at various levels, who will receive the requests for information from the public and necessary number of Central Public Information Officers (CPIO) in all administrative units/offices who will arrange for providing the necessary information to member(s) of the public as permitted under the law. The public authorities are also required to designate authority, senior in rank to a CPIO, as Appellate Authorities, who will entertain and dispose off appeals against the decision of the CPIO, as required under the Act. Any person who does not receive the decision from CPIO whether by way of information or rejection within the time frame, may within 30 days from the expiry of period prescribed for furnishing the information or 30 days from the date of receipt of the decisions, prefer an appeal to the Appellate Authority.

13.12 Fee for Seeking Information

A person who desires to seek some information from a public authority is required to send, along with the application, a demand draft or a banker's cheque or an Indian Postal Order of Rs. 10/- (Rupees ten), payable to the Accounts Officer of the public authority as fee

prescribed for seeking information. The payment of fee can also be made by way of cash to the Accounts Officer of the public authority or to the Assistant Public Information Officer against proper receipt.

The applicant may also be required to pay further fee towards the cost of providing the information, details of which shall be intimated to the applicant by the PIO as prescribed by the Right to Information (Regulation of Fee and Cost) Rules, 2005. Rates of fee as prescribed in the Rules are given below:

- (a) rupees two (Rs. 2/-) for each page (in A-4 or A-3 size paper) created or copied;
- (b) actual charge or cost price of a copy in larger size paper;
- (c) actual cost or price for samples or models;
- (d) for information provided in diskette or floppy, rupees fifty (Rs. 50/-) per diskette or floppy; and
- (e) for information provided in printed form, at the price fixed for such publication or rupees two per page of photocopy for extracts from the publication.

As already pointed out, a citizen has a right to inspect the records of a public authority. For inspection of records, the public authority shall charge no fee for the first hour. But a fee of rupees five (Rs. 5/-) for each subsequent hour (or fraction thereof) shall be charged.

If the applicant belongs to below poverty line (BPL) category, he is not required to pay any fee. However, he should submit a proof in support of his claim to belong to the below poverty line. The application not accompanied by the prescribed fee of Rs. 10/- or proof of the applicant's belonging to below poverty line, as the case may be, shall not be a valid application under the Act. It may be pointed out that there is no bar on the public authority to supply information in response to such applications. However, provisions of Act would not apply to such cases.

13.13 Third Party Information

Third party in relation to the Act means a person other than the citizen who has made request for information. The definition of third party includes a public authority other than the public authority to whom the request has been made.

13.13.1 Disclosure of Third Party Information

Information including commercial confidence, trade secrets or intellectual property, the disclosure of which would harm the competitive position of a third party, is exempt from disclosure. Such information should not be disclosed unless the competent authority is satisfied that larger public interest warrants the disclosure of such information.

In regard to third party information which the third party has treated as confidential, the Public Information Officer should follow the procedure as given in the chapter 'For Public Information Officers'. The third party should be given full opportunity to put his case for non-disclosure if he desires that the information should not be disclosed.

13.14 Public Information officers -RTI

The Public Information Officer of a public authority plays a pivotal role in making the right of citizens to information a reality. The Act casts specific duties on him and makes him liable for penalty in case of default. It is, therefore, essential for a Public Information Officer to study the Act carefully and understand its provisions correctly. Besides the issues discussed elsewhere in this document, a Public Information Officer should keep the following aspects in view while dealing with the applications under the Act.

13.15 Let Us Sum Up

To seek information from organized agencies and offices, the right to information act plays an important role. The procedure to seek information, there is no format still a nominal fees to be paid. The limitation of this act helps us to use the provisions of this act successfully.

13.16 References and Recommended Books

1. Kaneja. S. R: 2011 A Practical Hand book on Right to Information Act, 2005.
2. Verma. R.K: Right to Information Law & Practice with Case Book on Right to Information Hardcover– 19 Dec 2009.
3. Virendra. C. A and Pamecha. K: 2013 Right to Information Act 2005 - A Practical guide Paperback.

13.17 Assignment

Objectives of Right to Information Act.

13.18 Model Examination Questions

1. Write an account on exclusions of Right to Information Act.
2. Discuss on information seekers and providers in Right to Information Act

Unit- 14**INTELLECTUAL PROPERTY RIGHT****14.0 Aims and Objectives**

In this lesson you, will be learning the concept of Intellectually Property Rights and its history. The patents and copy right law are discussed. After going through this lesson, you will be able to understand the types of IP Rights, its objectives, its limitations etc.

14.1 Introduction**14.1.1 The Intellectual Property -Meaning****14.1.2 Alternative Terms****14.2 History****14.3 Types****14.4 Patents****14.5 Copyright****14.6 Objectives****14.6.1 Financial incentive****14.6.2 Economic growth****14.7 Morality****14.8 Infringement, Misappropriation and Enforcement****14.9 Criticisms****14.10 Objections to Overbroad Intellectual Property Laws****14.11 Industrial design rights****14.12 Let Us Sum Up****14.13 References and Recommended Books****14.14 Assignment****14.15 Model Examination Questions**

14.1 Introduction

Intellectual property (IP) is a [legal](#) concept which refers to creations of the mind for which [exclusive rights](#) are recognized. Under intellectual property law, owners are granted certain exclusive rights to a variety of [intangible assets](#), such as musical, literary, and artistic works; discoveries and inventions; and words, phrases, symbols, and designs. Common types of intellectual property rights include [copyright](#), [trademarks](#), [patents](#), [industrial design rights](#), [trade dress](#), and in some jurisdictions [trade secrets](#).

Although many of the legal principles governing intellectual property rights have evolved over centuries, it was not until the 19th century that the term intellectual property began to be used, and not until the late 20th century that it became commonplace in the majority of the world. The British [Statute of Anne](#) (1710) and the [Statute of Monopolies](#) (1623) are now seen as the origins of [copyright](#) and [patent law](#) respectively.

14.1.1 The Intellectual Property-Meaning

[Free Software Foundation](#) founder [Richard Stallman](#) argues that, although the term *intellectual property* is in wide use, it should be rejected altogether, because it "systematically distorts and confuses these issues, and its use was and is promoted by those who gain from this confusion." He claims that the term "operates as a catch-all to lump together disparate laws [which] originated separately, evolved differently, cover different activities, have different rules, and raise different public policy issues" and that it creates a "bias" by confusing these monopolies with ownership of limited physical things, likening them to "property rights". Stallman advocates referring to copyrights, patents and trademarks in the singular and warns against abstracting disparate laws into a collective term. Similarly, Boldrin and Levine prefer to use the term "intellectual monopoly" as a more appropriate and clear definition of the concept.

[Lawrence Lessig](#), along with many other [copyleft](#) and free software activists, have criticized the implied analogy with physical property (like land or an automobile). They argue such an analogy fails because physical property is generally rivalries while intellectual works are non-rivalries (that is, if one makes a copy of a work, the enjoyment of the copy does not prevent enjoyment of the original). Other arguments along these lines claim that unlike the situation with tangible property, there is [no natural scarcity](#) of a particular idea or information: once it exists at all, it can be re-used and duplicated indefinitely without such re-use diminishing the original. [Stephan Kinsella](#) has objected to *intellectual property* on the grounds that the word "property" implies scarcity, which may not be applicable to ideas.

14.1.2 Alternative Terms

In [civil law](#) jurisdictions, intellectual property has often been referred to as [intellectual rights](#), traditionally a somewhat broader concept that has included [moral rights](#) and other personal protections that cannot be bought or sold. Use of the term *intellectual rights* has declined since the early 1980s, as use of the term *intellectual property* has increased.

Alternative terms *monopolies on information* and *intellectual monopoly* have emerged among those who argue against the "property" or "intellect" or "rights" assumptions, notably [Richard Stallman](#). The [backronyms](#) *intellectual protectionism* and *intellectual poverty*, whose

initials are also *IP*, have found supporters as well, especially among those who have used the backronym [digital restrictions management](#).

The argument that an intellectual property right should (in the interests of better balancing of relevant private and public interests) be termed an *intellectual monopoly privilege* (IMP) has been advanced by several academics including Birgitte Andersen and [Thomas Alured Faunce](#).

14.2 History

Modern usage of the term *intellectual property* goes back at least as far as 1867 with the founding of the [North German Confederation](#) whose [constitution](#) granted legislative power over the protection of intellectual property to the confederation. When the administrative secretariats established by the [Paris Convention](#) (1883) and the [Berne Convention](#) (1886) merged in 1893, they located in Berne, and also adopted the term intellectual property in their new combined title, the [United International Bureaux for the Protection of Intellectual Property](#). The organisation subsequently relocated to Geneva in 1960 and was succeeded in 1967 with the establishment of the [World Intellectual Property Organization](#) (WIPO) by [treaty](#) as an agency of the [United Nations](#). According to Lemley, it was only at this point that the term really began to be used in the United States (which had not been a party to the Berne Convention) and it did not enter popular usage until passage of the [Bayh-Dole Act](#) in 1980.

The history of patents does not begin with inventions, but rather with royal grants by [Queen Elizabeth I](#) (1558–1603) for monopoly privileges... Approximately 200 years after the end of Elizabeth's reign, however, a patent represents a legal [right] obtained by an inventor providing for exclusive control over the production and sale of his mechanical or scientific invention... [demonstrating] the evolution of patents from royal prerogative to common-law doctrine.

In an 1818 collection of his writings, the French liberal theorist, [Benjamin Constant](#), argued against the recently introduced idea of "property which has been called intellectual." The term *intellectual property* can be found used in an October 1845 Massachusetts Circuit Court ruling in the patent case *Davoll et al. v. Brown.*, in which Justice Charles L. Woodbury wrote that "only in this way can we protect intellectual property, the labors of the mind, productions and interests are as much a man's own...as the wheat he cultivates, or the flocks he rears." The statement that "discoveries are...property" goes back earlier. Section 1 of the French law of 1791 stated, "All new discoveries are the property of the author; to assure the inventor the property and temporary enjoyment of his discovery, there shall be delivered to him a patent for five, ten or fifteen years." In Europe, [French](#) author A. Nion mentioned *propriété intellectuelle* in his *Droitscivils des auteurs, artistes et inventeurs*, published in 1846.

Until recently, the purpose of intellectual property law was to give as little protection possible in order to encourage innovation. Historically, therefore, they were granted only when they were necessary to encourage invention, limited in time and scope.

14.3 Types

Common types of intellectual property rights include [patents](#), [copyright](#), [industrial design rights](#), [trademarks](#), [trade dress](#) and in some jurisdictions, [trade secrets](#). There are also more

specialized varieties of [sui generis](#) exclusive rights, such as circuit design rights (called [mask work](#) rights in USA law, protected under the [Integrated Circuit Topography Act](#) in Canadian law, and in [European Union law](#) by Directive 87/54/EEC of 16 December 1986 on the legal protection of topographies of semiconductor products), [plant breeders' rights](#), [plant variety rights](#), [industrial design rights](#), [supplementary protection certificates](#) for pharmaceutical products and [database rights](#) (in [European law](#)).

14.4 Patents

A [patent](#) grants an inventor [exclusive rights](#) to make, use, sell and import an [invention](#) for a limited period of time in exchange for the public disclosure of the invention. An invention is a solution to a specific technological problem, which may be a product or a process.

14.5 Copyright

A [copyright](#) gives the creator of an original work [exclusive rights](#) to it, usually for a limited time. Copyright may apply to a wide range of creative, intellectual, or artistic forms, or "works". Copyright does not cover ideas and information themselves, only the form or manner in which they are expressed.

14.6 Objectives

The stated objective of most intellectual property law (with the exception of trademarks) is to "Promote progress." By exchanging limited exclusive rights for disclosure of inventions and creative works, society and the patentee/copyright owner mutually benefit, and an incentive is created for inventors and authors to create and disclose their work. Some commentators have noted that the objective of intellectual property legislators and those who support its implementation appears to be "absolute protection." "If some intellectual property is desirable because it encourages innovation, they reason, more is better. The thinking is that creators will not have sufficient incentive to invent unless they are legally entitled to capture the full social value of their inventions." This absolute protection or full value view treats intellectual property as another type of 'real' property, typically adopting its law and rhetoric. Other recent developments in intellectual property law, such as the [America Invents Act](#), stress international harmonization.

14.6.1 Financial incentive

These exclusive rights allow owners of intellectual property to benefit from the property they have created, providing a financial incentive for the creation of an investment in intellectual property, and, in case of patents, pay associated [research and development](#) costs. Some commentators, such as [David Levine](#) and [Michele Boldrin](#), dispute this justification.

In 2013, the United States Patent & Trademark Office claimed that the worth of intellectual property to the U.S. economy is more than US\$5 trillion and creates employment for an estimated 18 million American people. The value of intellectual property is considered similarly high in other developed nations, such as those in the European Union.

14.6.2 Economic growth

The WIPO treaty and several related international agreements are premised on the notion that the protection of intellectual property rights are essential to maintaining economic growth.

The *WIPO Intellectual Property Handbook* gives two reasons for intellectual property laws:

One is to give statutory expression to the moral and economic rights of creators in their creations and the rights of the public in access to those creations. The second is to promote, as a deliberate act of Government policy, creativity and the dissemination and application of its results and to encourage fair trading which would contribute to economic and social development.

The Anti-Counterfeiting Trade Agreement (ACTA) states that "effective enforcement of intellectual property rights is critical to sustaining economic growth across all industries and globally".

Economists estimate that two-thirds of the value of large businesses in the U.S. can be traced to intangible assets. IP-intensive industries" are estimated to generate 72 percent more value added (price minus material cost) per employee than "non-IP-intensive industries".

A joint research project of the WIPO and the United Nations University measuring the impact of IP systems on six Asian countries found "a positive correlation between the strengthening of the IP system and subsequent economic growth."

Economists have also shown that IP can be a disincentive to innovation when that innovation is drastic. IP makes excludable non-rival intellectual products that were previously non-excludable. This creates economic inefficiency as long as the monopoly is held. A disincentive to direct resources toward innovation can occur when monopoly profits are less than the overall welfare improvement to society. This situation can be seen as a market failure, and an issue of appropriate ability.

14.7 Morality

According to Article 27 of the Universal Declaration of Human Rights, "everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author". Although the relationship between intellectual property and human rights is a complex one, there are moral arguments for intellectual property.

The arguments that justify intellectual property fall into three major categories. Theorists believe intellectual property is an extension of an individual. Utilitarians believe that intellectual property stimulates social progress and pushes people to further innovation. Lockeans argue that intellectual property is justified based on deservedness and hard work. Various moral justifications for private property can be used to argue in favor of the morality of intellectual property, such as:

1. **Natural Rights/Justice Argument.** this argument is based on Locke's idea that a person has a natural right over the labour and/or products which is produced by his/her body. Appropriating these products is viewed as unjust. Although Locke had never

explicitly stated that natural right applied to products of the mind, it is possible to apply his argument to intellectual property rights, in which it would be unjust for people to misuse another's ideas. Locke's argument for intellectual property is based upon the idea that laborers have the right to control that which they create. They argue that we own our bodies which are the laborers, this right of ownership extends to what we create. Thus, intellectual property ensures this right when it comes to production.

2. **Utilitarian-Pragmatic Argument:** according to this rationale, a society that protects private property is more effective and prosperous than societies that do not. Innovation and invention in 19th century America has been said to be attributed to the development of the patent system. By providing innovators with "durable and tangible return on their investment of time, labor, and other resources", intellectual property rights seek to maximize social utility. The presumption is that they promote public welfare by encouraging the "creation, production, and distribution of intellectual works". Utilitarians argue that without intellectual property there would be a lack of incentive to produce new ideas. Systems of protection such as Intellectual property optimize social utility.
3. **"Personality" Argument:** this argument is based on a quote from Hegel: "Every man has the right to turn his will upon a thing or make the thing an object of his will, that is to say, to set aside the mere thing and recreate it as his own". European intellectual property law is shaped by this notion that ideas are an "extension of oneself and of one's personality". Personality theorists argue that by being a creator of something, one is inherently at risk and vulnerable for having their ideas and designs stolen and/or altered. Intellectual property protects these moral claims that have to do with personality.

Lysander Spooner (1855) argues "that a man has a natural and absolute right—and if a natural and absolute, then necessarily a perpetual, right—of property, in the ideas, of which he is the discoverer or creator; that his right of property, in ideas, is intrinsically the same as, and stands on identically the same grounds with, his right of property in material things; that no distinction, of principle, exists between the two cases".

Writer Ayn Rand argued in her book *Capitalism: The Unknown Ideal* that the protection of intellectual property is essentially a moral issue. The belief is that the human mind itself is the source of wealth and survival and that all property at its base is intellectual property. To violate intellectual property is therefore no different morally than violating other property rights which compromises the very processes of survival and therefore constitutes an immoral act.

14.8 Infringement, Misappropriation and Enforcement

Unauthorized use of intellectual property rights, called "infringement" with respect to patents, copyright and trademarks and "misappropriation" with respect to trade secrets, may be a breach of civil law or criminal law, depending on the type of intellectual property, jurisdiction, and the nature of the action.

Patent infringement typically is caused by using or selling a patented invention without permission from the patent holder. The scope of the patented invention or the extent of protection is defined in the [claims](#) of the granted patent. There is [safe harbor](#) in many jurisdictions to use a patented invention for research. This safe harbor does not exist in the US unless the research is done for purely philosophical purposes, or in order to gather data in order

to prepare an application for regulatory approval of a drug. In general, patent infringement cases are handled under civil law (e.g. in the US) but several jurisdictions incorporate infringement in criminal law also (for example, Argentina, China, France, Japan, Russia and South Korea).

Copyright infringement is reproducing, distributing, displaying or performing a [work](#), or to make [derivative works](#), without permission from the copyright holder, which is typically a publisher or other business representing or assigned by the work's creator. It is often called "piracy". While copyright is created the instance a work is fixed, generally the copyright holder can only get money for damages, if the owner registers the copyright. Enforcement of copyright is generally the responsibility of the copyright holder. The [ACTA trade agreement](#), signed in May 2011 by the United States, Japan, Switzerland and the EU requires that its parties add criminal penalties, including incarceration and fines, for copyright and trademark infringement, and obligated the parties to active police for infringement. There is a [safe harbor](#) to use copyrighted works under the [fair use](#) doctrine.

Trademark infringement occurs when one party uses a trademark that is identical or [confusingly similar](#) to a trademark owned by another party, in relation to products or services which are identical or similar to the products or services of the other party. As with copyright, there are common law rights protecting a trademark, but registering a trademark provides legal advantages for enforcement. Infringement can be addressed by civil litigation and, in several jurisdictions, under criminal law. In the US, the [Trademark Counterfeiting Act of 1984](#) criminalized the intentional trade in counterfeit goods and services and ACTA amplified the penalties.

Trade secret misappropriation is different from violations of other intellectual property laws. Since by definition, trade secrets are secret, while patents and registered copyrights and trademarks are publicly available. In the US, trade secrets are protected under state law, and states have nearly universally adopted the [Uniform Trade Secrets Act](#). The US also has federal law in the form of the [Economic Espionage Act of 1996 \(18 U.S.C. §§ 1831–1839\)](#), which makes the theft or misappropriation of a trade secret a federal crime. This law contains two provisions criminalizing two sorts of activity. The first, [18 U.S.C. § 1831\(a\)](#), criminalizes the theft of trade secrets to benefit foreign powers. The second, [18 U.S.C. § 1832](#), criminalizes the theft for commercial or economic purposes. (The statutory penalties are different for the two offenses.) In [Commonwealth common law](#) jurisdictions, confidentiality and trade secrets are regarded as an [equitable](#) right rather than a [property](#) right, but penalties for theft are roughly the same as the US.

As of 2011 trade in counterfeit copyrighted and trademarked works was a \$600 billion industry worldwide and accounted for 5%–7% of global trade

14.9 Criticisms

Some critics of intellectual property, such as those in the free culture movement, characterize it as intellectual protectionism, intellectual monopoly or government-granted monopoly, and argue the public interest is harmed by protectionist legislation such as copyright extension, software patents and business method patents.

A critique against the idea of *intellectual property* has been formulated by Eben Moglen in his *dotCommunist Manifesto*:

Society confronts the simple fact that when everyone can possess every intellectual work of beauty and utility—reaping all the human value of every increase of knowledge—at the same cost that any one person can possess them, it is no longer moral to exclude. If Rome possessed the power to feed everyone amply at no greater cost than that of Caesar's own table, the people would sweep Caesar violently away if anyone were left to starve. But the bourgeois system of ownership demands that knowledge and culture be rationed by the ability to pay.

14.10 Objections to Overbroad Intellectual Property Laws

Some critics of intellectual property, such as those in the [free culture movement](#), point at intellectual monopolies as harming health (in the case of [pharmaceutical patents](#)), preventing progress, benefiting concentrated interests to the detriment of the masses and argue that the public interest is harmed by ever expansive monopolies in the form of [copyright extensions](#), [software patents](#) and [business method patents](#). More recently, scientists and engineers are expressing concern that [patent thickets](#) are undermining technological development even in high-tech fields such as [nanotechnology](#).

[Peter Drahos](#) noted that "Property rights confer authority over resources. When authority is granted to the few over resources on which many depend, the few gain power over the goals of the many. This has consequences for both political and economic freedoms with in a society."

The [World Intellectual Property Organization](#) (WIPO) recognizes that conflicts may exist between the respect for and implementation of current intellectual property systems and other human rights. In 2001, the UN [Committee on Economic, Social and Cultural Rights](#) issued a document called "Human rights and intellectual property" that argued that intellectual property tends to be governed by economic goals when it should be viewed primarily as a social product; in order to serve human well-being, intellectual property systems must respect and conform to human rights laws. According to the Committee, when systems fail to do so, they risk infringing upon the human right to food and health and to cultural participation and scientific benefits. In 2004, the General Assembly of WIPO adopted *The Geneva Declaration on the Future of the World Intellectual Property Organization* which argues that [WIPO](#) should "focus more on the needs of developing countries and to view IP as one of many tools for development—not as an end in itself".

Further along these lines, The ethical problems brought up by IP rights are most pertinent when it is socially valuable goods like life-saving medicines are given IP protection. While the application of IP rights can allow companies to charge higher than the marginal cost of production in order to recoup the costs of research and development, the price may exclude from the market, anyone who cannot afford the cost of the product, in case of a life-saving drug. "An IPR driven regime is therefore not a regime that is conducive to the investment of R&D of products that are socially valuable to predominately poor populations...."

Some [libertarian critics of intellectual property](#) have argued that allowing property rights in ideas and information creates [artificial scarcity](#) and infringes on the right to own tangible property. [Stephan Kinsella](#) uses the following scenario to argue this point: imagine the time when men lived in caves. One bright guy—let's call him Galt-Magnon—decides to build a log cabin on an open field, near his crops. To be sure, this is a good idea, and others notice it. They naturally imitate Galt-Magnon and they start building their own cabins. But the first man to invent a house, according to IP advocates, would have a right to prevent others from building houses on their own land, with their own logs or to charge them a fee if they do build houses. It is plain

that the innovator in these examples becomes a partial owner of the tangible property (e.g., land and logs) of others, due not to first occupation and use of that property (for it is already owned), but due to his coming up with an idea. Clearly, this rule flies in the face of the first-user homesteading rule, arbitrarily and groundlessly overriding the very homesteading rule that is at the foundation of all property rights.

[Thomas Jefferson](#) once said in a letter to Isaac McPherson on August 13, 1813:

"If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me."

In 2005 the [RSA](#) launched the [Adelphi Charter](#), aimed at creating an international policy statement to frame how governments should make balanced intellectual property law.

Another limitation of current U.S. Intellectual Property legislation is its focus on individual and joint works; thus, copyright protection can only be obtained in 'original' works of authorship. This definition excludes any works that are the result of community creativity, for example Native American songs and stories; current legislation does not recognize the uniqueness of indigenous cultural 'property' and its ever-changing nature. Simply asking native cultures to 'write down' their cultural artifacts on tangible mediums ignores their necessary morality and enforces a Western bias of the written form as more authoritative.

14.11 Industrial design rights

An [industrial design right](#) protects the visual design of objects that are not purely utilitarian. An industrial design consists of the creation of a shape, configuration or composition of pattern or color, or combination of pattern and color in three dimensional form containing aesthetic value. An industrial design can be a two- or three-dimensional pattern used to produce a product, industrial commodity or handicraft.

14.12 Let Us Sum Up

The intellectual property right provides a kind of security for original producer. The Intellectual Property Rights spreads many areas so that people of all walks are given a kind of protection. This kind of protection encourages and helps to the people to create new ideas and concepts, which are necessary for development of mankind at large.

14.13 References and Recommended Books

Karki. M.M.S: Intellectual Property Rights: Basic Concepts, Dec 2009.

Ahuja. V.K: Law Related to Intellectual Property Rights, 2010.

Norman, Helen: Intellectual Property Law Directions, May 2014

14.14 Assignment

Types of IP Rights.
Criticism on IPR.

14.15 Model Examination Questions

1. Write an account on history and types of IPR.
2. Discuss the limitations of IP Law.

Unit- 15**COPY RIGHT ACT****15.0 Aims and Objectives**

In this lesson, you will be learning copy right concept and its development at global and India level. The history of copy right laws is stated clearly. The copy right law of India is discussed at length. The areas covered under this law are stated. After going through this lesson you will be able to understand the importance of copy right law, the provisions of copy right law etc.

STRUCTURE**15.1 Introduction****15.2 International Copyright Laws and Their Effects****15.3 Copy Right Law of India****15.4 Copy Right****15.4.1 Indian Work****15.5 Description of Work****15.5.1 Artistic work****15.5.2 Musical work****15.5.3 Sound recording****15.5.4 Cinematograph film****15.6 Government work****15.7 An Author****15.8 Duration of Copy Right****15.9 Assignment of Copyright****15.10 Rights of Broadcasting Organizations and of Performers****15.10.1 Broadcast reproduction right****15.10.2 Performer's right****15.10.3 Fair Dealing**

15.11 Government Works**15.12 Criminal Liability****15.13 Let Us Sum Up****15.14 References and Recommended Books****15.15 Assignment****15.16 Model Examination Questions****15.1 Introduction**

The advent of movable type in 1436 caused a proliferation of books across Europe. It is estimated that before Gutenberg's printing press the number of books in all of Europe numbered in the thousands, but that within 50 years, that number approached ten million. Such explosive growth and its accompanying economic opportunities created an immediate need for protection of the rights of both author and publisher from the earliest of literary pirates.

The world's first copyright law, the Statute of Anne, was enacted in England in 1710. Exercising its power under the newly adopted Constitution to secure the rights of authors and inventors, Congress passed an act almost identical to the Statute of Anne as the first American copyright law in 1790.

As books continued to be easier, faster and cheaper to produce and distribute, domestically and internationally, in Europe and North America, it became clear that enhanced protection of authors and uniform international copyright standards were necessary. One such movement for international uniformity led to the Berne Convention and its 1887 adoption of certain standards, minimum levels of copyright protection and their enforcement in the member countries across Europe and elsewhere came in.

The present day is the locus of the most intense and most extensive expansion of technological progress in recorded history. Thus, if history is any lesson, this is an era in which broader, more secure copyright rights are essential to protect the rights of thinkers, writers and visionaries.

15.2 International Copyright Laws and Their Effects

The newly recognized copyright rights of authors soon proved inadequate. Several movements toward international copyright protection arose, but only one proved influential or effective. In 1878, authors, artists, publishers, academics and other interested parties, led by French author Victor Hugo, as its president, formed the Association Littéraire et Artistique Internationale (AIAI), and began to sponsor conferences and adopt resolutions, some of which proved to be significant. AIAI advocated that the artist's right to his work is a property right; that its duration should be a period of 100 years from the date of publication.

At the AIAI's 1882 conference in Rome proposed "that the office of the International Association should be responsible for taking the steps necessary to initiate in the press of all

countries as extensive and profound a discussion as possible as to the possible formation of a Union of literary property and the proposal that, at a place and date to be fixed subsequently, a conference composed of organs and representatives of interested groups should meet to discuss and settle a scheme for the creation of a Union of literary property.”

The conference in Berne was convened on September 10, 1883 and those convened adopted a draft which included the concepts of national treatment of copyrights; the abandonment of formalities, other than those in the country of origin; definitions of literary and artistic works; and the protection of translations for the entire term of copyright.

In 1893, the United International Bureaux for the Protection of Intellectual Property (BIRPI) was established to administer the Berne Convention from its city of origin. BIRPI moved to Geneva in 1960, for proximity to the United Nations offices there. In 1970, the World Intellectual Property Organization (WIPO) was established to take the place of BIRPI, and in 1974, WIPO became a part of the UN.

Currently 160 countries are members of the Berne Convention. The United States did not join until 1989, due its insistence on formalities such as notice and registration for the protection of copyrights. The life of the author plus 50 years term had been long advocated by France following the recommendations adopted by a series of AIAI conferences which argued for uniformity throughout the Union, most members of which had that term.

The Council of the European Communities (EC) undertook a review of whether the term of protection should be extended. The Commission recommended that the terms be harmonized with the adoption of the term of life of the author plus 70 years or 70 years after the date of publication and for related rights (e.g. music, films, etc.) of 50 years from the date of publication. The Economic and Social Committee of the EC recommended that the Commission adopt life plus 50 years instead of life plus 70 years. There are currently 35 countries in the world that have a term of life plus 70 years including the US, UK, Germany, France, Italy and Switzerland. Two countries that have longer terms – Mexico (life plus 100 years) and Guatemala and (life plus 75 years).

In 2004, the European Commission reviewed making the terms of protection for the related rights life plus 70 years as well and it found “it seems that public opinion and political realities in the EU are such as not to support an extension in the term of protection, some would even argue that the term should be reduced.” It was recommended that this be further monitored and studied.

15.3 Copy Right Law of India

The Copyright Act, 1957 (Act No. 14 of 1957) governs the laws & applicable rules related to the subject of copyrights in India. Copyright Law in the country was governed by the Copyright Act of 1914, was essentially the extension of the British Copyright Act, 1911 to India, and borrowed extensively from the new Copyright Act of the United Kingdom of 1956. All copyright related laws are governed by the Copyright Act, 1957. The Copyright Act today is compliant with most international conventions and treaties in the field of copyrights. India is a member of the Berne Convention of 1886 (as modified at Paris in 1971), the Universal Copyright Convention of 1951 and the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement of 1995. Though India is not a member of the Rome

Convention of 1961, WIPO Copyrights Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT), the Copyright Act is compliant with it

15.4 Copy Right

Copyright is a right given by the law to the creators of literary, dramatic, musical and artistic works and producers of cinematograph films and sound recordings. In fact, it is a bundle of rights including, inter alia, rights of reproduction, communication to the public, adaptation and translation of the work. There could be slight variations in the composition of the rights depending on the work.

15.4.1 Indian Work

- The author of which is a citizen of India; or
- Which is first published in India; or
- The author of which, in the case of an unpublished work is, at the time of the making of the work, a citizen of India.

15.5 Description of Work

15.5.1 Artistic work - An artistic work means

- A painting, a sculpture, a drawing (including a diagram, map, chart or plan), an engraving or a photograph, whether or not any such work possesses artistic quality;
- A work of architecture; and
- Any other work of artistic craftsmanship.

15.5.2 Musical work

- "Musical work" means a work consisting of music and includes any graphical notation of such work but does not include any words or any action intended to be sung, spoken or performed with the music. A musical work need not be written down to enjoy copyright protection.

15.5.3 Sound recording

- "Sound recording" means a recording of sounds from which sounds may be produced regardless of the medium on which such recording is made or the method by which the sounds are produced. A phonogram and a CD-ROM are sound recordings.

15.5.4 Cinematograph film

- "Cinematograph film" means any work of visual recording on any medium produced through a process from which a moving image may be produced by any means and includes a sound recording accompanying such visual

recording and "cinematograph" shall be construed as including any work produced by any process analogous to cinematography including video films.

15.6 Government work

"Government work" means a work which is made or published by or under the direction or control of

- The government or any department of the government
- Any legislature in India, and
- Any court, tribunal or other judicial authority in India.

15.7 An Author

- In the case of a literary or dramatic work the author, i.e., the person who creates the work
- In the case of a musical work, the composer.
- In the case of a cinematograph film, the producer.
- In the case of a sound recording, the producer.
- In the case of a photograph, the photographer.
- In the case of a computer generated work, the person who causes the work to be created.

15.8 Duration of Copy Right

Lifetime of the author + until sixty years from the beginning of the calendar year next following the year in which the author dies.,

- Literary
- dramatic,
- musical and
- artistic works
- photographs

Until sixty years from the beginning of the calendar years next following the year in which the work is first published

- Anonymous and pseudonymous works

- Posthumous work
- Cinematograph films
- Sound records
- Government work
- Public undertakings
- International Agencies

15.9 Assignment of Copyright

The author of a work is the first owner of the copyright(Section 17).However, for works made in the course of an author's employment under a contract of service, the employer is the first owner of the copyright. The owner of the copyright in an existing work or the prospective owner of the copyright in a future work may assign to any person the copyright either wholly or partially and either generally or subject to limitations and either for the whole term of the copyright or any part thereof: Provided that in the case of the assignment of copyright in any future work, the assignment shall take effect only when the work comes into existence (Section 18). Section 19 lays down the modes of assignment- assignment can only be in writing and must specify the work, the period of assignment and the territory. Section 19(5) provides that if period of assignment is not specified it shall be deemed to be 5 years and section 19(6) provides that if the territorial extent of assignment is not specified it shall be presumed to extend within India. In a recent judgment, a division bench of the Delhi High Court in *Pine Labs Private Limited vs Gemalto Terminals India Limited*, the Court has held that in case of the duration of assignment is not specified, the duration shall be deemed to be five years and after five years the copyright shall revert to the author. In this case, Pine Labs had written some software for Gemalto under a Master Service Agreement (MSA).Though in the MSA Pine Labs had assigned the copyright in the works to Gemalto, the period of assignment was not specified. The Court held that though Gemalto may have paid for the software, Pine Labs, being the author was the first owner of the copyright and after five years, the copyright reverted to Pine Labs.

15.10 Rights of Broadcasting Organizations and of Performers

15.10.1 Broadcast reproduction right: The broadcast reproduction right shall subsist until twenty-five years from the beginning of the calendar year next following the year in which the broadcast is made.

15.10.2 Performer's right: The performer's right shall subsist until fifty years from the beginning of the calendar year next following the year in which the performance is made.

15.10.3 Fair Dealing: A fair dealing with a literary, dramatic, musical or artistic work (not being a computer programme) for the purposes of

1. for the purpose of research or private study,
2. for criticism or review,

3. for reporting current events,
4. in connection with judicial proceeding,
5. performance by an amateur club or society if the performance is given to a non-paying audience, and .
6. the making of sound recordings of literary, dramatic or musical works under certain conditions

15.11 Government Works

Although Government works are copyrighted, the reproduction or publication of following works not copy protected.

- Act of a Legislature.
- Report of a committee, commission, council, board or other like body appointed by the Government.
- Judgment or order of a court, tribunal or other judicial authority

15.12 Criminal Liability

Copyright infringement is punishable under 63 of the Copyright Act:

Offences of infringement of copyright or other rights conferred by this Act are: Any person who knowingly infringes or abets the infringement of-

(a) The copyright in a work, or

(b) Any other right conferred by this Act, shall be punishable with imprisonment for a term which shall not be less than six months but which may extend to three years and with fine which shall not be less than fifty thousand rupees but which may extend to two lakh rupees:

Provided that the court may, for adequate and special reasons to be mentioned in the judgment, impose a sentence of imprisonment for a term of less than six months or a fine of less than fifty thousand rupees.

Explanation - Construction of a building or other structure which infringes or which, if completed, would infringe the copyright in some other work shall not be an offence under this section.

15.13 Let Us Sum Up

The Copy Right Law became a universal phenomenon. Every country provides safe guards the interest of the original writers with the assistance of these Copy Right Laws. The duration of the copy right helps the users, the limitations and freedom of using the ideas or concepts, knowledge of the creators.

15.14 References and Recommended Books

Chawla. Alka: Law of Copyright: Comparative Perspectives, 2013.

Ahuja. V.K. : Law of Copyright and Neighbouring Rights: National and International Perspectives, 2007.

15.15 Assignment

1. Efforts on Copy Right Law at International level.
2. The development of Indian Copy Right Law.

15.16 Model Examination Questions

Discuss the description of works under Indian Copy Right Law.

Unit- 16

INFORMATION TECHNOLOGY ACT

16.0 Aims and Objectives

In this lesson an attempt is made to make you understand, the concept of Information Technology Act and its use. After going through this lesson you will learn the history of Information Technology Act, various provisions, and Criticism by experts.

Structure

- 16.1 Introduction
- 16.2 History
- 16.3 Provisions
- 16.4 The Information Technology ACT, 2008
- 16.5 Structure of Information Technology Act
- 16.6 Digital Signature And Electronic Signature (amended vide ITAA 2008)
- 16.7 Electronic Governance
- 16.8 Criticisms
- 16.9 Let Us Sum Up
- 16.10 References and Recommended Books
- 16.11 Assignment
- 16.12 Self Assessment Questions

16.1 Introduction

The Information Technology Act 2000 (also known as ITA-2000, or the IT Act) is an Act of the Indian Parliament (No 21 of 2000) notified on October 17, 2000. This act is being opposed by Save Your Voice campaign and other civil society organizations in India.

16.2 History

The United Nations General Assembly by resolution A/RES/51/162, dated the 30 January 1997 has adopted the Model Law on Electronic Commerce adopted by the United Nations Commission on International Trade Law. This is referred to as the UNCITRAL Model

Law on E-Commerce. Following the UN Resolution, India passed the Information Technology Act 2000 in May 2000, which came into force on October 17, 2000. The Information Technology Act 2000 has been substantially amended through the Information Technology (Amendment) Act 2008 which was passed by the two houses of the Indian Parliament on December 23, and 24, 2008. It got the Presidential assent on February 5, 2009 and came into force on October 27, 2009.

16.3 Provisions

Information Technology Act 2000 consisted of 94 sections segregated into 13 chapters. Four schedules form part of the Act. In the 2008 version of the Act, there are 124 sections (excluding 5 sections that have been omitted from the earlier version) and 14 chapters. Schedule I and II have been replaced. Schedules III and IV are deleted.

Information Technology Act 2000 addressed the following issues:

1. Legal Recognition of Electronic Documents
2. Legal Recognition of Digital Signatures
3. Offenses and Contraventions
4. Justice Dispensation Systems for Cybercrimes

16.4 The Information Technology ACT, 2008

The Ministry of Law, Justice and Company Affairs (Legislative Department), New Delhi made an act of our use of electronic resources thoroughly on 9th June 2000. The same was received parliament approval and received the assent of the President of India. Later the information act was amended and bill was passed in 2006 and 2008 in Lok Sabha and Rajya Sabha respectively.

An Act to provide legal recognition for the transactions carried out by means of electronic data interchange and other means of electronic communication, commonly referred to as "Electronic Commerce", which involve the use of alternatives to paper based methods of communication and storage of information to facilitate electronic filings of documents with the Government agencies and further to amend the Indian Penal Code: Indian Evidence Act, 1872: The Bankers' Books Evidence Act, 1891 and the Reserve Bank of India Act, 1934 and for matters connected therewith or incidental thereto.

The Government of India has brought major amendments to ITA-2000 in form of the Information Technology Amendment Act, 2008. ITAA 2008 (Information Technology Amendment Act 2008) as the new version of Information Technology Act 2000 is often referred to has provided additional focus on Information Security. It has added several new sections on offences including Cyber Terrorism and Data Protection. A set of Rules relating to Sensitive Personal Information and Reasonable Security Practices (mentioned in section 43A of the ITAA, 2008) was released in April 2011.

16.5 Structure of Information Technology Act

The information technology act 2008 is in 13 areas:

1. **Preliminary**
 - Short Title, Extent, Commencement and Application
 - Definitions
2. **Digital Signature and Electronic Signature (Amended vide ITAA 2008)**
 - Authentication of Electronic Records
 - Electronic Signature (Inserted vide ITAA 2006)
3. **Electronic Governance**
 - Legal Recognition of Electronic Records
 - Legal recognition of Electronic Signature
 - Use of Electronic Records and Electronic Signature in Government and its agencies
 - Delivery of Services by Service Provider (Inserted vide ITAA-2008)
 - Retention of Electronic Records
 - Audit of Documents in Electronic form
 - Publication of rules, regulations, etc, in Electronic Gazette
 - Sections 6, 7 and 8 Not to Confer Right to insist document should be accepted in electronic form
 - Power to Make Rules by Central Government in respect of Electronic Signature (Modified Vide ITAA 2008)
 - Validity of contracts formed through electronic means (Inserted by ITAA 2008)
4. **Attribution, Acknowledgment and Dispatch Of Electronic Records**
 - Attribution of Electronic Records
 - Acknowledgement of Receipt (Modified by ITAA 2008)
 - Time and place of dispatch and receipt of electronic record
5. **Secure Electronic Records and Secure Electronic Signatures**
 - Secure Electronic Record
 - Secure Electronic Signature (Substituted vide ITAA 2008)
 - Security procedures and Practices (Amended vide ITAA 2008)
6. **Regulation of Certifying Authorities**

- Appointment of Controller and other officers (Amended Vide ITAA 2008)
- The Controller may perform all or any of the following functions, namely:
 - Recognition of foreign Certifying Authorities(Omitted vide ITA 2008)
 - License to issue electronic signature certificates
 - Application for license
 - Renewal of license
 - Procedure for grant or rejection of license
 - Suspension of License
 - Notice of suspension or revocation of license.
 - Power to delegate.
 - Power to investigate contraventions.
 - Access to computers and data.
 - Certifying Authority to follow certain procedures.
 - Certifying Authority to ensure compliance of the Act, etc.
 - Display of license.
 - Surrender of license
 - Disclosure

7. Electronic Signature Certificates

- Certifying Authority to issue Electronic Signature Certificate
- Representations upon issuance of Digital Signature Certificate
- Suspension of Digital Signature Certificate.
- Revocation of Digital Signature Certificate.
- Notice of suspension or revocation.

8. Generating Key Pair, Acceptance of Digital Signature Certificate, Control of Private key,

9. Penalties , Compensation and Adjudication (Amended Vide ITAA-2006/8)

- Penalty and Compensation for damage to computer, computer system, etc (Amended vide ITAA-2008)
- Compensation for failure to protect data (Inserted vide ITAA 2006)
- Penalty for failure to furnish information, return, etc
- Residuary Penalty
- Power to Adjudicate
- Factors to be taken into account by the adjudicating officer

10. The Cyber Appellate Tribunal (Amended vide ITA-2008)

- Establishment of Cyber Appellate Tribunal
- Composition of Cyber Appellate Tribunal (Substituted vide ITAA 2008)
- Qualifications for appointment as Chairperson and Members of Cyber Appellate Tribunal (Substituted vide ITAA 2006)
- Term of office, conditions of service, etc., of Chairperson and Members (Substituted vide ITAA 2008)
- Salary, allowances and other terms and conditions of service of Chairperson and Member. (Substituted vide ITAA 2008)
- Powers of superintendence, direction, etc (Inserted vide ITAA 2008)
- Distribution of Business among Benches (Inserted vide ITAA 2008)
- Powers of the Chairperson to transfer cases (Inserted vide ITAA 2008)
- Decision by majority (Inserted vide ITAA 2008)
- Filling up of vacancies (Amended vide ITAA 2008)
- Resignation and removal (Amended vide ITAA 2008)
- Orders constituting Appellate Tribunal to be final and not to invalidate its proceedings (Inserted vide ITAA 2008)
- Staff of the Cyber Appellate Tribunal (Error in amendment...item 28)
- Appeal to Cyber Regulations Appellate Tribunal
- Procedure and Powers of the Cyber Appellate Tribunal
- Right to legal representation
- Limitation
- Civil court not to have jurisdiction (Amended vide ITAA 2008)
- Appeal to High court
- Compounding of Contravention
- Recovery of Penalty or compensation (Amended vide ITAA 2006)

11. Offences

- Tampering with Computer Source Documents
- Computer Related Offences (Substituted vide ITAA 2008)
- Punishment for sending offensive messages through communication service, etc. (Introduced vide ITAA 2008)

- any electronic mail or electronic mail message for the purpose of causing annoyance or inconvenience or to deceive or to mislead the addressee or recipient about the origin of such messages (Inserted vide ITAA 2008)
- Punishment for dishonestly receiving stolen computer resource or communication device (Inserted Vide ITA 2008)
- Punishment for identity theft. (Inserted Vide ITA 2008)
- Punishment for cheating by personation by using computer resource (Inserted Vide ITA 2008)
- Punishment for violation of privacy. (Inserted Vide ITA 2008)
- Punishment for cyber terrorism
- Punishment for publishing or transmitting obscene material in electronic form (Amended vide ITAA 2008)
- Punishment for publishing or transmitting of material containing sexually explicit act, etc. in electronic form (Inserted vide ITAA 2008)
- Punishment for publishing or transmitting of material depicting children in sexually explicit act, etc. in electronic form.
- Preservation and Retention of information by intermediaries
- Power of Controller to give directions (Amended Vide ITAA 2008)
- Powers to issue directions for interception or monitoring or decryption of any information through any computer resource (Substituted Vide ITAA 2008)
- Power to issue directions for blocking for public access of any information through any computer resource
- Power to authorize to monitor and collect traffic data or information through any computer resource for Cyber Security
- Protected system (Amended Vide ITAA-2008)
- National nodal agency. (Inserted vide ITAA 2008)
- Indian Computer Emergency Response Team to serve as national agency for incident response
- Penalty for misrepresentation
- Breach of confidentiality and privacy
- Punishment for Disclosure of information in breach of lawful contract (Inserted vide ITAA-2008)

- Penalty for publishing electronic Signature Certificate false in certain particulars
- Publication for fraudulent purpose
- Act to apply for offence or contraventions committed outside India
- Confiscation
- Compensation, penalties or confiscation not to interfere with other punishment. (Substituted Vide ITAA-2008)
- Compounding of Offences
- Offences with three years imprisonment to be cognizable
- Power to investigate offences (Amended Vide ITAA 2008)

12. Intermediaries not to be Liable in Certain Cases (Substituted Vide ITA-2006)

- Exemption from liability of intermediary in certain cases
- Central Government to notify Examiner of Electronic Evidence

13. Miscellaneous

- Power of Police Officer and Other Officers to Enter, Search, etc
- Act to have Overriding effect
- Chairperson, Members, Officers and Employees to be Public Servants (Amended Vide ITA-2008)
- Power to Give Direction
- Protection of Action taken in Good Faith
- Modes or methods for encryption (Inserted Vide ITA-2008)
- Punishment for abetment of offences (Inserted Vide ITA-2008)
- Punishment for attempt to commit offences (Inserted Vide ITA-2008)
- Offences by Companies.
- Removal of Difficulties
- Power of Central Government to make rules
- Constitution of Advisory Committee
- Power of Controller to make Regulations
- Power of State Government to make rules

16.6 Digital Signature And Electronic Signature(amended vide ITAA 2008)**Authentication of Electronic Records**

(1) Subject to the provisions of this section, any subscriber may authenticate an electronic record by affixing his Digital Signature

(2) The authentication of the electronic record shall be effected by the use of asymmetric crypto system and hash function which envelop and transform the initial electronic record into another electronic record.

Explanation

For the purposes of this sub-section, "Hash function" means an algorithm mapping or translation of one sequence of bits into another, generally smaller, set known as "Hash Result" such that an electronic record yields the same hash result every time, the algorithm is executed with the same electronic record as its input making it computationally infeasible ;

(a) To derive or reconstruct the original electronic record from the hash result produced by the algorithm;

(b) That two electronic records can produce the same hash result using the algorithm.

(c) Any person by the use of a public key of the subscriber can verify the electronic record.

(d) The private key and the public key are unique to the subscriber and constitute a functioning key pair.

Electronic Signature (Inserted vide ITAA 2006)

(1) Notwithstanding anything contained in section 3, but subject to the provisions of sub-section (2), a subscriber may authenticate any electronic record by such electronic signature or electronic authentication technique which-

(a) is considered reliable ; and

(b) may be specified in the Second Schedule

(2) For the purposes of this section any electronic signature or electronic authentication technique shall be considered reliable if-

(a) the signature creation data or the authentication data are, within the context in which they are used, linked to the signatory or as the case may be, the authenticator and of no other person;

(b) the signature creation data or the authentication data were, at the time of signing, under the control of the signatory or, as the case may be, the authenticator and of no other person;

- (c) any alteration to the electronic signature made after affixing such signature is detectable
 - (d) any alteration to the information made after its authentication by electronic signature is detectable; and
 - (e) it fulfills such other conditions which may be prescribed.
- (3) The Central Government may prescribe the procedure for the purpose of ascertaining whether electronic signature is that of the person by whom it is purported to have been affixed or authenticated
- (4) The Central Government may, by notification in the Official Gazette, add to or omit any electronic signature or electronic authentication technique and the procedure for affixing such signature from the second schedule;
- Provided that no electronic signature or authentication technique shall be specified in the Second Schedule unless such signature or technique is reliable
- (5) Every notification issued under sub-section (4) shall be laid before each House of Parliament

16.7 Electronic Governance

Legal Recognition of Electronic Records: Where any law provides that information or any other matter shall be in writing or in the typewritten or printed form, then, notwithstanding anything contained in such law, such requirement shall be deemed to have been satisfied if such information or matter is :

- (a) Rendered or made available in an electronic form; and
- (b) Accessible so as to be usable for a subsequent reference

16.8 Criticisms

The amendment was passed in an eventful Parliamentary session on 23rd of December 2008 with no discussion in the House. Some of the cyber law observers have criticized the amendments on the ground of lack of legal and procedural safeguards to prevent violation of civil liberties of Indians. There also appreciation about the amendments from many observers because it addresses the issue of Cyber Security.

Section 69 empowers the Central Government/State Government/ its authorized agency to intercept, monitor or decrypt any information generated, transmitted, received or stored in any computer resource if it is necessary or expedient so to do in the interest of the sovereignty or integrity of India, defense of India, security of the State, friendly relations with foreign States or public order or for preventing incitement to the commission of any cognizable offence or for investigation of any offence. They can also secure assistance from computer personnel in decrypting data (see mandatory decryption), under penalty of imprisonment. Section 66A has been criticized and challenged in Lucknow and Madras High Courts for its constitutional validity.

16.9 Let Us Sum Up

For development of Information Technology Act, the basis is United Nations general Assemble 1997. In India, the Information Technology Act came in 2000 and made amendments to the Act. Consequently Information Technology Act 2008 came in. There is lot of criticism on this act in various angles. The Information Technology Act is in thirteen areas. In 2008 IT Act, suitable provisions given for digital and electronic signature.

16.10 References and Recommended Books

Murray. Andrew: 2013: Information Technology Law: The Law and Society Paperback– 22 Aug 2013

Samuel. T.M. & Samuel . Maria .2008: Information Technology and the Law.

The Information Technology ACT, 2008, Ministry of Law, Justice and Company Affairs, New Delhi, the 9th June 2000/Jyaistha 19, 1922.

16.11 Assignment

History of Information Technology Act.and provisions if IT act

Electronic signature.

16.12 Self Assessment Questions

Discuss the structure of Information Technology Act.

Unit- 17**NATIONAL POLICY FOR LIBRARY AND
INFORMATION SCIENCE****17.0 Aims and Objectives**

In this unit you will be learning concept of information policy and its meaning. After going through this unit you should be able to explain the importance of information policy of national level, features of information policy and other related information policies.

Structure**17.1 Introduction****17.2 Meaning and Definition****17.3 Library Information Policy at National Level - India****17.4 Salient Features****17.5 Other Library and Information Policies****17.6 Let Us Sum UP****17.7 References and Recommended Books****17.8 Assignment****17.9 Self Assessment Questions****17.1 Introduction**

Library and Information Policy at the National Level: A Policy is a statement of commitment to a generic course of action necessary for the attainment of a goal which in our case is library development. A policy is conditioned on the political, economic, social, and cultural milieu. Policies are values in a number of ways such as they standardize activities, facilitate decision making, minimize confusion, coordinate the activities of various units, conserve time in training etc. Policy statements are to be formulated at the institutional, regional, state, national and international levels. It comprehends a set of basic issues which are infrastructure development, information services development, utilization of new technologies, manpower development and other general recommendations. Many countries have adopted a library policy which helped them to undertake library development with a certain commitment and assurance. Policies in certain sectors of the national economy have also had their implications for library development.

17.2 Meaning and Definition

The concept of Library and Information Policy is new. Here, we are going to discuss how the concept of "Policy" originated in the field of Library and Information Science. Today's society is known as an Information Society which require information at every step. In modern society, information is treated as a very important source in all areas of development whether it is social, political, economic, cultural etc. The progress of any nation depends on the information generation, disseminating it to the users, and putting it to work. Lack of information is going to adversely affect the development. It is because of the ever increasing demand for information from all walks of life that the need of a policy is felt. And since, this information is being imparted or disseminated via the Libraries, Documentation Centers, Information Analysis and Consolidation Centers etc. are the means for collecting, storing, and organizing information. Thus, the policy had to be formulated on Libraries and Information Systems. In almost all countries, national governments are the major investors and disseminators of information. As such, each country should evolve a National Policy of its own taking into consideration of the developments at national and international level.

In the context of India, a National Information Policy must necessarily be governed by and form an integral and harmonious part of the social, economic, educational, research and development and other related policies, which get formulated at various stages of our national development. Further, the Information Policy needs to be properly made compatible with the Five Years National Plans of the country.

"A National Information Policy is a set of decisions taken by the government, through appropriate laws and regulations, to orient the harmonious development of information transfer activities in order to satisfy the information needs of the people. A National Information Policy needs provision of necessary means or instruments such as financial, personnel, institutional for concrete implementation".

A National Information Policy would ensure access to professional and specialized knowledge at the global level as the development of any country directly depends upon the planning and policies followed by the government of the country.

17.3 Library Information Policy at National Level - India

Libraries in our country function under a variety of ownerships and jurisdiction. There is generally no coordination in their development. The progress of libraries has been very slow because of the following factors:

- a) Neglect of library services during the British period
- b) Resource constraint in the post-Independence era
- c) Sole dependence on Government funds for library development.

Due to above said reasons and many more, the need for an integrated library system or policy for India was felt and in this direction, first step was taken by Dr. S. R. Ranganathan, Father of Library Science, in 1944. He suggested that "library edifice of postwar India should be so planned that primary libraries are attached to regional centres, regional centres to provisional

central libraries, these again to the national centre libraries of other countries and international centres”.

The Government of India made various attempts to improve library services. Under the National Library of India Act, 1948, the Imperial Library was renamed to National Library. In 1951, Delhi Public Library was set up. Indian National Scientific Documentation Centre (INSDOC) was established in 1951. Five Year Plans included funnels for their improvement. In 1957, the Advisory Committee suggested library services “free to every citizen of India.”

National Policy on Library Information System was formulated by the Raja Ram Mohan Roy Library Foundation (RRRLF) which was set up in 1972 and also by the Indian Library Association.

The Department of Culture, Ministry of Human Resource Development, Government of India, appointed a Committee of senior library scientists and other specialists with Prof. D. P. Chattopadhyaya as Chairman, to prepare a draft document on the National Policy on Library and Information System in October 1985. The Committee completed its assignment and submitted a draft document to the Government on May 31, 1986. The draft policy document consists of 10 chapters.

To implement the recommendations of the committee, Government appointed an Empowered Committee under the chairmanship of Prof. D.P. Chattopadhyaya, in October 1986. The committee submitted its report in March 1988.

The recommendations of the committee are:

- a) Constitution of National Commission on Libraries.
- b) Creation of All India Library Services.
- c) Active role of Central Government in Public Library Development in State.
- d) Public Library Development has also to be supported by agencies involved in education, social and rural development.
- e) National Library of India, Kolkata should be strengthened.
- f) Development of system of national libraries.

17.4 Salient Features

A number of features that constitute the National Information Policy are given below:

- i) To establish, maintain, and strengthen the free public libraries. A network of libraries would result with a district library being the apex library in the district along with public libraries at city, town and village levels. These would, then be a part of the national network with each state having its own library legislation.

- ii) Every school or college established should have a library and a qualified librarian. The policy states that science libraries are essential part of education. There must be a state level agency for proper development of school libraries of the state and a national agency for coordination at the national level. The policy gives University Grants Commission, the authority for college and university libraries and suggests that all these institutes form a network and share the resources by signing Memorandum of Understanding (MOU).
- iii) Expansion of national, regional, sectoral, and local levels of NISSAT (National Information System for Science and Technology). The policy recommends that national, regional, sectoral, and local levels of NISSAT scheme should be further strengthened and expanded.
- iv) Similar systems are organized in Social Sciences, Humanities and Languages.
- v) Development of information system and data banks in different fields.
- vi) Parent bodies should be committed to provide support and infrastructure for libraries.
- vii) The policy recommends for a system of national libraries consisting of The National Library at Calcutta, National Depository Libraries, National Subject Libraries and National Documentation/Information Centres, National Databases of Manuscripts, etc. A National Library Board should be set up by the National Library of India for effective inter-relation among all these national libraries and also between libraries, archives and museums.
- viii) Manpower, planning and development: The policy also recommends specialized information personnel who could apply modern management techniques to Information Services.
- ix) Library legislation and regulation of information flow: To meet effectively, with the changing information needs of society, the policy recommends a national library act to be enacted and supplemented by model library legislation at the state level.
- x) Use of technology: Information revolution is indisputably caused by the unprecedented advances in technology. These advancements have made accessibility to world information and knowledge possible, almost from any part of the world. All these developments in information technology have far reaching implications for National Information Policy. It recommends the access and use of technology for enhancing the existing services and to exploit and utilize the available resources to its optimum.
- xi) Removal of communication barriers: Information, being an important resource, any barrier in its free flow should be removed for easy access and maximum use.
- xii) National network of libraries: The National Information Policy recommends the setting of a National Commission for Libraries and Information System by the Government. This would take charge of the national network of libraries, within which, libraries of different levels from the rural society to the modern society, from the school to the research organizations would be accommodated. The policy states that the necessary financial support 6 to 10% of the education budgets for systems will be made available by the Government of India and state of governments.

17.5 Other Library and Information Policies

UNESCO has been advocating the adoption of a National (Science) Information Policy by all the countries of the world. In this connection, UNESCO held some regional meetings and seminars in India. NISSAT, which is the focal point in India for the UNISIST/UNESCO programme, is expected to take interest in framing information policy. The Society for Information Science in India has done considerable spade work for preparing the National (Science) Information Policy.

Even, in India or other nations, there are various associations formulated at state and district levels for e.g. Library Association for Chandigarh, Library Association of Visakhapatnam, Madras Library Association and so on, contributing in formulating and implementing the Library and Information Policies for the betterment of the Nation as a whole.

The policies which have been adopted by Government in a few other sectors have direct impact on Library field such as National Policy on Education 1986, National Book Policy 1986, Scientific Policy Resolution 1958, Technology Policy 1983, Information (Communication) Policy, National Knowledge Commission, 2005.

The primary objective of a national policy is to achieve a progressive upliftment of the socioeconomic development of the country through the provision of access to and availability of information and knowledge with speed and efficiency to all those who are involved in activities for national development. Planning and programming endeavours are essential to aim at a systematic and assured development. The formulation of a National Policy on Library and Information System are epoch-making measures in the library movement in the country. If the policy recommendations are faithfully implemented, a new phase in library development in India towards a far better performance and achievement is sure to come about. A National Library Policy is also necessary to have a commitment to provide library service to all the people as it is suggested by the Advisory Committee. The Five Year Plans have given a great deal of attention to library development and informatics and the Ninth Plan has made appropriate provision. If implemented rigorously, library development will get assured success.

17.6 Let Us Sum UP

The idea of National Information Policy and its meaning are enough to understand the importance of information policy, with the information policy, the comprehensive development of libraries of India is possible. National Information Policy would encourage the professionals to learn latest communication technologies in order to implement and serve the user successfully. The contributions of UNESCO towards development of National Information Policy are also significant.

17.7 References and Recommended Books

National Information Policies and Programmes: SXXXVII All India Library Conference held at IIT, Madras, Dec 4-7, 1991, Delhi:ILA, 1991.

Raja ammohan Roy Library Foundation . A Compresive Plan for Rural Libraries in india, Calcutta: RRLF, 1995.

India, Ministry of Human Resource Development (Department of Culture). Report of the working group of the Planning Commission on "Libraries and Informatics" for the Ninth Five Year Plan (1997-2002). New Delhi, 1996.

17.8 Assignment

Write an account on National Information Policy.

UNESCO role towards National Information Policy.

17.9 Model Examination Questions

Describe the salient features of National Information Policy of India.

Write an account on Library Information Policy at National Level for India

Unit- 18**NATIONAL INFORMATION POLICY****18.0 Aims and Objectives**

In this unit you will be learning the meaning, definition, need, history, basic consideration of information policy etc. The role of government in formulating national information policy is discussed. After going through this unit you will be able to understand the concept of National Information Policy and its need. The role of libraries towards development of society in the light of national information policy is also stated.

Structure

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18.1 Introduction

Information policy is the set of all public laws, regulations and policies that encourage, discourage, or regulate the creation, use, storage, access, and communication and

dissemination of information. It thus encompasses any other decision-making practice with society-wide constitutive efforts that involve the flow of information and how it is processed.

There are several fundamental issues that comprise information policy. Most prominent are public policy issues concerned with the use of information for democratization and commercialization of social life. These issues include, inter alia, digital environment, such as intellectual, economic regulations, freedom of expression, confidentiality or privacy of information, information security, access management and regulating how the dissemination of public information occurs.

Information dissemination and accessibility is underlying factor for sustainable economic, political, communal, and social development. Information policy affects all of us because without information, we don't function individually and definitely not as a society. The aim of the information society is to gain competitive advantage through using IT in a creative and productive way internationally. The information society produces enormous amount of information, information technologies enable to collect, store, archive information and access it at anytime and anywhere in modern ways. The information policy is determined as the set of rules, regulation and standards that controls the access to information for society. A concept is difficult to understand when it constantly is growing and evolving due to the information it covers and as we know information is always changing. Still, the national information policy is a key issue of culture, knowledge and information institutions.

Libraries are information institutions inherently. They play a key role as information pipeline. It is important carefully uphold the standards and policies which support its mission.

- The general mission for libraries in this dynamic, challenging and globally-networked environment is advancing the world's knowledge.
- The online landscape will increasingly resemble the "semantic web" –in which computers become capable of extracting, classifying, categorizing, and analyzing data to create context and new uses for content.
- Library users will increasingly demand searches that identify sources of quality information and gives new context to content.

18.2 Meaning and Definition

The term "information policy" has many connotations depending upon deferent viewpoints and various interpretations: "To some, it is that body of statutes and regulations that governs the telecommunications industry. To others, it is concerned with the issue of privacy and freedom of information. To still others, it is those laws and policies affecting libraries and government printing and publication."

As identified by the National Commission on Libraries and Information Science, information policy should be a policy which governs the way information affects our society. It deals with various components of information which are interrelated and interdependent.

18.3 Overview

Information policy became a prominent field of study during the latter half of the 20th century as the shift from an industrial to an information society transpired. The growing awareness in the importance of information policy has sparked an interest in various groups to

further study and analyze its magnitude. The most common audience for information policy analysis includes undergraduate and graduate students, scholars, policymakers, policy analysts as well as those members of the public who have taken an interest in understanding the effects of the laws and regulations involving information.

Although information policy generally has a broader definition and encapsulates a multitude of components, its scope and impact can vary depending on the context. For example, in the context of an information lifecycle, information policy refers to the laws and policies that deal with the stages information goes through beginning with its creation, through its collection, organization, dissemination and finally to its destruction. On the other hand, in the context of public administration, information policy is the means by which government employees, institutions and information systems adopt themselves to an environment in rapid fluctuation and use information for decision-making .

Information policy is in fact, a combination of several varying disciplines including information science, economics, law and public policy. Thus, its scope may differ when each of these disciplines analyses or uses it. The information sciences may be more concerned with technical advances and how this impacts information policy, while from a law perspective, issues such as privacy rights and intellectual property may be of greatest focus.

The information society generates and consumes enormous amounts of information and at the same time information technological progress has made it easier to process, store and communicate information and knowledge in new ways. Alone the ever-accelerating Internet generates innumerable quantities of information supported by a decrease in telecommunication costs as well as in hardware prices. However the large amount of information available also creates a number of different problems, because it is difficult to assess exactly what information is available and how specific groups of citizens may get it. What does it take to meet that development? For libraries as well as for their originators and "sponsors".

The development calls for new actions from all types of libraries including the public libraries and the way they store and make available their collections. In the light of this situation development of national information policy and IT-strategies are needed more than ever everywhere. As the revised edition of UNESCO's Manifesto emphasizes "The public library is the responsibility of local and national authorities. It must be supported by specific legislation and financed by national and local governments. It has to be an essential component of any long-term strategy for culture, information provision, literacy and education".

A couple of years ago IFLA's Section of Public Libraries decided to find out whether IFLA's member states actually have established or are developing national information policies and - or national information technology strategies. And if positive, whether they include libraries. IFLA's Standing Committee for Public Libraries appointed mid 1995 a special ad-hoc group, to work with the NIP/NITS issue. Members: Françoise Danset, France, Peter Klinec, Slovakia, Philip Gill, UK and Hellen Niegaard, Denmark. When FD and PK left the committee in 1997, NicDiament, France and Ilona Glashoff, Germany joined the working group.

18.4 National Information Policy-Need

While the value of information is ascertained so affirmatively, the most effective collection, processing, dissemination, transferring, availability, access, analysis and utilization of information depend greatly upon a workable, long-range, multi-faced national information policy.

Throughout the world policymakers are establishing national policies to promote their information industries and to protect against potential negative effects on the information age. "Information is at the very heart of public policy" stated by Hubert H. Humphrey, illustrates the prominent position of information policy in the United States; Universally, attention to national information policy is indeed on the upswing. The information policy is determined as the set of rules, regulation and standards that controls the access to information for society. National information policy is a key issue of culture, knowledge and information institutions.

18.5 History of Information Policy

The earliest sight of information policy was present around the mid 1900s. The stages to begin evolving from an industrial society to an information society sparked several other transformations. The common industrial technologies were beginning to be replaced by informational meta-technologies. Organizations began changing their form, several new architectures of knowledge developed, and most importantly, the information economy replaced industrial and agricultural economies.

By the 1970s, the concept of National Information Policy was created to protect the data and information that was used in creating public policies. The earliest adopters of information policy included the United States, Australia, as well as several European countries who all recognized the importance for a more standardized governance of information.

Elizabeth Orna contributed to a paper on information policies by providing a brief history of the development of ideas surrounding national and organizational information policies, from the beginning when the United Kingdom Ministry of Information was established in the First World War to present day.

In the 20th century, to cope with the privacy problems of databases, information policy evolved further safeguards. In the USA, the federal Privacy Act provides individuals the right to inspect and correct personal information in federal datafiles.

18.6 Concept and Relevance of a National Information Policy According to UNESCO

National Information Policies, including considerations of informatics and telematics, are the key to cope with the challenges of the Information Society. There has to be a complete re-examination of traditional information policies in the virtual, interactive, highly volatile reality of cyberspace, particularly in the framework of legal and ethical issues. Many developing countries are now struggling to "catch-up" with the industrialised.

18.7 Issues and Basic Consideration

The interrelationships and interdependences of the various components of information, which can be seen in communication, technology, economics, privacy of information and among information management, information networks and information/library science are indeed key issues for information policy. A sound, comprehensive, and coordinated national information policy, therefore, should be determined with a broad concept and should deal with every facet of information: creation, collection, organization, supplies, processing, dissemination, transfer and usage. In effectively and successfully formulating a national information policy, centralized high-

level leadership, hierarchical upgrading of responsible sub-units, participation of public and private sectors and coordinated efforts are basic considerations.

18.8 The Role of Libraries

In almost all the countries NIP and/or NITS was adopted recently (1993-1997), though a few were developed before and some are about to be adopted in 1999. Most of the countries have appointed a particular body or committee to be responsible for co-ordination, where libraries play the central role of the NIP/NITS, often the national library or a similar institution is responsible.

The role of the libraries includes of course all traditional library tasks - comprising both traditional collections and IT-services but this is not all. In short several countries see the future role of libraries as public access points to knowledge and information, "*gateways to information*", as a bridge between information strong and information weak citizens, as information centre toward a national IT development and as partners in the processes of standardisation etc. Target groups are generally "*the public in general, educational and scientific institutions, as well as national business*".

NIP/NITS is put into practice in a number of ways - varying from legislation and other state initiatives to national programmes and projects. A part from a few exceptions funding derives everywhere from public budgets; state and/or local level, mostly state. To the question "*What progress have been made due to NIP/NITS?*" allocating of funds is together with co-ordination the most common replies. When asked about the importance of libraries being a part of NIP/NITS, answers are very positive in general, though some do underline that one thing is adopting NIP/NITS another is to make the intentions come through.

18.9 Types of NIP & Importance of NIP

The types of information policy can be separated into two different categories. It can be discussed in the short-term focus exclusively on information science. It can also have a much broader context in relation to different subjects and be within a larger time period, for example dating back to Roman civilization, the Bill of Rights, or the Constitution.

The obvious reason for the need of information policy deals with the legal issues that can be associated with the advancement of technology. More precisely, — the digization of the cultural content made the cost of the copy decreasing to nearly zero and increased the illegal exchange of files, online, via sharing web site or off line (copy of hard disks). As a result, there are many grey areas between what users can and cannot do, and this creates the need for some sort of regulation. Today, this has led to the creation of SOPA (Stop Online Piracy Act). Information policy will mark the boundaries needed to evaluate certain issues dealing with the creation, processing, exchange, access and use of information.

18.10 Convergence

Convergence essentially combines all forms of media, telecommunications, broadcasting, and computing by the use of a single technology: digital computers. It integrates diverse technological systems in the hopes of improving performance of similar tasks. Convergence is thought to be the result of the need for expansion into new markets due to competition and technological advances that have created a threat of new entrants into various

segments of the value chain. As a result, previously disparate technologies interact with one other synergistically to deliver information in new and unique ways and allow for inventive solutions to be developed.

Nearly every innovative trend in the social industry involves adding data or layers of connectivity. Social networking sites have begun interacting with e-mail functionalities, search engines have begun integrating Internet searches with Facebook data, Twitter along with various other social media platforms have started to play a prominent role in the emergency management framework (mitigation, preparedness, response, and recovery) among several others.

In 2012, a prominent issue arises that deals with the convergence of social media with copyright infringement monitoring systems. The growing interest in this topic can be largely attributed to the recent anti-piracy bills: the Stop Online Piracy Act (SOPA) and the Protect IP Act (PIPA). Various officials from all over the world have expressed an interest in forcing social networks to install and utilize monitoring systems to determine if users are illegally obtaining copyrighted material. For example, if implemented, these filters could prevent the illegal sharing of music over social networking platforms. The convergence of search engines and social networks could make this process even easier. Search engines such as Google, Yahoo, and Bing have begun to merge with social media platforms to link Internet searches to your social networking sites such as Facebook. This poses an even greater threat to users since their Internet searches can be monitored via their social networks.

The issue of converging social networks with piracy monitoring systems becomes controversial when it comes to protecting personal data and abiding by privacy laws. In order for a synergy such as this one to take place, regulatory convergence would need to be considered. Regulatory convergence is the merging of previously disparate industry-based laws and regulations into a single legal and regulatory framework.

18.11 Internet Governance

Internet governance has both narrow and broad definitions, thus, making it a complex concept to understand. When most people think of Internet governance, they think of the regulations of the content and conduct that are communicated and acted on through the Internet. Although this is certainly a broad component of Internet governance additionally, there are more narrow elements to the definition that are often overlooked. Internet governance also encompasses the regulation of Internet infrastructure and the processes, systems, and institutions that regulate the fundamental systems that determine the capabilities of the Internet.

Architecture is the foundation of the Internet. The fundamental goal of the Internet architecture is to essentially create a network of networks by interconnecting various computer network systems globally. Protocols such as TCP/IP as well as other network protocols serve as the rules and conventions by which computers can communicate with each other. Thus, TCP/IP is often viewed as the most important institution of Internet governance. It serves as the backbone to network connectivity.

Organizations such as the Internet Corporation for Assigned Names and Numbers (ICANN) coordinate the various systems within the Internet on a global level to help to preserve the operational stability of the Internet. For example, coordination of IP addresses and managing the Domain Name System (DNS) ensure computers and devices can correctly connect to the

Internet and can communicate effectively and globally. If regulation of these crucial elements of the Internet such as TCP/IP and DNS were governed by disparate principles, the Internet would no longer exist as it does today. Networks, computers and peripherals would not be able to communicate and have the same accessibility if these foundational elements varied.

18.12 Government Roles

Like with any policy, there needs to be an agent to govern and regulate it. With information policy in a broader sense, the government has several roles and responsibilities. Some examples include providing accurate information, producing and maintaining information that meets the specific needs of the public, protecting the privacy and confidentiality of personal and sensitive information, and making informed decisions on which information should be disseminated and how to distribute it effectively, among others. Although the government plays an active role in information policy, the analysis of information policy should not only include the formal decision making processes by government entities, but also the formal and informal decisions of both the private and public sector of governance.

18.13 Security Vs freedom of information

A persistent debate concerning the government role in information policy is the separation of security and freedom of information. Legislation such as the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USAPATRIOT or USAPA) Act of 2001 is an example of security taking precedence over civil liberties. The USAPA affected several surveillance and privacy laws to include:

- Wire Tapping (Title III) which requires there, be probable cause for real-time interception of voice and data communication.
- Electronic Communications Privacy Act (ECPA) regulates government access to email and other electronic communications.
- Foreign Intelligence Surveillance Act (FISA) authorizes the government to carry out electronic surveillance against any person, including Americans.

The USAPA was passed in October 2001, not long after 9/11 and without much contention from congress. Civil liberties advocates argue that the changes made to the standing surveillance laws were done in an abrupt manner and without consideration to basic rights as outlined in the US constitution, specifically fourth amendment rights which protects against unreasonable search and seizure.

18.14 Issues Requiring Policy Action Procedures

- Media development: regulation and deregulation
- Enhancing communication professions and institutions
- Cultural development and social integration
- Human resources development and training
- Communication technologies: old, new and emerging
- Development Support Communication

- Regional and international cooperation
- Commercialization and Privatization
- Resource Mobilization and Allocation.

18.15 Procedures

A procedure is a sequence of steps for completing a given activity. A procedure may outline the manner in which a particular policy is to be implemented, but it cannot take the place of that policy. Recall that a good policy is inviolate, that is, policies change slowly and infrequently if at all. Procedures, on the other hand, change often as dictated by any number of factors such as staffing, equipment, space, and technology. An earlier procedure related to a given policy may have required a number of steps which can now be eliminated as a result of new technology.

18.16 Let Us Sum UP

For development of any nation in all respects, the people should be provided with required information from time to time. The information is to be made available uninterruptedly to people, a kind of information policy is necessary. The NIP helps the people to satisfy the information needs in order to meet their day to day requirements. In this context, the role of UNESCO is quite significant. Now information is made available in several formats like print and electronic. The electronic format is getting popularized for various reasons, which influence the information policy in several directions.

18.17 References and Recommended Books

INDIA. Ministry of Human Resource Development (Department of Culture), National Policy on Library and Information System – A presentation. New Delhi, 1986.

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INDIA. Ministry of Human Resource Development (Department of Culture). Report of the Working Group of the Planning Commission of “Libraries and Informatics” for the Ninth Five Year Plan (1997-2002). New Delhi 1996.

18.18 Assignment

1. Write an account on need for National Information Policy.
2. Explain History of Information Policy.

18.19 Model Examination Questions

1. Discuss the Role of UNESCO in development of Information Policy.
2. Discuss the types of Information Policy.

Unit- 19**NATIONAL KNOWLEDGE COMMISSION****19.0 Aims and Objectives**

In this lesson you will be learning the idea and purpose of National Knowledge Commission appointed by Government of India. The terms of reference for the commission are stated to make you understand the areas that the commission is likely to touch upon. The recommendations are given in general and in specific areas. After going through this unit you will be able to understand the policy of Government of India on various academic areas.

STRUCTURE**19.1 Introduction****19.2 National Knowledge Commission -Objectives****19.3 Working of the National Knowledge Commission****19.4 Terms of Reference****19.5 Controversies****19.6 Recommendations****19.7 Highlights of Other Recommendations of NYC****19.8 Let Us Sum UP****19.9 References and Recommended Books****19.10 Assignment****19.11 Model Examination Questions****19.1 Introduction**

National Knowledge Commission is an Indian think-tank charged with considering possible policies that might sharpen India's comparative advantage in the knowledge-intensive service sectors. It was constituted on 13 June 2005, by the [Prime Minister of India](#), Dr. [Manmohan Singh](#).

In particular, the Commission has to advise the Prime Minister's Office on policy related to education, research institutes and reforms needed to make India competitive in the [knowledge economy](#). The Commission recommends reform of the education sector, research labs, and intellectual property legislation; as well as consider whether the Government could itself upgrade its use of the latest techniques to make its workings more transparent. The NKC website was launched in February 2006.

19.2 National Knowledge Commission - Objectives

The overarching aim of the National Knowledge Commission is to enable the development of a vibrant knowledge based society. This entails both a radical improvement in existing systems of knowledge, and creating avenues for generating new forms of knowledge.

Greater participation and more equitable access to knowledge across all sections of society are of vital importance in achieving these goals.

In view of the above, the NKC seeks to develop appropriate institutional frameworks to:

- Strengthen the education system, promote domestic research and innovation, facilitate knowledge application in sectors like health, agriculture, and industry.
- Leverage information and communication technologies to enhance governance and improve connectivity.
- Devise mechanisms for exchange and interaction between knowledge systems in the global arena.

19.3 Working of the National Knowledge Commission

The National Knowledge Commission (NKC) consists of the following eight members.

- Sam Pitroda, Chairman
- Dr. Ashok SekharGanguly, Corporate leader
- Nandan Nilekani, Chairman of Unique Identification Authority of India (UIDAI)
- Dr. Deepak Nayyar, former Vice-chancellor, University of Delhi
- Dr. Jayati Ghosh, economist at Jawaharlal Nehru University
- Dr. Sujatha Ramdorai, internationally reputed algebraic number theorist and professor of mathematics at Tata Institute of Fundamental Research
- Dr. Padmanabhan Balaram, director of Indian Institute of Science, Bangalore
- Prof. Amitabh Mattoo, Former Vice Chancellor, Jammu University

19.4 Terms of Reference

- "Build excellence in the educational system to meet the knowledge challenges of the 21st century and increase India's competitive advantage in fields of knowledge.
- Promote creation of knowledge in Science and technology laboratories.
- Improve the management of institutions engaged in Intellectual Property Rights.
- Promote knowledge applications in Agriculture and Industry.

- Promote the use of knowledge capabilities in making government an effective, transparent and accountable service provider to the citizens and promote widespread sharing of knowledge to maximize public benefit.”

The organisational structure of the NKC is flat. The Secretariat is headed by an Executive Director and consists of around 8-9 research associates. It also has four advisors who advise the commission on different issues. The Secretariat of the Commission is located in Chanakyapuri, New Delhi.

In December 2006, the Commission brought out a 'Report to the Nation 2006'. It includes the following recommendations submitted to the Prime Minister:

- Libraries
- Knowledge
- E-governance
- Translation
- Languages
- National portal of india

Many of the recommendations of the NKC are already in the implementation stage by different ministries of the Government. This includes areas such as Libraries, e-governance and translation.

Some of the major areas under work are higher education, vocational education, entrepreneurship, school education etc. The NKC consults a wide range of stake-holders and experts on each area before submitting the recommendations to the Prime Minister. Each area has a working group which is headed by a prominent person in that field. The Working Group members meet several times to submit a report to the NKC. The NKC members then hold discussions on the report before submitting it to the Prime Minister. After submitting the recommendations, an extensive coordination also takes place with the Planning Commission of India and relevant ministries of the Government.

As many of the components of the education sector remains the state subjects in India, NKC representatives also visit various state governments and conduct deliberations with secretaries of education departments for reforming of the education sector at the state level.

The Commission was mandated to last till October 2008. But now, looking at the good work the Commission has done, it has been extended until March 2009.

19.5 Controversies

Since its inception, the commission has been surrounded by different controversies.

In May 2006 the Commission spoke out against the [Human Resource Development Ministry](#)'s plans to increase quotas for backward castes in institutions such as the [IITs](#). Following [Arjun Singh](#)'s subsequent remarks on their credentials, two of the members, [Andre Béteille](#) and [DrPratapBhanu Mehta](#), sent letters of resignation to the Prime Minister.

A difference of opinion also took place between Dr. [P.M.Bhargava](#) and rest of the commission members in early 2007, which resulted in reconstitution of the commission.

Majority of Vice-Chancellors had rejected the policy direction given in NKC report to nation 2006 on the Higher Education during the discussion on the NKC report in the 82nd Annual meeting of the Association of Indian Universities. However, some of the former and present vice-chancellors of various leading universities accept major directions like structural reform, augmentation of university number, freeing appointment of Vice-Chancellors from direct or indirect intervention on the part of government, etc. It is a major setback to the NKC. Consequently the commission has released "FAQs on NKC recommendations on Higher Education"

19.6 Recommendations (Sam Pitroda, Chairman, The National Knowledge Commission)

As a result of their work and discussions at the NKC recommend the following:

- 1. Provide impetus for developing translation as an industry** in the country. Going by the experiences of other countries, in a country like India with its many languages, as well as the huge potential for foreign language translation, the entire translation industry has the potential eventually to employ between 200,000 and half a million people.
- 2. Establish a store-house of information** on all aspects of translation involving Indian languages and to make this facility available by creating, maintaining and constantly updating information on translations published, training programmes, translation tools/instruments and new initiatives, and facilities such as a 'National Register for Translators'.
- 3. Promote printed as well as virtual publication** of works on translation studies. Further provide a clearing house for all translation activities, both in theoretical and applied subjects, in as many Indian languages as possible.
- 4. Create and maintain various tools for translation**, including digital tools like Thesauri, Bilingual Dictionaries and software for translation. In addition, promote machine translation, leveraging emerging technologies to provide rapid and large volume of translation at a relatively low cost.
- 5. Provide quality training** and education for translators. Some ways this could be done include short term training programmes, course packages for translators that could be incorporated in the language teaching programmes, and fellowship programmes and research projects to encourage quality students. There is also need for guidance in the methodology of translation and undertake activities to enrich teaching and training activities in translation studies.
- 6. Translate pedagogic materials** at all levels (including primary onwards to tertiary education) specifically in natural and social sciences.
- 7. Project Indian languages and literatures within South Asia and outside** through high-quality translation.

8. **Set up a national web portal** on translation as a one stop shop for all information on translation and to provide a forum for dialogue by creating a bulletin board for people to post questions and answers.

9. **Organize annual National Conferences** on translation to take stock of activities and initiatives in the field, attended by experts, industry and practitioners in the field.

10. **Promote book launches, festivals, fellowships and prizes etc.** and encourage collaborative translation work, as well as long-term multi-translator projects, and organise workshops for translators to interact and exchange views and experiences.

19.7 Highlights of Other Recommendations of NKC

Keeping in view of all the stated issues the commission highlighted the following recommendations on various areas.

Libraries

- Set up a National Commission on Libraries
- Prepare a National Census of all libraries
- Revamp Library and Information Sciences education, training, and research
- Re-assess staffing of libraries
- Set up a Central Library Fund
- Promote Information Communication Technology applications in all libraries
- Facilitate donation and maintenance of private collections
- Encourage Public Private Partnerships in LIS development
- Modernize library management, encourage greater community participation in library management

Translation

- Project Indian languages and literatures through high-quality translation
- Provide quality training and education for translators
- Establish a store-house of information on all aspects of translation involving Indian languages
- Create and maintain various tools for translation
- Project Indian languages and literatures within South Asia and outside
- Promote book launches, festivals, fellowships and prizes
- Promote printed as well as virtual publication of translation studies
- Translate pedagogic materials at all levels specifically in Natural and Social Sciences
- Set up a national web portal on translation
- Organize Annual National Conferences on translation
- Set up a National Mission on Translation for this purpose
- Provide impetus for developing translation as an industry

National Science and Social Science Foundation

- Set up a National Science and Social Science Foundation (NSSSF) which will look at all knowledge as one seamless entity
- The Foundation to suggest policy initiatives to make India a leader in the creation and use of knowledge, to ensure that science and technology are maximally used for the betterment of the lives of people, and to develop the scientific temper in the country

E-governance

- Re-engineer government processes first, to change our basic governance pattern for simplicity, transparency, productivity and efficiency
- Select 10 to 20 important services that make a critical difference, simplify them and offer them as web-based services
- Develop common standards for services and transactions with citizens
- Make data collected by government agencies available to all agencies
- Provide a nationwide secure broadband infrastructure
- Open source software should be widely used
- Invest 1-2 per cent of national programme budgets to establish new processes and associated e-governance infrastructure
- Establish an organization, in mission mode, to facilitate e-governance reforms
- Establish specialized information technology officers in state and central ministries
- Begin all new national programmes (like Bharat Nirman, Rural Employment Guarantee Scheme, etc.) with well-engineered e-governance implementation and web interface

Portals

- Create national web based portals for basic needs on certain key sectors such as Water, Energy, Environment, Education, Food, Health, Agriculture, Employment, Citizen Rights
- A consortium consisting of representatives from a wide range of stakeholders from the sector should own and manage the portal
- Provide access to government held data
- Encourage collaborative funding

Legislative Framework for Public-funded Research

- Enact a legislation that would give universities and research institutions ownership and patent rights over inventions arising out of government-funded research thereby, creating an enabling environment for commercialization of such inventions through licensing arrangements where inventors would also be allowed to receive a share of the royalty

- The proposed enactment should incorporate important safeguards for exceptional circumstances where the government could be given 'march in rights' to protect public good

Health Information Network

- Initiate development of Indian Health Information Network
- Establish national standards for clinical terminology and health informatics
- Create a common Electronic Health Record (EHR)
- Frame policies to promote use of IT in health care
- Create appropriate policy framework to protect health data of citizens
- Medical Informatics to be part of medical and paramedical curriculum
- Create an institutional framework for implementation

Traditional Health Systems

- Transform traditional medicine education by introducing evidence-based approaches into the current educational framework
- Strengthen research by establishing a network of world-class research programmes in different parts of the country
- Strengthen pharmacopoeial standards by creating internationally acceptable pharmacopoeias
- Diversify and expand the Traditional Knowledge Digital Library (TKDL) work
- Initiate a Traditional Knowledge Informatics programme
- Create a suitable Intellectual Property Rights framework in the country for protection of the sources of traditional medical knowledge. Give sufficient incentives for commercialization of traditional medicine
- Support non-government and corporate initiatives for promotion of THS
- Promote international co-operation in exploration of traditional health systems
- Undertake a major re-branding exercise of Indian traditional medicine

Intellectual Property Rights

- Scale up efforts to build a world class IPR infrastructure, including steps to modernize the patent offices with computerization, e-filing, process re-engineering, human resource development, transparency, documentation, accessibility and building global standards
- Intensify IPR training in IP Offices as well as in educational institutions and develop IPR Cells

- Establish new structures such as a separate IPR Tribunal, a national institution for cutting edge IPR policy and a Global Technology Acquisition Fund
- Protect TK, create incentives for TK and also explore mechanisms for identification of key IPR issues in new technology areas

Innovation

- NKC's Innovation Survey reveals that innovation is emerging as one of the key factors in India's economic growth, where both large firms and SMEs have increased innovation-related revenues. The strategic prioritization of innovation has also increased significantly since the start of economic liberalization
- Crucial firm level structures and processes play a key role in innovation but skill shortage arising out of lack of emphasis on experimentation/problem solving in the curricula is a critical barrier. There is also need for more effective synergies between industry, government, the educational system, R&D environment and the consumer. A comprehensive campaign is needed across the entire economy from the grassroots to the large firm level to make India a global leader in innovation

Entrepreneurship

- Develop a supportive business environment consisting of single window clearance,
- single composite application form for clearances, a single unique company number
- Create new institutional mechanisms such as commercial courts to settle commercial disputes and limited liability partnerships
- Provide access to financial, statutory, legal, and regulatory information for entrepreneurs through one stop shops, web-based portals and information handbooks
- Develop measures to facilitate access to early stage finance, and provide incentives for seed capital funding
- Develop and put in place a comprehensive policy on Business Incubation for Entrepreneurs
- Enact a uniform legislation for publicly funded research and enable researchers to set up commercial entities
- Make Entrepreneurship a core subject in business schools and explore possibilities of setting up specialized entrepreneurship schools
- Develop an entrepreneurial culture by rewarding and recognizing successful entrepreneurs and entrepreneurial networks and associations

19.8 Let Us Sum UP

The National Knowledge Commission was appointed by Government of India and Sam Pitroda was chairman of this commission. The commission submitted its report in 2006 on Six major areas. The recommendations of the commission are useful to develop a knowledge society.

19.9 References and Recommended Books

http://knowledgecommission.gov.in/downloads/documents/towards_knowledgesociety

.pdf

http://knowledgecommission.gov.in/downloads/documents/NKC_Library.pdf

http://www.svc.ac.in/files/NKC_Innovation.pdf

<http://nationalknowledgecommission.wordpress.com/about/about-national-knowledge-commission/>

19.10 Assignment

1. National Knowledge Commission and its objectives.

19.11 Model Examination Questions

1. Discuss the recommendations of Knowledge Commission.
2. Mention the terms of references and controversies of Knowledge Commission.

Unit- 20**UNIVERSAL AVAILABILITY PUBLICATIONS****20.0 Aims and Objectives**

In this unit you will be learning the importance of availability of publication at global level. The UAP projects are discussed in detail. After going through this unit, you will be able to understand the importance of UAP and the contributions of UNESCO and IFLA towards UAP.

Structure**20.1 Introduction****20.2 Definition****20.3 Promotion of the principle of UAP****20.4 Supporting UAP: (Twins, Digitization, Union Catalogues and more)****20.5 UAP – Projects****20.5.1 IFLA/UNESCO Survey on Digitization and Preservation****20.5.2 Union catalogues****20.5.3 IFLA Twinning Project****20.6 Guidelines and practical tools****20.7 IFLA Voucher Scheme****20.8 Let Us Sum UP****20.9 References and Recommended Books****20.10 Assignment****20.11 Model Examination Questions****20.1 Introduction**

UAP has achieved a great deal over the past 25 years. Universal Availability of Publications has been an ideal and an objective as well as a programme. It has given practical support to those engaged internationally by collecting and publicising information about the practice of international, conducting and encouraging research in the area and by providing a range of specialized services. IFLA would like to acknowledge the contribution of all who have been concerned in this valuable contribution to the ideal of achieving the widest possible

availability of published material. In this connection we should especially like to mention Maurice Line and Graham Cornish, both former directors of UAP.

There has been an "IFLA Office" at the British Library, Boston Spa, for well over 20 years. This report highlights some of the major achievements of the IFLA Offices for UAP and International Lending during their lifetime. It also includes, as an appendix, a full listing of all UAP publications and a list of the UAP Seminars that have been held. It will also try to clarify the wide confusion over the relationship between OIL (Office for International Lending) and UAP. What do the acronyms OIL and UAP actually stand for? Are they the same programme with different names? Different programmes with the same staff? Part of the British Library Copyright Office? Whatever the inaccuracies, many people in the library world are familiar with the concept of UAP and most would be able to come up with 'international', 'publications', 'availability', 'ILL' or 'lending', to fit some of the words in the acronyms.

The Core Programme for the Universal Availability of Publications was started in the late 1970s by Maurice Line, following a proposal by Donald Urquart some years earlier. The reasoning went that if you were aiming for a systematic recording of all library collections (the aim of the Core Programme for UBC), then there was also a need to improve the availability of those collections for all potential users. National bibliographies were all very well, but did they in fact help the user to obtain the library material required? Or did they simply raise awareness of the existence of relevant material and increase demand, which could not always be met? The aim of the new Core Programme for UAP was to improve access to published material, whether this meant improving local publishing and distribution patterns in developing countries; identification of effective strategies for the retention of last copies for preservation purposes; transfer of documents across national boundaries; or the traditional means of sharing library resources, good old interlibrary loan. In 1980, IFLA's second core programme was formally established at the British Library at Boston Spa.

The UAP programme was originally rooted within the Office for International Lending, sharing its staff and resources. The Office for International Lending had been established some years earlier, with the specific purpose of improving procedures for international lending and document supply between libraries. In June 1979, when an extra full-time officer was recruited, the functions, staffing and financing of the UAP programme were fully separated from those of the Office for International Lending (OIL), which continued to be supported wholly by the British Library. The Programme Management Committee confirmed in December 1980 the formal designation of an International Office for UAP, in line with the International Office for UBC in London.

Although the OIL and UAP programme have different origins, were funded differently and had different aims, it has always proved difficult to keep the two functions separated in people's minds, and, often, in the work that has been undertaken. Certainly in more recent years, the two arms were inextricably linked, despite constant protestations by each Director that they should be considered as separate functions. Since ILL is a key element of UAP, which relies on ready sharing of material among libraries, this report looks jointly at the work of the two offices.

The work of the Offices for UAP and OIL seems to have fallen into three main areas:

- Promotion of the principle of UAP
- Projects that support and encourage UAP

- Development of guidelines and practical tools to support effective international ILL

20.2 Definition

UNIVERSAL AVAILABILITY OF PUBLICATION: The idea of UAP was mooted by Urganhart, B.J. who maintained that "it is no use users discovering what exists which may interest them if they are unable to consult it" .

According to Durance and Mclean (1988) UAP refers to The promotion of access to and availability of published materials to all categories of users by encouraging and Promoting policies and processes for the production, distribution, acquisition, utilization, retention (for further use) and inter-library supply of publications within and among libraries. Its ultimate aim is the making of documents available to anyone who wants them whenever and wherever published without inhibition whatsoever .

20.3 Promotion of the principle of UAP

Throughout the life of the Office, one of the key activities carried out by the programme was the series of UAP workshops held in different regions of the world. The aim of the workshops was to bring together senior representatives of the library and publishing worlds and governments, in order to bring about real improvements in the provision of published material to the region's citizens. Discussion on the local publishing and book supply industries supported the consideration of national library and information networks. Interlibrary loan was always a key element of these Seminars, and some important initiatives have emerged.

The concept and aims of UAP were promoted very strongly in the early years, beginning with a "call to arms" in the form of the International Congress on UAP, which took place in Paris, May 3-7 1982. The Congress attracted 178 participants from 64 member states of UNESCO, and resulted in a list of 48 recommendations aimed at governments, international organisations, the World Book Congress, national libraries and professional library staff.

After this, the first UAP Seminar appears to have been the UAP Training Seminar , held at the British Library Lending Division in February 1983. Its aim was to "provide a number of individuals of suitably senior status from various parts of the world with a broad and deep understanding of UAP." This was the first of many such seminars to be held, often concentrating on a single geographic area, where barriers to improving access would be similar for all libraries, and where, hopefully, seminar participants could work together to seek solutions.

The seminars were useful for UAP staff too, in identifying recurring barriers to effective interlibrary loan and document delivery. It was discussions such as these that highlighted the enormous difficulties experienced by libraries in paying for their ILL requests and of course, the now famous . IFLA Voucher Scheme was eventually developed to overcome this particular barrier.

In addition to the discussion and debate that was so valuable for the promotion of UAP, the UAP Office produced a series of publications to support education in UAP. The Model Handbook for Inter-lending & Copying; Guide to the organisation of meetings on UAP; Guidelines for national planning for the availability of publications; and Universal Availability of Publications: a programme to improve the national and international provision are of important UAP documents.

20.4 Supporting UAP: (Twins, Digitization, Union Catalogues and more)

As well as the direct promotion of the concept of UAP, the Office undertook a range of projects which all tied in with the aim of improving access to published material. One of the difficulties with UAP - and especially with its name - was the all-encompassing nature of the concept, which meant that virtually any scenario relating to improving access could be deemed to be of UAP interest. While the Programme was enormously wide-ranging, the projects carried out were necessarily more focussed and of value only to specific sectors of the library world. Some of the projects undertaken by the Office had rather tenuous links with the original ideals of UAP, but many sat happily with the aims of the Office to promote access and improve availability.

20.5 UAP – Projects

20.5.1 IFLA/UNESCO Survey on Digitization and Preservation

This very big project was successful in bringing together two of IFLA's established core activities to work on a co-operative project, identifying and listing major library cultural heritage collections that had been digitized. The two major reasons for digitizing material are the preservation of documents and the improvement in access to those documents. It was entirely appropriate that the Core Programmes for UAP and for Preservation and Conservation (PAC) should work together with UNESCO, to develop a web directory of those digitized collections which would provide instant access. The Directory was handed over to UNESCO on completion, and is now accessible on the UNESCO website :<http://www.unesco.org/webworld/digicol/>.

20.5.2 Union catalogues

To improving access to published documents, the UAP programme aimed to tackle some of the wider areas that support document provision. The project to develop a Worldwide Directory of National Union Catalogues (a union catalogue of union catalogues) which would help libraries access the collections of the major libraries of the world, was another example of co-operation between different working elements of IFLA. With the support of the Sections on Serials, on Document Delivery & and on Acquisitions & Collection Development, the UAP core programme created the Directory, which lists the major national and regional union catalogues in every country, and reports on their level of accessibility for libraries in other countries. Where possible, the catalogues are accessible directly from the Directory site. This project is being taken over by the Section on Serials, with a view to updating it.

20.5.3 IFLA Twinning Project

In response to regular enquiries from libraries in various parts of the world, a database was established in 1997 to help libraries find partners with similar areas of interest. Dubbed the "Dateline for librarians", the aim was to enable libraries to share their experience and knowledge with other libraries working in the same field. This would be particularly worthwhile for North-South co-operation, where established partnerships might lead to improved access to publications for the less developed library and a greater awareness of the challenges and working practices for both libraries, as well as an exchange of experience and knowledge.

There was a huge interest in the project and many applications for partners were received. However, because of the very diverse nature of the libraries listed on the database, the number of successful matches were small, and the longer-term success of those partnerships was even smaller. Although a partnership with a like-minded library was appealing to many, when it came to a commitment of those two most crucial resources - time and funding - many of the partnerships floundered, and the project was finally laid to rest.

20.6 Guidelines and Practical Tools

While the UAP Seminars focused very closely on particular regions of the world, and supported library developments in perhaps just one or two countries, some of the more practical initiatives of the OIL/UAP programme have had more wide-ranging results.

The development of a set of principles which would regulate international ILL is one idea which spans UAP and OIL. The aim of the principles is to encourage libraries to share their resources with libraries in other countries and to provide some guidance in doing so. The first and over-riding principle is that each country should accept responsibility for supplying copies of its own publications to any other country. The concept of universal availability of publications relies on this principle, since national publications must be available locally, if there is to be any chance of them also being available to users in other countries. Another principle recommends that particular effort should be made to satisfy requests received from libraries in less developed countries, in support of UAP. The International Lending and Document Delivery: Principles and Guidelines for Procedure were first agreed by IFLA in 1954, and have been revised from time to time since then. A major revision was undertaken in 2001 by the OIL and the Section on Document Delivery & Interlending and a small sub-committee of that Section has been established to look after the Principles after the closure of UAP.

In 1975, the Office produced the first Brief Guide to Centres of International Lending & Photocopying. This Directory listed national lending centres for every country of the world (or national library where there was no national loan centre), and provided information on how ILL requests should be handled in each country. Users could ascertain whether a national loan centre existed, or which body held responsibility for coordinating lending in that country. Preferred request methods, likely charges and payment options were also provided. By 1995, the 5th edition was in production, and enquiries are still regularly received asking when the next edition will be available.

The IFLA Loan/Photocopy Request Form is perhaps one of the OIL's most famous and enduring products. The request form has been in use since at least 1975 and probably for much longer. It is recognised by ILL departments the world over, accepted by most of them as a standard format for paper ILL requests, and continues to be used by many libraries despite so much electronic progress in the world of ILL.

Use of this concept has clearly declined in recent years, and the move by libraries to other, electronic, request methods can be used as an example of the difficulty the UAP Core Programme has experienced in remaining relevant in the fast-moving bright new world of ILL. In the early years of UAP, most communication was carried out by letter or telephone and email had not been invented. International interlibrary loan requests were sent almost always by post and national boundaries were clear and significant. ILL was seen as the Cinderella of library operations and international lending was often seen as the triumph of optimism over a huge number of obstacles: lengthy delays at all stages of the request and supply process, difficulty in

finding out which library might hold the item you required and an enormous reluctance on the part of most libraries in the world to lend abroad. The Office for International Lending prided itself on encouraging libraries to be more co-operative in support of international resource-sharing and was in a position to offer advice and practical help in this area. International ILL was such a difficult operation that any small improvements were welcomed with open arms by those trying to obtain material from abroad. The Office was able to gather fairly comprehensive statistical information on the flow of ILL requests around the world, such was the limited nature of that activity.

By the mid-1990's of course, everything had changed. Interlibrary loan was now an exciting, dynamic operation, new electronic options for sending and responding to requests and for sending the item were coming thick and fast. There was no longer only one option for sending ILL requests, but many. The commercial document suppliers, coupled with improved access to library catalogues across national boundaries and fast cheap options for sending copies, meant that there were whole areas of ILL in which the OIL did not have the expertise to participate.

But there are still several areas of ILL where progress has been slow. In the international loan of returnable items (traditional lending), long delays in the processing of requests, a persistent reluctance to lend material abroad and slow postal delivery rates still mean that this process is less than satisfactory. And the challenge of making payments for interlibrary loan transactions between countries remains the most problematic area. International payment problems are not limited to libraries of course, but anything that can be done to help libraries avoid the high bank charges, poor exchange rates and long delays in payment transactions can only be a good move.

20.7 IFLA Voucher Scheme

In 1995 after much discussion and some opposition, the IFLA Voucher Scheme for International ILL Payments was developed and implemented. The Scheme was developed in response to the regular cry for help in overcoming international payment barriers in ILL. But it was by no means obvious that this invention would be successful. The Scheme required libraries to buy payment 'tokens' in bulk in advance and a critical mass of users would be needed to make the system successful. Seven years on and it is clear that the Voucher Scheme has gone a long way in improving the ILL payment options for many libraries. Over 1000 libraries are listed on the Voucher Scheme database, and around 67,000 full and 23,000 half vouchers have now been sold to the international ILL community. Although its success has brought with it its own challenges in managing its administration and production costs, the Voucher Scheme is a model of simplicity and is a reflection of what the OIL has always done best: small practical solutions to specific ILL challenges. The Voucher Scheme has been identified as one of the few items of existing work that should be continued after the closure of the Office, and the management of the Scheme will transfer to IFLA Headquarters by the end of March 2003.

20.8 Let Us Sum UP

The IFLA Core Programme for UAP and the Office for International Lending have achieved a great deal during their lifetime. Often seen as a single function by many, they had very different approaches to similar challenges. The OIL tried to offer practical solutions to practical problems, specifically in the field of ILL. For ILL practitioners needing information about lending policies in other countries, the Office was an essential resource. The guidelines, finding

tools, request forms and of course, the Voucher Scheme, have all offered invaluable support in the ILL arena. Universal Availability of Publications, on the other hand, is an ideal, a lofty concept, an achievement towards which all libraries should be striving. It is one of the key underlying tenets of libraries, for if libraries are not in the business of providing access to publications, then what is their responsibility? The very hugeness of this aim has sometimes made it difficult to assess the impact of the UAP core programme and difficult for smaller parts of IFLA to identify themselves with it in any practical way. But the impact and practical achievement that UAP has had during its lifetime cannot be underestimated and it is to be hoped that the aims behind the programme continue to be expressed and acted upon in the future.

20.9 References and Recommended Books

<http://nopr.niscair.res.in/bitstream/123456789/27979/1/ALIS%2031%281-2%29%203843.pdf>

<http://www.emeraldinsight.com/doi/pdfplus/10.1108/eb008538>

<http://ifl.sagepub.com/content/12/4/325.extract>

20.10 Assignment

1. Provisions of UAP
2. UAP – IFLA Training Projects

20.11 Self Assessment Questions

1. Write an account on UAP projects.
2. Write an account on UAP and Practical tools.