Unit-1 Overview of Communication Process

1.0 Introduction
1.1 Objective
1.2 Communication: Concept and Genesis
   1.2.1 Oral Communication
   1.2.2 Audio-Visual Communication
   1.2.3 Written Communication
1.3 Written Communication
   1.3.1 Creative Writing
   1.3.2 Technical Writing
1.4 Types of Communication
   1.3.1 Non – Vocal v/s Vocal Communication
   1.3.2 Non – Verbal Communication
   1.3.3 Intrapersonal, Interpersonal, Group and Mass Communication
1.5 Communication Process
   1.4.1 Communication Cycle
1.5 Models of Communication Process
1.6 Elements of Communication Process
1.7 Library as a Communication Link
1.8 Summary
1.9 Self-check Exercise
1.0 INTRODUCTION

We communicate so frequently that we fail to realize the importance and complexity of the process. All human activity is based on communication and human beings cannot do without communication.

Human communication has progressed through four distinct phases. Each phase is associated with a specific form of communication. The first phase began with the verbal communication in which development of language took place. The second phase was the era of written communication. In the third phase the printing era began with Gutenberg and his Bible in 1456. The fourth phase was the age of telecommunications which began with Morse’s telegraph and was perpetuated by Marconi’s wireless.

After passing through the four phases, we are currently in the fifth phase in which there is emphasis on interactive communication systems.

1.1 OBJECTIVES

After reading this Unit you will be able to:

- Understand the concept of Communication;
- Identify different types of Communication;
- Describe the Communication Process;
- Analyse the elements of Communication Process;
- Understand the role of libraries as a Communication Link.

1.2 COMMUNICATION: CONCEPT AND GENESIS

The term of Communication comes from the Latin word “Communis” meaning common. When we communicate with someone, we try to establish a certain degree of commonness with the communicate e.g., by sharing some information, an idea or an attitude. Communication, therefore, refers to transmission or exchanging of information, messages etc. Information and Communication are two interlinked terms in the sense that without information communication is not possible.

The oxford English Dictionary defines communication as “the imparting conveying or exchanging of ideas and knowledge whether by speech, writing or sings”. In the Columbia Encyclopedia of Communication it is defined as “the transfer of thoughts and message as contrasted with transportation of goods and persons”.

In ordinary usage, the verb ‘to communicate’ means (1) to exchange thoughts, feelings, information; (2) to make know; (3) to make common; and (4) to have...
a sympathetic relationship. In the noun form; communication refer to (1) the exchange of symbols, common messages, information; (2) the process of exchange between individuals through a common system of symbols; (3) the art of expressing ideas; and (4) the science of transmitting information.

In the popularly understood sense of the term communication refer to anything from a face-to-face conversation between two persons; conversation over the telephone, correspondence between friends. The transmission of programmes on live television broadcast via communication satellite i.e. received by millions of persons.

Communication taken place when people send or receive message of various kinds. It is not only human being who communicate, the animals also transmit and receive messages largely by instinct. However, man has been described as the “Communicating Animal” with a variety of processes of Communication.

Human communication is a complex activity. We are usually not aware of its complexity as we talk, listen, read, write, watch television, or listen to radio etc.

1.2.1 Oral Communication

Oral communication is a method of communication through speech. It is characteristic of its immediacy and personal touch which may be difficult to capture in other forms of communication. This is because, the physical senses like vision, hearing and touch can be used by the speaker as well as the listener. The tonal variations, volume of sound and its modulations, verbal expressions and the methods of rendering them etc. to emphasise a particular point of view, create a diversion of thought or force a decision, etc. on the listeners. In addition to these, there is very often an informal or flexible setting which lets the sender and the receiver interact with questions and answers, comments and response. And as all these take place at a given time, there is an immediacy in response and feedback.

Oral communication can either be direct or indirect. If an individual speaks to another person or a group of persons, face-to-face or through any media, it implies a direct approach to communication. Whereas when a message is transmitted through a person other than the originator of the message, to a particular person or group of persons, the communication is said to be indirect. An officer addressing his subordinates is an instance of direct communication. On the other hand, the top management of an organisation, issuing instructions through the line of managers to be communicated orally to the employees, may be regarded as indirect communication. Whatever the type of oral communication, the fact remains that this kind of communication permits an instant reaction.

1.2.2 Audio-Visual Communication

If oral communication is combined with visuals, the effectiveness of the message reaching the communicate tends to be more assured. Television programmes that combine oral and visual communication have a direct impact on the viewers, giving more credence and precision to the subject
communicated, than a mundane oral speech, a formal lecture or reading a prosaic text.

1.2.3 Written Communication

Another form of transmitting and receiving information is the written form of communication. Although written communication does not have the quality of personal touch and immediacy of oral communication, it has its own advantages. It has an "at a distance" approach and probably because of this and other characteristics which enhance it, it can be far more effective than oral communication in certain respects.

1.3 WRITING COMMUNICATION

Some of the perceptible characteristics of written communication are that it: has a more formal perspective, suggesting greater authority and trustworthiness; can be a potential record, capable of extended life and of being used again and again; can be extracted in parts or portions and can be authentically quoted; is suitable for reading at an individual's own best reading time, speed and place; and is accessible to a large readership which can also lead to the benefit of expert criticism and review by peers.

These characteristics get further value-added, if the communication is written by experts and knowledgeable persons; the data included in such written communications and the statements made there in are likely to be perceived to be well thought out, valid and accurate.

So when you communicate through written texts, you should be able to make full use of all the advantages that go with written communication, hearing in mind that you don't have the advantage of oral communication. To compensate for the advantages of oral communication, experienced writers try to introduce through their writings immediacy, personal touch and involvement through style, vocabulary and ton of writing, etc. to get a proper rapport with the audience.

Communication through writing is also of different forms; Writing can be creative or technical.

1.3.1 Creative Writing

Creative writing involves a certain amount of, or a streak of creativity in an individual. In addition to a good command of a language (proficiency in vocabulary and diction) a creative writer should have a flair for writing. A creative writer, applying his/her rhetoric abilities of using a language, effectively portrays a vivid picture of an event or activity (real or fictitious) in an imaginative style with a deep perception of the environment in which the event or activity takes place and the characters involved in it.

Good poetry, novels or short stories or other forms of imaginative writings then would not be technical because they are built on intuition, feelings and
imagination. High quality creative writings also lend themselves to various meanings and interpretations. Creative writing, therefore, is attributive of almost a spiritual activity. Its purpose is not to inform but to reveal. A creative writer meditates either on concrete things of the world or on abstract thoughts like love or divinity and pours out his/her own feelings and emotions in the writing. While bringing his/her unique imagination into play, may interact with life around and write about social situations and events, so as to enlighten, uplift and transport, in a manner all his/her own - as in a novel or short story. One can sense the writer's individual vision and personality, perceptions and understandings in such writings.

1.3.2 Technical Writing

Technical writing unlike creative writing is not a reality but rather the recreation of what was once a reality, namely narrating a given job, to meet a social, economic, commercial or techno-economic need. Technical writing differs from other genres of writing in many ways. But the predominant characteristic that distinguishes technical writing from other expository writing is the reporting of technical data, which necessarily include tabular presentation of data, graphical representation and often photographs.

Technical writing, therefore, deals with ideas and situations; its intent and purpose are to inform; it adds to one's own knowledge and widens his/her perception of things. In the educational context, books on history, economics, science or technology, belong to this category. In order to achieve the best in the task of informing, the writer has to be analytical in his/her approach and present the arguments methodically and lucidly so that writing is easy to comprehend.

Although on the basis of subject matter, form and presentation, technical writings can be divided into creative and non-creative, it is not unusual that a highly imaginative writer can present a non-creative work in a creative manner. Conversely a technical writer can also produce a high quality creative work. Some of the best writers in science have produced works of great literary merit and imagination while presenting highly complex scientific and technical subjects.

1.4 TYPES OF COMMUNICATION

Communication systems may be categorized as vocal or non-vocal, verbal or nonverbal, intrapersonal, interpersonal, group or mass communication. Let us understand these categories one by one.

1.4.1 Non-vocal v/s Vocal Communication

Non-vocal Communication refers to the use of signs, signals and symbols, gestures etc., in the communication process. Signals, signs and symbols are the three related components of non-vocal communication process which are found in all know cultures.
Signals could be in the form of smoke puffs, drum beats etc., it refers to some sort of interruption in a field of constant energy transfer. The most common signs encountered in daily life are picture or drawings. The basic different between signs and signals is that a sign contains meaning of an intrinsic of an intrinsic nature while a signal is merely a device by which one is able to formulate extrinsic meaning. Traffic signs are examples of signs frequently encountered in our daily life. Symbols are more difficult than signs to understand and define. Symbol has been defined as any device with which an abstraction can be made. Body gestures are also a form of non-vocal communication which has been used since antiquity by professional actors and dancers.

**Vocal Communication** refers to any form of communication that uses the human vocal chords. It can range from shouting to spoken languages. Man’s vocal apparatus as a device of communication represents an apex of physical and intellectual evolution. It has the potential processes including the possible mastery of numerous complex languages, each with an enormous vocabulary.

### 1.4.2 Non Verbal and Verbal Communication

**Non Verbal Communication** includes actions such as gestures, vocalizations, facial expressions and other behaviors.

**Verbal Communication** on the other hand refers to the use of words are often viewed as the primary if not the only means by which information can be conveyed from one person to another. Communication by facial expression, by tone of voice, by touch etc., comes under the category of non-verbal communication.

Non-Verbal Communication is usually used to communicate feelings likings and preferences. Non-Verbal Communication is categorized into seven types:

(i) Paralinguistic (ii) Kinesics (iii) Hap tics (iv) Phonemics (v) Dress and Appearance (vi) Chromatics (vii) Iconic

### 1.4.3 Intrapersonal, Interpersonal, Group and Mass Communication

**Intrapersonal:** Communication within one person, it could be talking to you, reading something etc. In this type of communication the source and the recipient of information are limited to one person.

**Interpersonal:** Communication between two or more persons. Interpersonal communication could be face to face or it could be at a distance with the help of telephone, letters etc.

**Group and Mass Communication:** It is a form of communication in which several people are involved and the roles of the speaker and listener are shifted among the participants. Group communication could be categorized into small group consisting of two or more persons, usually not more than 25, or large
group where there is communication by one or several persons to an audience of 25 or more persons.

Public or Mass Communication: It refers to communication from one person or a group of person, through special media, to large audiences. Any large-scale communication disseminated mainly by the media of print, broadcasting, film, or the new electronic networks to large audiences, is considered to be public or mass communication.

1.5 PROCESS OF COMMUNICATION

Communication is not something that happens in a disjointed fashion. It is an endless and continuous process in which the entire humanity is involved.

Communication process always requires at least three basic elements – the Source, the Message and the Destination.

![Source Message Destination Flowchart](source-message-destination.png)

**Basic Elements of the Communication Process**

**Source:** - is the point at which the message originate originate. It is, therefore, also referred to as sender or initiator of information. A source may be an individual (speaking, writing, drawing, gesturing) or a communication organizations like newspaper, publishing house, television station, motion picture studio, etc.

**Message:** - may be in the form of written or printed text, sound or light waves in the air, impulses in the electric current, or in the form of any other signal which is capable of being interpreted meaningfully.

**Destination:** - is the intended target of the message. Destination could be an individual or a group, or a mob. The recipient gets the message in the form of reading, listening, watching etc. Destination is the final level in the communication chain.

The Communication is the process by which two or more people exchange information and share meaning. By analyzing the communication process, one discovers that it is a chain made of identifiable links. “Links in this process includes: Sender message, encoding, decoding, receiver and feedback. Like any other chain, the communication chain is only as strong as its weakest link”
A Communication Process Model

1. **Sender**: The process of communication involves two parties i.e., the sender and the receiver. Sender may be individual or group of individuals or any organization, who desires to share information for a predetermined purpose or for an expected action or response. The process starts at the moment when an idea or felling or information strikes the mind of the sender. The sender being the promoter of the process is required to have clear vision of his expectation of the communication process and the receiver.

2. **Encoding**: Encoding means to transform the idea into words, symbols, pictures, diagrams, gestures i.e., it is a method to provide a concrete shape to the message. The purpose of encoding is to translate internal thought patterns into a language or code that the intending receiver of the message will probably understand. Encoding requires common media which both the sender and the receiver can understand. Because there is a need for the receiver to interpret the information in a sense which the sender transmits.

3. **Message/Information**: The message is the physical form of the thought which can be experienced and understood by one or more senses of the receiver. Communication process facilitates transmission of information or message in the form of word, symbols or any such media, which carries the information to the receiver. In fact, message is an idea, felling opinion or any expression generated in the mind of the sender which he desires to convey to the receiver with a predetermined purpose.

4. **Channel/Media**: It is a vehicle in the transmission of a message. In this stage the message is actually sent and the information is transferred. Sender must consider all aspects: speed, cost, quick receipt, printer record, confidentiality etc, for making an intelligent decision before sending his message.

5. **Receiver**: The person of group, who perceives the message and attaches some meaning to the message to the message, is the receiver. If there is no receiver, there is no communication. The situation is not much
improved if the message reaches receiver but the receiver does not understand it.

6. **Decoding:** Decoding is translation of information received, into an understandable message to interpret it. Even the most expertly fashioned message will not accomplish its purpose unless it is understood. After physically receiving the message, the receiver must comprehend it. If the message has been properly encoded, decoding will take place rather routinely. But perfect encoding is nearly impossible to archive in our world of many languages and cultures. The receiver’s willingness to receive the message is a principal prerequisite for successful decoding.

7. **Feedback:** Feedback is the response to the message received by the receiver of the information, which sends back to the sender of the information. Feedback is the reversed of the communication process.

   Appropriate forms of feedback are determined by the same factors that govern the sender’s encoding decision. Without feedback, senders have no way of knowing whether their ideas have been accurately understood. It may be noted, that in oral communication, feedback is often immediate and direct, in meeting the audience may nod or smile to show understanding and agreement.

8. **Noise:** Noise is not an integral part of the chain like communication process, but it may influence the process at any or all points. Noise is any interference with the normal flow of understanding from one person to another. Psychological noise consist of forces within the sender or receiver that interfere with understanding i. e., egotism, hostility, prejudices, etc.

1.5.1 **Communication Cycle**

Communication process is which the source transmits the message and the destination receivers it. However, in actual practice, the communication process does not end with the receiving of the message by the destination. Communication is a continuous process in which each individual or institution functions as the transmitter as well as the receiver of message. In other words, Communication process thus works in a cycle in which each individual is functioning as the encoder, interpreter and the decoder of information alternatively. In fact communication is interactive multidimensional process.
1. Shannon's Model of the Communication Process

Shannon's (1948) model of the communication process is, in important ways, the beginning of the modern field. It provided, for the first time, a general model of the communication process that could be treated as the common ground of such diverse disciplines as journalism, rhetoric, linguistics, and speech and hearing sciences. Part of its success is due to its structure list reduction of communication to a set of basic constituents that not only explain how communication happens, but why communication sometimes fails. Good timing played a role as well. The world was barely thirty years into the age of mass radio, had arguably fought a world war in its wake, and an even more powerful, television, was about to assert itself. It was time to create the field of communication as a unified discipline, and Shannon's model was as good an excuse as any. The model's enduring value is readily evident in introductory textbooks. It remains one of the first things most students learn about communication when they take an introductory communication class. Indeed, it is one of only a handful of theoretical statements about the communication process that can be found in introductory textbooks in both mass communication and interpersonal communication.
Shannon's model, as shown in Figure 1, breaks the process of communication down into eight discrete components:

1. An information **source**. Presumably a person who creates a message.
2. The **message**, which is both sent by the information source and received by the destination.
3. A **transmitter**. For Shannon's immediate purpose a telephone instrument that captures an audio signal, converts it into an electronic signal, and amplifies it for transmission through the telephone network. Transmission is readily generalized within Shannon's information theory to encompass a wide range of transmitters. The simplest transmission system, that associated with face-to-face communication, has at least two layers of transmission. The first, the mouth (sound) and body (gesture) create and modulate a signal. The second layer, which might also be described as a channel, is built of the air (sound) and light (gesture) that enable the transmission of those signals from one person to another. A television broadcast would obviously include many more layers, with the addition of cameras and microphones, editing and filtering systems, a national signal distribution network (often satellite), and a local radio wave broadcast antenna.
4. The **signal**, which flows through a channel. There may be multiple parallel signals, as is the case in face-to-face interaction where sound and gesture involve different signal systems that depend on different channels and modes of transmission. There may be multiple serial signals, with sound and/or gesture turned into electronic signals, radio waves, or words and pictures in a book.
5. A carrier or **channel**, which is represented by the small unlabeled box in the middle of the model. The most commonly used channels include air, light, electricity, radio waves, paper, and postal systems. Note that there may be multiple channels associated with the multiple layers of transmission, as described above.
6. **Noise**, in the form of secondary signals that obscure or confuse the signal carried. Given Shannon's focus on telephone transmission, carriers, and reception, it should not be surprising that noise is restricted to noise that obscures or obliterates some portion of the signal within the channel. This is a fairly restrictive notion of noise, by current standards, and a somewhat misleading one. Today we
have at least some media which are so noise free that compressed signals are constructed with an absolutely minimal amount information and little likelihood of signal loss. In the process, Shannon's solution to noise, redundancy, has been largely replaced by a minimally redundant solution: error detection and correction. Today we use noise more as a metaphor for problems associated with effective listening.

7. A **receiver**. In Shannon's conception, the receiving telephone instrument. In face to face communication a set of ears (sound) and eyes (gesture). In television, several layers of receiver, including an antenna and a television set.

8. A **destination**. Presumably a person who consumes and processes the message.

Like all models, this is a minimalist abstraction of the reality it attempts to reproduce. The reality of most communication systems is more complex. Most information sources (and destinations) act as both sources and destinations. Transmitters, receivers, channels, signals, and even messages are often layered both serially and in parallel such that there are multiple signals transmitted and received, even when they are converged into a common signal stream and a common channel. Many other elaborations can be readily described. It remains, however, that Shannon's model is a useful abstraction that identifies the most important components of communication and their general relationship to one another. That value is evident in its similarity to real world pictures of the designs of new communication systems, including Bell's original sketches of the telephone, as seen in Figure 2.

![Figure 2: Bell's drawing of the workings of a telephone, from his original sketches](image)

Bell's sketch visibly contains an information source and destination, transmitters and receivers, a channel, a signal, and an implied message (the information source is talking). What is new, in Shannon's model (aside from the
concept of noise, which is only partially reproduced by Bell's batteries), is a formal vocabulary that is now generally used in describing such designs, a vocabulary that sets up both Shannon's mathematical theory of information and a large amount of subsequent communication theory. This correspondence between Bell's sketch and Shannon's model is rarely remarked (see Hopper, 1992 for one instance).

Shannon's model isn't really a model of communication, however. It is, instead, a model of the flow of information through a medium, and an incomplete and biased model that is far more applicable to the system it maps, a telephone or telegraph, than it is to most other media. It suggests, for instance, a "push" model in which sources of information can inflict it on destinations. In the real world of media, destinations are more typically self-selecting "consumers" of information who have the ability to select the messages they are most interested in, turn off messages that don't interest them, focus on one message in preference to other in message rich environments, and can choose to simply not pay attention. Shannon's model depicts transmission from a transmitter to a receiver as the primary activity of a medium. In the real world of media, messages are frequently stored for elongated periods of time and/or modified in some way before they are accessed by the "destination". The model suggests that communication within a medium is frequently direct and unidirectional, but in the real world of media, communication is almost never unidirectional and is often indirect.

The models that need to be considered are:

- Lasswell’s model
- George Gerbner’s model
- The Schramm model

2. Lasswell’s model:

Lasswell, a U. S. Political Scientist developed this model in 1948. This model is very useful to split the communication process into different components. The value of this model lines in its use as a structuring device and in situations in which the sender has a clear interest to influence the receiver. The model is summarized as “Who says what in which channel to whom with what effect;

![Lasswell’s model of Communication Process](image-url)
Lasswell’s model can be interpreted in the context of Libraries in the following manner:

- **Who?** Authors, Publishers, Research bodies, Translators, Professional bodies, etc.
- **What?** Symbolic contents of knowledge, use of language notations, symbols etc.
- **Which channel?** Books, Journals, Mss, Reports, Conference proceedings, Audio Visual materials, Computer media etc.
- **Whom?** Library users or members of society
- **What effect?** Knowledge addition to individuals of society or users of library.

3. **George Gerbner’s model:**

This model is conceptually different from the earlier two models. Gerbner developed this model in 1956. The essence of this model is to “connect the communication situation and the participant’s perception of and response to the situation and the communication process. This model can incorporate machine as well as human process in different combinations and at various stages.

George Gerbner’s General Model Communication

Means and control dimensions relationship between communication agent and communication products
4. The Schramm model:

Schramm tried to develop a human communication model giving emphasis on experiences of two individuals and the interaction between those two were later designed as models. He developed three models to explain the proposed concept or theory. The three models are diagrammatically represented.

**Schramm model - I**

According to this model, communication starts from source (i.e. 1st individual) and it is encoded transmitted through signals. These signals re decoded either manually or mechanically and reach destination (i.e. 2nd individual). This model is more or less similar to Shannon – Weaver Model.

**Schramm model - II**

In this model, he introduces the ideas that only that which is shared in the fields of experience of both the sources and destination is actually communication.
because only that portion of the signal is held in common by source and destination.

**Schramm model - III**

This model deals with communication as an interaction with both the parties encoding, interpreting, decoding, transmitting and receiving signals. In this model feedback and the continuous loop of shared information can be noticed.

**5. Derivative Models of the Communication Process**

One of these shortcomings is addressed in Figure 2's intermediary model of communication (sometimes referred to as the gatekeeper model or two-step flow (Katz, 1957)). This model, which is frequently depicted in introductory texts in mass communication, focuses on the important role that intermediaries often play in the communication process. Mass communication texts frequently specifically associate editors, who decide what stories, will fit in a newspaper or news broadcast, with this intermediary or gatekeeper role. There are, however, many intermediary roles associated with communication. Many of these intermediaries have the ability to decide what messages others see, the context in which they are seen, and when they see them. They often have the ability, moreover, to change messages or to prevent them from reaching an audience (destination). In extreme variations we refer to such gatekeepers as censors. Under the more normal conditions of mass media, in which publications choose some content in preference to other potential content based on an editorial policy, we refer to them as editors (most mass media), moderators (Internet discussion groups), reviewers (peer-reviewed publications), or aggregators (clipping services), among other titles. Delivery workers (a postal delivery worker, for instance) also act as intermediaries, and have the ability to act as gatekeepers, but are generally restricted from doing so as a matter of ethics and/or law.
Variations of Figure 3’s gatekeeper model are also used in teaching organizational communication, where gatekeepers, in the form of bridges and liaisons, have some ability to shape the organization through their selective sharing of information. These variations are generally more complex in depiction and often take the form of social network diagrams that depict the interaction relationships of dozens of people. They network diagrams often presume, or at least allow, bi-directional arrows such that they are more consistent with the notion that communication is most often bidirectional.

The bidirectional of communication is commonly addressed in interpersonal communication text with two elaborations of Shannon's model (which is often labeled as the action model of communication): the interactive model and the transitive model. The interactive model, a variant of which is shown in Figure 4, elaborates Shannon's model with the cybernetic concept of feedback (Weiner, 1948, 1986), often (as is the case in Figure 4) without changing any other element of Shannon's model. The key concept associated with this elaboration is that destinations provide feedback on the messages they receive such that the information sources can adapt their messages, in real time. This is an important elaboration, and as generally depicted, a radically oversimplified one. Feedback is a message (or a set of messages). The source of feedback is an information source. The consumer of feedback is a destination. Feedback is transmitted, received, and potentially disreputable via noise sources. None of this is visible in the typical depiction of the interactive model. This doesn't diminish the importance of feedback or the usefulness of elaborating Shannon's model to include it. People really do adapt their messages based on the feedback they receive. It is useful, however, to notice that the interactive model depicts feedback at a much higher level of abstraction than it does messages.
This model acknowledges neither creators nor consumers of messages, preferring to label the people associated with the model as communicators who both create and consume messages. The model presumes additional symmetries as well, with each participant creating messages that are received by the other communicator. This is, in many ways, an excellent model of the face-to-face interactive process which extends readily to any interactive medium that provides users with symmetrical interfaces for creation and consumption of messages, including notes, letters, C.B. Radio, electronic mail, and the radio. It is, however, a distinctly interpersonal model that implies an equality between communicators that often doesn't exist, even in interpersonal contexts. The caller in most telephone conversations has the initial upper hand in setting the direction and tone of a telephone call than the receiver of the call (Hopper, 1992). In face-to-face head-complement interactions, the boss (head) has considerably more freedom (in terms of message choice, media choice, ability to frame meaning, ability to set the rules of interaction) and power to allocate message bandwidth than does the employee (complement). The model certainly does not apply in mass media contexts.

Each model is intended to explain certain points, which its creator feels are relevant in communication process or structure. No model can accomplish everything that is desired. In other words, it cannot be “do it all” model. Therefore, it is essential that we select models that would best suit our purpose to solve the problem at hand.

### 1.6 ELEMENTS OF COMMUNICATION PROCESS

Most of the Communication systems, whether sophisticated or not, are perceived to process the following basic elements:

- Information source
- Encoder
- Message
- Communication Channel
- Noise
- Decoder and
- Receiver/Destination

In other words, the art of communication has to originate from a source. The idea/message of communication has to be encoded using symbols. The process of translating ideas, feeling and information into a code is know as encoding. The device/mechanism used to carry out the message is called a channel. The success or failures of communication mainly depends on the channel used.

**Information Source**: Source is the point at which information, message or the news originates. A source could be a person or an instruction. It is the starting point in the communication process. In the case of a book the author of the book is the information source.
Encoder: The function of the encoder is to translate the through or ideas into words, signs, signals etc, which combined, together, constitutes a message or an information.

Message: It is the meaningful representation of the original through of the information source. Message could be consider as the verbalization of the ideas through language.

Channel: The medium through which a message is sent is called the channel. In other words channels are the transmission media through which the message travels from the source to the destination.

In a library or an information institution, the communication process involves the use of print as well as non-print media as the channels of communication. A book or a journal are example of printed channels of communication while non-print media may range from microforms, audio-video cassettes to CD ROM databases.

Noise: Noise in the communication process refers to anything that interferes with the message or information to be communicated in any way. All the communication process or systems are subject to this unwanted disturbance or interference, which is not part of the signal but can cause it to break up or otherwise degrade it.

Decoder: The process of translation of the message or information by the receiver is known as decoding. The function of the decoder is, therefore, to interpret the information message. A decoder could be anything ranging from human beings, telephone receiver to computers.

Receiver: The receiver is the person or equipment who receives the message transmitted by the source. In oral communication the listener is the receiver of the message. In the cases of electromagnetic communication system, the telephone, radio, tele-printer, television, computer etc, constitute the receivers of information.

1.7 LIBRARY AS A COMMUNICATION LINK

Libraries represent a major storehouse of human knowledge. Their value rests not merely on their facility to store information but to disseminate it in optimum quality and quantities to any information—seeking community. Libraries and information centres are the vital link between the producers and users of information. Libraries and information centre are vital components in the information communication chain, where the authors and writer are the originators of information and publishers, editors etc. as the transmitter of information (for published documents). The primary documents e.g., books, periodicals etc., secondary documents e.g., directories, bibliography of bibliographies etc. constitute the means of access to information that is being transmitted. These sources of information need to be channeled through some medium to reach user of information. The libraries and information centers, in this respect constitute the channels of communication. The role of libraries and
information centers as a communication link can be well understood with the help of the diagram.

**Libraries and Information Centre’s in the Communication Process**
The role of libraries and information centres is now getting invigorated through the application of modern technology to all their activities. Now their role is not merely limited as communication links between the producers and users of information, but also between institutions, communities and even between countries as library networks are currently getting designed and operated. Recent developments in telecommunications, computers and networks are changing the way libraries are organized and operated and serve users. Libraries can now tap the resources of other libraries through resource-sharing networks and disseminate information to a wide range of users or get access from any place irrespective of distances and locations.

1.8 SUMMARY

In this Unit we have studied that:

Communication is an activity, a process in which message, data or information is transmitted from the source to the ultimate user through a channel.

Communication is interactive and multidimensional and it is not a one way process.

Communication could be vocal or non-vocal, verbal or non-verbal. It could also be distinguished according to the levels viz, intrapersonal, interpersonal, group and public or mass communication.

The basic elements of any communication process are information source, encoder, message, channel, noise, decoder and destination.

Various types of communication media are used to transfer the information or message from the source to the ultimate user. However, the two basic types of communication media are: print media and Electronic media. Library and information centuries are vital components in the information communication chain.

1.9 Self-check Exercise

1. What do you mean by Communication? Give the types of Communication.
2. Explain the linear model of communication with the help of block diagram.
3. Discuss briefly the Shannon and Weaver Model of communication. List other prominent models of communication.
4. Enumerate the basic elements of a communication process.
2.0 Introduction
2.1 Objectives
2.2 Classification of Technical Communications
2.3 Characteristics of Technical Writing
2.4 Characteristics of Type, Relevant to Library and Information Field
   2.4.1 Professional Writings
   2.4.2 Proposals
   2.4.3 Plans
   2.4.4 Report
   2.4.5 Instructional Materials
   2.4.6 Professionals Services
   2.4.7 Summary
   2.4.8 Key Words
2.5 Oral Communication
   2.5.1 Presentation Materials
2.6 Summary
2.7 Self-check Exercise
2.0 Introduction

The goal of technical writing is to clearly communicate a select piece of information to a targeted reader or group of readers for a particular purpose in such a way that the subject can readily be understood. It is expository writing that requires a response from the reader. This Unit presents various forms of technical communications, using a few relevant characteristics to identify them. While there are general characteristic features common to all categories of technical writing, specific characteristic features reckon the different ones. These types of writing situations are illustrated with examples of outlines for each one of them, identifying their specific characteristic features. This types of designing outlines would give you a good practice such outlines to any specific writing material that is to be written. Oral presentations have to be invariably supported by carefully designed written materials. This unit tries illustrating a few examples of presentation materials to support oral communication.

2.1 Objectives

After reading this Unit, you will be able to:

- Classify written communications using appropriate characteristics to divide them into many useful group;
- Get a good insight into various writing situations relevant to library and information professionals;
- Grasp the essential characteristic features of technical writing to identify specific types;
- Obtain a working knowledge of designing structural outlines for specific types of technical writing; and
- Understand oral presentation supported by carefully designed written materials.
Classifying written communication into various categories would be a useful exercise because it helps to analyses and identify the characteristic features of various types of written documents. There is, of course, no single characteristic or a single set of characteristics that can classify all written communication to serve every purpose.

**Categorization of technical communications is shown below:**

i) Division by function
   a) Proposing what one wants to do: Proposal for new projects, new materials, etc. 
   b) Recording setting down details of an business action, decision plan or agreement agreements, 
   c) Reporting Routine periodic: Organisation/institution reports (annual, half-yearly, Progress reports 
   Inquiry investigations, 
   Surveys, 
   Experiments, tests, research, etc.; Information 
   Informatreviews product process 
   d) Persuading urging conclusions, 
   Recommending Reports; Commission 
   Construction bids, 
   Suggesting action 
   Committee Reports; applications, an 
   
   d) Persuading urging conclusions, 
   Recommending Reports; Commission 
   Construction bids, 
   Suggesting action, 
   Persuading urge
influence a business and

e) Training/instruction reference guides

user manuals;

(ii) Division by type of documents:

professional reference, tools,

regulatory

newsletters

such other and

(ii) Division by readership:

and

business persons,

academicians /

/

general public

The above groups are not mutually exclusive. They indeed overlap very much. They are, however, grouped here only to help us to identify the distinct categories of each one of them. The purpose is to aid us in the formulation of structural designs for each of them that would go a long way to prepare written drafts.

2.3 CHARACTERISTICS OF TECHNICAL WRITING
Technical writing is a profession that involves explaining complex technical ideas in simple terms to the user. Are you planning to make a career in this field? For that, you must know the characteristics of technical writing. Read on to know more.

The aim of technical writing is to translate scientific and technical information in a way that is clear and easy to understand. The specific information conveyed should be helpful to the reader. Technical writing is a form of writing that is extensively used to prepare manuals, description of new electronic products, instructions on how to operate a particular machine, etc. A technical writer is often asked to create a documentation for a technology. The documentation must clearly explain how to install and use that technology.

Technical writing is different from usual essay writing. This profession, as many think, is not about writing a bunch of technical words. Nowadays, technical writing is used in diverse fields including robotics, chemistry, software and others. An educational textbook on subjects like physics or biology is also a form of technical writing. In order to become a successful technical writer, one must know the characteristics of technical writing. They are as follows

1. **Clarity**
   
   It is essential that the technical writer understands the reader's background and needs. Making the documentation too technical can confuse the reader. The document is meaningless if the intended audience does not understand what the writer wants to communicate. Writers who are well aware of their audiences are in a position to give a solution to their problems. The profession of technical writing demands simplicity of language and clarity of expression. One must avoid unnecessary words that may put the readers in a quandary. The written document must be clear and concise so that the text becomes easier to grasp and understand.
2. **Descriptiveness**
Electronic products such as digital cameras or VCRs often come with manuals that tell how to operate it. As the customers may come from a non-technical background, care must be taken that the manual is not difficult to understand. Certain key concepts to operate the product must be explained as easily as possible for the targeted readers. If you use pure jargons, the customer will possibly never know what you want to say. Explaining the product in layman's terms is absolutely necessary. Good technical writing conveys ideas in the most effective manner. A well-written technical document always contains answers to anticipated problems in the product or application. This aspect of technical writing is commonly seen in articles that are related to troubleshooting a particular software or product.

3. **Accuracy**
Accuracy is an important characteristic of any technical document. A slight mistake can have grave consequences. For instance, if you forget to mention some important features of a new mobile phone, the customers may think that there is nothing special in that phone and will not prefer to buy it. Effective communication requires quality content and language that is accurate and readable. Technical writing does not mean that you translate information unquestioningly. In this profession, one must know for whom the document is being written and whether it is accurate.

4. **Correctness**
The grammatical structure of your technical document should be correct and free from any kind of ambiguities. The intended meaning will not be communicated to the reader if the document has ambiguous sentences. A well-organized document that makes use of headings and sub-headings is not only pleasing to the eye but will also helps the reader to find specific information in a short time.
For technical articles to be effective, it is essential to implement the aforementioned characteristics of technical writing. If you follow the above guidelines, the users will definitely appreciate your technical manuals.

2.4 CHARACTERISTICS OF TYPES, RELEVANT TO LIBRAR AND INFORMATION FIELD

Effective written communication skills are one of the most essential requirements of a library and information professional, as these professionals are basically communicators. It is not an overstatement to say that without these skills, advancement to the top positions in this field would be rather increasingly difficult in the changing and expanding dimensions of Library and Information Science.

2.4.1 Professional Writings:

Professional writings take, usually, the form of research/technical papers/articles, investigative reports, survey of literature, review articles, and such others. Many of these get published in journals, conference proceedings and in other periodical publications. Some are brought out in the form of independent reports or monographs.

The hallmarks of a good quality technical communication are:

- objectivity,
- accuracy and authenticity of technical content,
- clarity of presentation,
- brevity,
- consistency and precision, and
- good physical production

These hallmarks have to be reflected in all the elements of a technical communication. The characteristic features of a research or technical paper, viz. the title, abstract, introduction, body of the text, presentation of results, discussion, conclusions, summary, etc. should vouchsafe for quality. Names and addresses of authors, literature citations, professional jargons, etc. should conform to professional standards to meet their different functions.
2.4.2 Proposal

A proposal is a written statement of i) intention, ii) willingness and iii) qualifications and expertise to accomplish a particular task within a given time frame. The most important function of a proposal is to convince the peers to win approval and get financial and other support for tasks, that the proposer wants to take up.

A proposal may be internally generated and addressed to the top management to get approval and funding for a new product development or a service (a current awareness service in a newly developing discipline, or preparation and production of a directory). They generally identify problems, suggest a solution and indicate specifically what the proposer wishes to accomplish. Proposals generally have the following components:

- **Letter of transmittal:** A formal proposal is always accompanied by a letter which usually identifies and highlights the problem, and offers to work on it on mutually agreed conditions.

- **Title page:** This gives a succinct statement of the problem, name of the organisation to whom the proposal is submitted with an identifying number, date of submission and the period during which the work would be completed, etc.

- **Executive summary:** This is a brief summary of the total proposal. Busy executives seldom find time to go through detailed text of a proposal but they are the ones that approve and sanction funding. Hence the executive summary needs to be carefully drafted to get a favorable response.

- **Table of contents:** Any proposal having more than five to six pages should have a table of contents.

- **Statement of request:** If the proposal is in response to a request, the statement of request is sometimes given, which may include the terms of reference.
• **Introduction:** It should include an elaborate statement of the problem and its background. The scope of the proposal has to be spelled out.

• **Methodology:** This explains how the work is to be accomplished and hence is perhaps the most important section of the proposal.

• **Facilities:** The facilities required to execute the task have to be stated unambiguously to avoid any problem at later stages. These may include equipment and machinery, literature support, transport and communication and such others.

• **Personnel:** This includes professionals, secretarial staff, their quality and number, depending upon the nature of the project.

• **Duration:** It should indicate milestones, phases and completion of the task.

• **Cost:** This is crucial. It includes salaries, capital expenditure, if any, expendable equipment, miscellaneous expenses and overheads.

• **Summary:** Busy executives would also read the summary and conclusion to assess the proposal and hence should be written with utmost attention.

### 2.4.3 Plans

A plan is a well thought out and designed document of an activity or a set of activities, complete in all aspects. It provides a framework to set objectives and outline the way the targets are to be achieved, marshalling human, material and financial resources. Planning is an analytical process involving:

- determination of desired goals, objectives, and set targets of achievements within a time span in a phased manner;
• assessment of future in relation to environmental changes, professional trends, technological advances, and the influence and impact on all aspects of developments;
• selection of activities, programmers and projects to accomplish goals and targets set, from among the alternatives available, and fixing priorities;
• estimation of resources required in terms of finance, equipment, manpower and other physical resources;
• preparation of a written plan document; and
• provision of an action plan for execution.

In short, a good plan is a blueprint for action. It anticipates problems and suggests methods and strategies to overcome them. It is flexible enough to modify at different stages of implementation and helps the achievement of goal and targets prudently and economically.

The characteristic features of a plan for library automation of a medium size library, specializing in a set of new disciplines, may be as follows:

• A vision of the future of the library in terms of users, collection development, database creation and maintenance, new and innovative services, and human resources development - in general to derive all advantages of library automation;
• A design plan in which all aspects stated above are spelled out in detail, with reference to library's current status and inputs needed;
• An operational strategy to evolve a pragmatic method and to apply it in a phased manner, identifying milestones and specific targets to fit into achievable time frame;
• Identifying every component of the operational strategy, and estimate requirements in terms of quality and quantity; and
• A workable management strategy to deal with transitional problems.

2.4.4 Reports

Next to correspondence, reports are the most frequently written documents in an organisation. There are many types of reports to serve specific purposes. Most commonly, reports:
• inform readers about an organisation's activities, programmers, and plans so that readers are up to date on the current status (periodic routine reports);
• record results of an inquiry or investigation on specific aspects of a problem with recommendations for future reference for decision making or for any action (committee/ commission reports); and
• determine the feasibility of an undertaking to plan an activity.

Reports may vary in length, depending on the topic or purpose; they may be informal memos, formal reports, sometimes running into multivolume’s. Whether or not a report is short or long, its use depends on how much information a reader needs for a particular purpose in a specific situation, on the subject or the format of the report.

**The technical report requires:**

• Letter of transmittal: For formal reports, a letter of transmittal is often required to detail the terms of reference and such other data.
• Title page: It gives the first contact with the report and its character of the report. Usually contain the name of person/corporate body to whom it is submitted; writer's name, date, etc.
• Executive summary: The entire report is presented in a highly condensed form, an essential requirement.
• Table of contents: Seeks out the structured pattern of the report, indicating the relationship between the main and subordinate units.
• Introduction: States the subject of the report, scope, purpose and plan of treatment.
• Preliminary section: Gives a fuller development of the results of study, conclusions and recommendations;
• The body: Contains the procedure, equipment used for the study, results, analysis of results, discussions, conclusion, and recommendations which logically follow from the conclusions. The text may be supported by charts, tables, diagrams, drawings, and photographs;
• Summary:
• Bibliographical references
• Appendix: Incorporates information which could not be presented along with the body of the text, such as detailed statistics and other items.

2.4.5 Instructional Materials

Quite often library and information professionals are involved as resource persons or faculty members of professional training courses, short or long term programmers. Formal oral presentations also are invariably required to be supported by written materials. With the increasing application of Information Technology to the Library and Information field, users’ guides have become absolutely necessary for the effective use of software packages. At present computer professionals are involved in the preparation of users’ guides besides system operation guides. This activity is generally referred to as documentation in computer parlance. While the guides to system operation software could be expected to be done well by computer specialists, the user guides particularly for library and bibliographic software could preferably be written by professional experts. This calls for special writing skills which will have to be acquired by library and information professionals. While the characteristic features would vary from subject to subject and course to course, the structural outline of a unit of a course, for example, on “Computerized Cataloguing and Searching Techniques” would include:

• Objectives of unit which should be oriented towards students' learning objectives;
• Introduction giving a plan of thematic presentation of the topic;
• Ranganathan's five laws;
• Changing role of the library;
• Library catalogue in the changing context;
• Computerized catalogues and cataloguing;
• Networks, interlinking, dispersed access, online access;
• Descriptive cataloguing: bibliographic formats;
• Subject searching strategies and techniques;
• Shared cataloguing;
2.4.6 Professional Services

Writing skills are necessary in library and information services for:

- Condensation preparation of abstracts, synopsis, digests, summaries, etc.;
- Consolidation preparation of trend reports, state-of-art reports and the like;
- Repackaging preparation of condensation and consolidation materials, orienting towards specified categories of users;
- Preparation of promotional booklets, brochures, charts, writing scripts for video presentation of library and information services and the like;
- Writings required for consultation services;
- Writings required for involvement in activities organized by national and international professional associations.

Writing skills required for these professional activities may overlap with some of the skills already outlined or described in the previous sections of this Unit. The point to be noted is that writing skills have become indispensable for many activities in Libraries and Information Canters. The conscious realization of this and acquiring the necessary skills would greatly enhance professional prestige and status.

2.4.7 Correspondence

Correspondence generally includes letters and memos. Although these frequently are addressed to one person, they often have multiple readers because the senior to whom it is addressed passes the correspondence down the line of employees in the organization either for information or joint action. Letters and memos are versatile written
documents that serve many purposes. Letters are written primarily to persons outside an organization and cover a variety of situations such as 

a) requests; b) claims; c) complaints and adjustments; d) enquiries and response to enquiries; e) sales; f) credit; g) urging actions to solve a particular problem; h) goodwill messages; i) announcements; j) records of agreements; k) follow-up to telephone conversations; l) transmittals of other technical documents; and m) invitations.

Memos are written primarily to persons inside an organization. Many internal reports, such as deputation reports, progress reports and short proposals may be in memo form. There are no specific formats or methods characterizing the features in writing letters and memos. Each writing situation would have to be handled with a complete understanding of the problem and the concerned subject and the objective to be realized. It is however, to be realized that this kind of writing also requires writing skills that should be acquired with experience.

2.5 ORAL COMMUNICATION

Everyone involved in a technical field will, on many occasions, be required to present information in discussions, meetings, arranged lectures, speeches and talks. Oral communication, if it were to be effective, will have to be prepared well in advance, with visual supports. Generally, oral communication serves the purpose to inform, persuade or instruct the listeners.

2.5.1 Presentation Materials

Presentation materials mean all written texts which include, main points to be highlighted in an oral communication, statements that should catch the attention of the audience; tables, graphs and other visual supports to
quantify information; and photographs to illustrate an event of importance, etc. Technical papers are presented in seminars, conferences and such other congregations. If such papers are read, as on many occasions persons do, the impact of the papers on the audience is very little, despite some good and worthwhile ideas present in them. But on the other hand, if the main points are highlighted with textual matter and supported by visual representations, even a paper of lesser quality will have an effect on the audience. Similarly, if a case has to be built for a project in official meetings, oral presentations with selected text matter and audio-visual support materials will ensure approval of the project with the necessary financial support. Business persons invariably present their products with visual support and impress on the purchasers the value and utility of the product they sell. There is no gainsaying the fact that the information business also needs to exploit these methods in the present day contexts. But not much attention is paid to either the text matter selected or the visual support required. Both these techniques require a good deal of attention. Many different types of presentation aids are available. Flipcharts give the flexibility to emphasize a particular point in the presentation by instantaneously highlighting or adding to the point by hand. Because flipcharts are usually drawn by hand, written legibly in bold letters, and do not carry too much information in one, they are most appropriate for informal, smaller presentations.

**Transparencies** using overhead projectors are very popular in these days in oral presentations. Computer generated information on the acetate sheets greatly enhances the quality of the presentation. **Slides** can provide text and graphics, and can be effectively handled, using remote control facilities available for slide projectors. **Multimedia** will in the near future provide facilities, particularly, for demo packages, with accessibility to text, graphics and sound through digital representation technology. In using all these gadgets, the primary factor that would determine the quality of presentation is writing skills necessary to prepare texts and visuals, combined with audio for which the script is also to be carefully prepared.
This Unit brings the characteristic features of technical communications. These features are the elements or components that together represent structural organisation of the contents of technical communication. In order to identify different characteristic features of various groups of technical writing, a classificatory approach groups them into different categories, giving example of each group. The three major categories are groups that are obtained by using function, type and reader as characteristics for division. Seven typical writing situations relevant to the Library and Information field are examined with reference to their characteristic features. These are professional writings, proposals, plans, reports, instruction materials, professional services, and correspondence. Illustrative examples exemplify the specific features in each of these categories. Oral presentations also need textual and visual support for their impact and effectiveness on the audience. This is also explained with a few ideas on the preparation of presentation materials.

**2.7 SELF-CHECK EXERCISE**

Q.1 Explain the Classification of Technical Communications.
Q.2 Identify some of the specific characteristics of Technical Writing.
Q.3 What do you mean by Professional Writings?
Q.4 State a few reasons for classifying technical communications.
Q.5 Give an outline of the components that should feature in an annual report of a Library.
UNIT-3 TARGET GROUPS WRITTEN COMMUNICATION

3.0 Introduction

3.1 Objectives

3.2 Target Groups
   3.2.1 Types of Readers
   3.2.2 Characteristics of Readers

3.3 Reader Analysis
   3.3.1 Guidelines for Reader Analysis
   3.3.2 Checklist for Reader Analysis

3.4 Writing Situations and Target Groups
   3.4.1 Professional Writing
   3.4.2 Instructional Writing
   3.4.3 Official Memos
   3.4.4 Preparation Materials for Oral Presentation

3.5 Summary

3.6 Self-check Exercise
3.0 INTRODUCTION

In this Unit, we would expand our study of targeted readers of written communication, their expectations, demands and needs. In other words, we shall try to learn what exactly the readers look for, from a written communication to meet any of their needs.

Every written communication has its own purpose as conceived by the author; but his purpose is not the determining factor that makes the written communication worthwhile. On the other hand, it is the receiver who should feel satisfied with the written material he has got. Not only are the groups of readers too large and varied, but also their specific requirements and purpose vary considerably. We shall pay full attention, in this Unit, to various categories of target groups and their expectations, needs and demands that should provide useful guidance in the process of writing on technical subjects.

3.1 OBJECTIVES

After reading this Unit, you will be able to:

1. recognize different varieties of target groups with their distinct requirements of written communication;
2. identify different groups of readers with reference to the writing situations;
3. appreciate and underscore that success to written communication is determined only when it meets the requirements of the targeted reader;
4. do reader analysis to slant technical communication towards their requirements; and
5. adopt this approach in professional writing and also in library and information services.

3.2 TARGET GROUPS

We have learnt that any communication process, be it oral or written, terminates with the message reaching the receiver. The receiver may be an individual or a group of persons functioning in different situations. These receivers are generally referred to as the audience or more specifically readers. The term `readers' refers to individuals, or a group of individuals who have potential for being exposed to and using a written information product or service.

The views of reader adopted here do not presume that the user group must be of a specific size or particularly diverse, that all its members be exposed to the same information at the same time, or that members of the group must be unknown to the information producer. More basic is the view that the information product or service offered must be deliberate] produced and distributed to meet the requirements of different groups.

The essence of this approach is that information should be aimed at a specific target group there could be, however, many categories
of readers based upon characteristics chosen for the purpose for which the written communication is attempted.

### 3.2.1 Types of Readers

Readers can be classified by a) age and sex; b) individuals and groups; c) level of knowledge in a subject; d) level of technical proficiency; e) institutions and organizations and similar other characteristics. The requirements of these groups can be matched against writing situations; and the appropriate documents can be produced. It is, however, important to note that for classification of anything, there is no single characteristic or a single set of characteristics for division that could meet every purpose. The resulting groups are also not always mutually exclusive. The choice of characteristics invariably has to depend upon the purpose of division. Writing situations and the target groups are given below. These are only illustrative, not exhaustive.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Writing Situation</th>
<th>Target Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Persuasive writing (proposals, promotional materials, etc.)</td>
<td>Directors of an institutions; Top managers of companies; Special committees; Consumers of products and services; and the like.</td>
</tr>
<tr>
<td>ii)</td>
<td>Instructional writing (Teaching and learning materials, guides, manuals, etc.)</td>
<td>Students and teachers; Professional and technical personnel; users of different categories.</td>
</tr>
<tr>
<td>iii)</td>
<td>Writings aiding decision snaking processes (feasibility reports, committee and commission reports, etc.) Professional writings (Scientists, specialist groups of technocrats, technicians, managers, etc.)</td>
<td>Heads of institutions; Departments of govt’s; Business and industrial undertakings; and the like. Peers in science and technology; Various levels of subject/professional expertise; Generalists but non-professionals; Laypersons.</td>
</tr>
</tbody>
</table>

Table 1: Writing Situation and Target Group

While the members of the above reader groups are consumers of information, technical communication underscores the active and dynamic quality of consumers. This leads us to the discussion of audience analysis.
3.2.2 Characteristics of Readers

The goal of technical writing is to communicate information that is needed by a user group. The writer must be clear that the information conveyed is not to impress a user with his/her prowess for writing. Neither the information is for pleasure or for entertainment. It is also to be understood, particularly by beginners in technical writing, that readers who use the document come from different levels of subject background or technical proficiency. In other words, the entire piece of writing must be slanted to the expectations and abilities of use of the target group.

Just as a writer is induced by some motivation to write, readers also have some reasons to use a written document. Various factors such as goals, needs, attitudes and values, capability and competence, utility, communication style, context, experience and habit of audience group determine the nature of technical writing.

The goals of a user group may be to achieve competence in an area such as computer skill to improve the person's chances of improving career opportunities. Research scientists may be interested in keeping themselves abreast of current developments in their field of research. A business person may be keen to enlarge the scope of his business by studying available market reports on the nature of consumers in a locality.

Most often needs of users necessitate them to seek information. These needs may be met by a manual or a reference guide.

Attitudes - preferences and predispositions about particular topics, people and situations - also play a critical role in information consumption. It is also observed that most persons will look for information and interpretations that support their perceptions before they will consider no supportive information.

Values are basic principles that often determine users' choice and preferences in the selection of information. As with attitudes, values also can substantially influence users in their choice selection, interpretation and retention.

The interrelationship of attitudes, values, and information consumption is a complex one. On occasions, information inconsistent with our attitudes can lead us to give it more attentive than that consistent with our attitudes. We spend more time to reflect on information that troubles us than on messages that are consistent with our perspective; our tendency, yet often is to take the latter for granted.

Competence and capability of users on a particular subject or topic and the facility with which they understand the technical jargons and the language style and tone, have obvious impact on the kinds of information sought.

Generally speaking users will attend to and make efforts to understand and remember information that they are intending to use. To an individual who is interested in buying television set, informative articles on the qualities of TV sets, advertisements and trade literature, etc. would be much more relevant, and of immediate use than a technical article on TV sets.
The context in which a person functions, determines his needs and utility for that information. If the information is not available at the time required to meet a particular need in a given context, that information may not have any use for a user later.

Users of information, also develop habits or inclinations as a result of their experience in the reception or response to different kinds of information. Preferences for certain author journals, institutional publications are some of the habits that users cultivate.

The initial exercise in the process of technical writing, therefore, has to study the audience to whom the writing is meant for. This exercise is not a mere academic ritual. It is the first and probably the most important step in the process of technical writing.

3.3 READER ANALYSIS

Writing about reader and adaptation, Ram D. Taneja (1990), accentuates the need for studying the reader for whom the writing is intended. He writes, "the first great principle of writing is economy of mental effort on the part of the reader. When a writer assumes the reader's knowledge of the subject or interest in the subject mirrors the writer's own, it usually results in extra effort on the part of the reader. A specialist, writing for other specialists in the same field often feels justified in making the reader work to understand the text, under the assumption that, since the reader mirrors the author's knowledge and interest concerning the subject, they are willing to put as much work into reading the text as the author puts into writing it. Unfortunately, that is often a mistaken assumption. A skillful writer will take the time and trouble to write for a real audience, making a realistic appraisal of their knowledge, their interest and their willingness to expend effort in their reading. A skillful writer remembers the reader."

The reader for a good part of technical writing is diversified, from the persons trained in related technical specialties to those with little or no technical background. In such instances, it is the writer's responsibility to bridge the gap wherever necessary. That gap can be considerable, depending upon the nature of the technical document whether it is for a laymen, a technician, a semiskilled operator, or an expert engineer. For instance, the reader for a user guide to a software package in graphics for personal computer might include:

- management
- engineers
- students
- professors
- secretarial staff
- programmers
- professional staff
- marketing staff

"In every field the number of situations requiring one to write for a reader which is not composed of specialists in that field is on the increase. Architects write for bank officers, engineers write for
departmental estimate committees, chemists write for management, and everyone writes for government bureaucrats” (Ram D. Taneja, 1990). Knowing the readers' depth of subject background and interest has therefore, become essential in technical writing. Systematic studies to understand a reader is generally referred to as “reader analysis”. Some writers prefer to use the expression “reader adaptation” for reader analysis.

3.3.1 Guidelines for Reader Analysis

As an understanding of the reader is so fundamental to successful technical writing, many writers prefer to prepare ‘Reader Profiles' before beginning any complicated assignment. Some of the facts, among others, that they try to obtain of readers include their

- General education
  - Subject specialization,
  - Position in organization
  - Responsibilities in, organizations,
  - need for information
  - Possible use of information obtained, and
  - Preferences in reading
  - Expectations in a technical document

Such reader profiles may help categorising readers into primary, secondary and fringe grout. The writer adjusts the organisation, emphasis and language of the writing according the requirements of readers. If this preliminary step is overlooked, the efforts in preparing a technical document would become a waste, particularly if the document is unrelated the reader's level of understanding.

It is suggested by experienced technical writers that writers develop a profile of their reader and group them in the following manner:

- High-tech readers
- Low-tech readers
- Lay readers
- Mixed readers
- Multiple readers

3.2.2 Checklist for Reader Analysis

We have noted that different readers pose different problems for a writer in organising and presenting his/her writing. A checklist is given below to give a general guidance to aid writers to prepare their reader profiles

- Content: Depth or shallow; long or short; relevant or irrelevant;
- Concepts: Familiarity or unfamiliarity with concepts; laymens's definitions or

- standard technical definitions; lengthy or short
- explanations;
- Vocabulary: Popular or technical;
• Organisation: All or selected facets of a topic; Preferred or conventional sequence;
• Methods of Development: Necessity for (i) a historical perspective (ii) Comparison and contrast;
• Graphics: Necessity to support text; kinds of graphics; and
• Others.

3.4 WRITING SITUATIONS AND TARGET GROUPS

In the foregoing sections, we have been discussing some general aspects of readers and the need for a writer to slant the writing to respond to specific requirements of target groups. In this section, we shall take a few instances of technical writing and examine the correlation required to match reader requirements. The five writing situations taken for illustration here are:
• Professional writing;
• Proposal writing;
• Instructional writing;
• Office memos; and
• Preparation materials for oral presentation.
• Email communication
• Employment communication
• Notice agenda and minutes
• Brochures
• BR

3.4.1 Professional Writing

Professionals are not always one homogenous group for whom one kind of writing would meet all requirements. There is the peer group who are equals, have more or less the same or similar qualifications and professional experience. Practioners, who are in operational positions and who have considerable field experience constitute another subgroup. A third group would perhaps be the learning groups who are freshers, needing field experience and looking for information that would enhance their pragmatic-knowledge and theoretical foundations.

Learned journals largely satisfy the first group viz. peers who would look for developments in the field and would like to verify and assess results, and critically evaluate the quality of research. Although there are certain conventions and practices in writing for this group, the vain aspects are not to state that they are already well known and established among the peers. The writing would have to be specifically dealing with wavefronts of knowledge and research conducted in these areas. The writer would await peer groups reactions and critical comments that
would reckon the contribution and also establish the person's standing and reputation in the field.

The third group comprises learners (and not beginners) in the field, most of them being in positions of picking up valuable experience, working under seniors. They have the necessary academic background and would be able to understand technical contributions. They may take abilities for critical examination. Writers for this group should come down to these groups levels of exposition required of a subject, so that their purpose to widen their knowledge is served.

3.4.2 Proposal Writing

While there are a variety of proposals, the main purpose of a proposal is to convince the reader to get the proposal approved along with financial and other supports sanctioned for the projects and programme proposed. Whether a proposal is solicited or unsolicited, usually these are examined by the top person in the organisation who provides formal approval and sanctions. This person may be supported by technical experts in the organisation who may submit their critical assessment on different aspects to him. Sometimes the proposal may be examined by a technical committee who collective view is taken for decision making by the top person. So there are a number of persons who would be involved in reading proposals. Hence the writer has to be careful to make the proposal absolutely clear from every point of view.

As we have noted in Unit 2 of this Block, the elements of a proposal are a) letter of transmittal; b) title; c) executive summary; d) table of contents; e) introduction; f) methodology; g) facilities required; h) personnel; i) duration; j) cost; and k) summary.

Every one of these elements is important since every element has a particular function. Thy persons who examine the proposal would look to the proposal from i) methodology point of view that reflects a certain degree of competence; ii) economics of the proposal including facilities requested and the budgetary positions, etc.; and iii) personnel that may be involved So each of these groups may examine a particular section of the proposal and hence the writer has to give attention to every one of these elements.

3.4.3 Instructional Writing

Audience to this group would also comprise many groups. Among others, these groups may include learners, technicians working at operational levels, persons who guide, and those that assess the quality of instructional materials.

For those who are attending a course, teaching and learning materials that are prepared for the course, must help the process of learning and teaching. Care has to be taken by the writer to provide all the help required by way of lucid presentation with many illustrations, examples, and exercises to check the progress of learning, and a summary to recapitulate the main points.

Manuals for technicians at operational levels should help to apply the techniques with ease, in a step by step method, indicating pitfalls while
operating a particular technique, diagrams, flowcharts and other visual aids, etc.

Persons who are supervisors should be able to use the manuals to instruct the trainees with suggestive examples, simulate various situations and attempt to develop self help while learning.

What is being stressed here is that user groups requirements will have to be uppermost in the mind of the writer.

3.4.4 Official Memos
Memos are informal and formal messages communicated within an organisation. The contents are always internal organizational matters and addressed from the top to lower categories of personnel or among the employees from one to another section. Such internal memos should promote understanding and harmony and help the process of smooth functioning. Groups of persons are the general readers to this category of technical writing. Some of the attributes of a good memo include tone and language of writing, a positive approach to a particular problem, certain degree of persuasive writing if some aspects of a solution to a problem has to be generally accepted, and similar others.

3.4.5 Preparation Materials for Oral Presentation
We have already known that any good oral presentation has to be supported by written material, supplementing and complementing oral presentation. While flipcharts, OHP transparencies, slides and other aids are used during the presentation, certain types of written documents are also distributed during the talk to the readers. These documents are to reinforce the main arguments with reference to the topic of an oral presentation. These will be read by persons who have attended the talk and also by others who have an interest in the area but have not attended the talk. It should be a self-contained document, explaining every aspect of the topic. The idea is that persons who have the document should get interested in the oral presentation also and would make up their minds to attend similar talks when presented.

3.5 SUMMARY
In this Unit, emphasis is laid on the study of readers for any type of technical writing. The main points of this Unit are:

- Any piece of technical writing has to be slanted towards the requirements of the readers;
- Readers are always a diversified group; they have to be classified, choosing characteristics relevant to the purpose. By way of illustration, there are four characteristics chosen for categorizing readers, such as persuasive writing, instructional writing, writing for decision making and professional writing;
Emphasizing the need for reader analysis, some guidelines and a checklist are given to prepare profiles of user groups in a given context; and

Five writing situations are taken to match them against their target audience. Professional writing, proposals, instructional writing, office memos and presentation materials for oral presentation are the examples given.

### 3.6 Self-check Exercise

1) Explain reasons for slanting technical writing to readers requirement.

2) Give a few characteristics of audiences that tend to influence the technical writing process.

3) Explain the need for reader analysis for being successful in technical writing.

4) State some of the facts that should go into a reader profile.

5) Identify different categories of reader's for a feasibility report for library automation.
4.0 Introduction

4.1 Objectives

4.2 Communication Chain

4.3 Reader Response and Feedback

4.4 Reader-Writer Relationship
   4.4.1 Instructional Documents
   4.4.2 Study/Investigation Reports
   4.4.3 Promotional Materials
   4.4.4 Scripts for Video Programmes

4.5 Readability Yardstick
   4.5.1 Fog Index
   4.5.2 Flesch Formula

4.6 User Studies
   4.6.1 Library and Information Science
   4.6.2 Publishing
   4.6.3 Mass Communication

4.7 Summary
4.8 Self-check Exercise
4.0 INTRODUCTION

The reader-writer relationship is intertwined and dependent on each other. Of course, a writer can write without a reader, but if their words remain unread and unexplored, then do the words really mean anything? On the other side, a reader cannot exist without a writer. Therefore the relationship is one of symbiosis – a relationship of mutual benefit or dependence.

The writers write for pleasure, and hopefully for their readers. However what a reader takes from a piece of work may not be what the author intended. Because a reader's view is skewed by their own personal experiences, their view and interpretation of the words may be different to that of the writer, or even another reader who has had different life experiences. Unlike creative writing wherein the readers need not be a well-defined community, in technical writing, on most occasions, writers know fairly well the type of readers, whom the writing is meant for. In many writing situations, writers could assess or ascertain the quality of writing required even as they begin.

We shall try to understand how reader-writer relationships could be established in many technical writing situations. In certain situations, reader response and feedback could also be seen as a built-in feature, forming an integral part of the information communication process.

There have been research efforts to determine appropriate yardsticks to measure the readability of a technical document. Although there is no unanimity of opinion in the use of these readability yardsticks in actual writing processes, they may serve as useful guidelines, particularly for beginners.

The case studies or user studies have become an important discipline of intense research in Library and Information Science, corresponding to market and consumer research in business. The methods to assess users' reaction to information products and services have thrown considerable light on planning activities that are highly user-oriented. Publishing trends and reader analysis in mass communication also are increasingly focused on use and user. All these aspects of writer-reader relationship are discussed in this Unit.

4.1 OBJECTIVES

The primary purpose of this unit is to enable scholars to approach their reporting responsibilities with confidence. This is a pedagogical practice of moving from the simple to complex. Through reading, discussion, and application of knowledge, students are led through the essential stages for production effective, simple or complex report. This unit is helpful to develop research and report writing skill. The unit is also useful to explain the process of response and feedback to writers for their efforts in technical writing.

This unit is helpful to comprehend the dual roles of generators and users of information in a communication process. By reading this unit, one can become familiar with research in measuring readability; and recognizes possibilities of applying the methodologies of user studies in technical writing.
This Unit deals with the ways by which writers could try to get users' response to their writing and obtain useful feedback, to match users' information requirements adequately.

### 4.2 COMMUNICATION CHAIN

Due to the different possibilities of producing, processing and exploiting spoken utterances there exists a tremendous variety in the architecture of the so-called communication chain. Therefore we define the communication chain as the connection(s) between a talker and a listener via an auditory, a visual and/or an electric channel. While these are parallel channels of information flow, the electric channel as well might be seen as serial and/or parallel connections of electric devices and channels.

We know that information generators and users of are operating at the two ends of the communication transfer chain. Particularly in technical communication, the generator of a piece of information is also a user at the same time, of some other relevant information, generated by someone else. This dual role of a generator/user create a sort of reader-writer relationship that gets in-built into the system of technical communication, i.e., a writer has a considerable understanding of the nature of requirements of users; and the writer, therefore, always can adjust the writing to respond adequately to the needs of a special reader.

In professional communication, there is a pattern of flow of information from the generator to the user. Research papers, monographs, treatises, research reports etc. are normally passed through a mechanism of quality control. In this process, the scholars are totally involved in one way or the other. Most of the scholars are active writers, reporting their research output through journals and other communication channels. They are also involved as referees, journal editors, users and in similar other functional capacities in the communication process. As a result of all these, writers get to know their readers besides being fully aware of the purpose for which their readers use their outputs. Hence the reader-writer relationship is already established in the system of communication.

Reader-writer relationship is not as explicit as we see them in professional writing. In proposal writings or feasibility report writing and such others, there exists a relation between the writer and the persons or organizations for whom these documents are written. In most cases the terms of references are spelled out or a clear understanding of the purpose of the report is obtained prior to taking the studies or investigations.

Thus reader-writer relationship is very closely connected with each other that always exist between a generator of information and its ultimate user. In technical writing, writers do have a facility to know their readers.

### 4.3 READER RESPONSE AND FEEDBACK
The reader is an active agent who imparts "real existence" to the work and completes its meaning through interpretation. Reader-response criticism argues that literature should be viewed as a performing art in which each reader creates his or her own, possibly unique, text-related performance. Thus reader response means the behavior and reactions of readers to a piece of technical writing. However, feedback refers to the way they express their reactions, either positively or otherwise, to the technical document after reading it.

Writers may obtain direct response to their research writing through personal interactions and discussions with their peers in conferences, meetings or through correspondence. The comments may be made on preprints of the research papers to get published in learned journals or presented in national or international forum. These kind of reader-writer contacts among scholars are a normal feature of scholarly communication.

There are some other modes of communication to obtain readers’ response and feedback on writings. Book reviews, review articles, annual reviews, advances, state-of-the-art reports, citation practices, document delivery systems, indexing and abstracting services, etc. provide some insight to writers to assess the writings of the writers.

In writing situations, other than professional writings, there is an implicit understanding of the purpose of writing. In many instances, there is an indirect involvement of the reader in the preparation of a technical communication. Prior to the process of writing a proposal, feasibility report, or commission report, meetings take place between the writers and the user community. At later stages of the progress of work also, meetings are held to ascertain if the contents of the technical communication are in conformity with the original agreement between the two sides. In this way, the reader-writer relationship gets established.

### 4.4 READER-WRITER RELATIONSHIP

The four typical types of writing situations are being explained. The each type of writing has its own parameters. The four writing situations are:

- Instructional documents,
- Study/investigation reports,
- Promotional materials, and
- Script for a video programme.

#### 4.4.1 Instructional Documents

These documents are geared towards those users who are unfamiliar with the various ways in which they can access documents. These kinds of documents include course materials for learning and training, operation manuals, literature guides, etc. These documents have a distinct group of users. Opportunities of interaction with them may offer writers considerable insights into the type of writing required by them.
Course materials designed for the training programmes may be examined at various levels for the purpose for which it has prepared. Readers’ reactions to course materials may be assessed by circulating a questionnaire at the end of the course. The important facts may be obtained through users or learners with the help of structured questionnaire to improve the quality of course materials/programme. The demand for course materials is an indicator of the quality. Several versions of the revised course materials can be tested to get proper insight to improve the quality of course materials.

The operation manuals are also tested to obtain reader response and feedback. Along with analyzing and interviewing readers, writers sometimes evaluate audience needs through user tests of an operation manual while it is still in draft. In fact, manuals and instructional materials are particularly good for user tests because their primary purpose is to guide readers in performing certain functions. When potential readers test a document's usefulness before the final draft stage, a writer can make needed changes in design and content based on the feedback from the readers. Three types of tests for obtaining user reaction and feedback are usually employed.

**Questionnaires:** It is used to know the views of readers for particular phenomena for the purpose of writing in a certain form. The readers make response to well designed questionnaires to help a writer to decide whether the document is useful for them. The readers are able to understand the questions of questionnaire. A company or an institution may distribute a brochure to consumers for promoting a product in the market. For example: A brochure for a product. The writer makes a brochure for consumers using questions alongwith the answers for that particular product to determine the quality of product. For this, several versions of the same brochure may also be tested to determine the usefulness for users.

The test may involve the following steps:
• a group of typical consumers regarding to make a draft and reading the brochure;
• consumers reply for a series of questions on the contents and style of presentation;
• consumers may also make their comments on the different types of users;
• data analysis using questionnaires; and
• revision in the brochure in the light of desirable changes required by users.

**Performance Test:** A writer may be most concerned, whether readers will be able to follow instructions and perform a task correctly. A manual may be tested at the draft stage by operators and technicians who will use the final version. The user test follows the same general pattern as the preceding test but the emphasis is on performing a task. The sequences of steps are:

selected operators follow the written instructions to perform steps of a procedure;

the length of time to complete the task is recorded, as well as how smoothly the operators proceeded through the suggested steps;
the operators analyse reactions of user groups who are likely to adopt the manual their comments on how effective they found the instructions and areas that were unclear;

analysis of the results focuses on correctness in completing the task, the length of time required, and the portions of the document that received the most criticism from the readers; and the writer revises the sections that were not clear to the readers and retests the document.

**Protocol analysis**: It is a tool for behavior analysis. The study of thinking is made difficult by the fact that many of the relevant stimuli and responses are not apparent. Although the use of verbal reports has a long history in psychology, it is only recently that Ericsson and Simon's (1993) book on verbal reports explicated the conditions under which such reports may be reliable and valid.

The studies in behavior analysis and cognitive psychology that have used talk-aloud reporting may be reviewed. Particular methods for collecting reliable and valid verbal reports using the “talk-aloud” method as well as discuss alternatives to the talk-aloud procedure that are effective under different task conditions, such as the use of reports after completion of very rapid task performances may also be reviewed. The practice of asking subjects to reflect on the causes of their own behavior and the less frequently discussed problems associated with providing inappropriate social stimulation to participants during experimental sessions may also be useful.

This type of user test requires readers to ‘think aloud’ as they read through a document. This is called protocol analysis. It allows the writer or design review team to record readers' responses everywhere in the document, analyse readers’ comments, and revise content, structure, and style accordingly. Readers may not like the jargons, the sequence of the presentation of different aspects, too much or too little detail, graphics, or sentence clarity, etc. The writer can then revise these areas before the final draft.

Users' tests have become increasingly important for audience analysis, especially in large institutions. The Document Design Centre of the American Institute for Research in Washington D.C. established a Usability Test Laboratory in 1985 to assist businesses in testing documents and evaluating readers' responses to written materials.

### 4.4.2 Investigation Reports or Study

The investigation reports or study is carried out for institutions or government bodies to solve a problem or investigate an event or activity. This study is used to take a decision or help to evolve guidelines for the purpose for which study has been made. This kind of study or investigation carried out by an individual or a team usually completed within a specific time frame and in a given set terms of reference. An individual or a given body is also asked to submit the report of that study. They may also have direct contacts to ascertain the views more personally or obtain information and data through questionnaires. The reaction of user community is also obtained through a series of meetings in which the terms of references are not only spelled out in detail but also modified if necessary. Periodic meetings are also held to evaluate the progress
of the study or investigation to draw appropriate conclusions. The writer-reader relationship may be visualized in this process. This kind of task is helpful for preparing the final report that could be more suitable to take correct decisions.

4.4.3 Promotional Materials
We are living in an information era. Today it is increasingly being considered as an economic product. It is being sold and bought in the form of books, journals, conference proceedings, patents, standards, online database, indexing and abstracting, CD-ROMs and many other information products. The various library management software packages, library network facilities and other services are available in the market. Consequently, many of the business practices are coming in the information field for product promotion like advertisement, demos for products etc. Special promotional materials are also being prepared for highlighting features and qualities of the product. Advertisements are also appearing in print and non-print media to inform the customers and potential buyers on the range of information products and services.

The American Marketing Association defines that advertisement is a paid form of non-personal presentation of ideas, goods or services by an identified sponsor. It is promotional and persuasive in nature.

Advertisements are important means of communication which demand special skills in conceptualisation, and in transforming ideas into visuals and write-ups. More than anything else they require an intuitive ability to gauge user responses. Demands for products and services may have to be created in many situations. The field of information is one in which the utility of information as a means of enlarging the scope of improving business or creating new knowledge, etc. have to be marketed. Advertisements as promotional materials in marketing information products and services are undoubtedly the best means to achieve useful results.

4.4.4 Script for Video Programmes
Script writing for video programmes is an important activity in the present context of multimedia communication. News magazines on public affairs, educational materials, business and managerial practices and many other programmes are produced on video cassettes. Today these products are being used as a powerful means of communication.

The ability and skill to concretise ideas, think and choose appropriate visuals are indeed a difficult task. The writing has to be minimal but most effective to support visuals and the voice has to be in the background while reading the script. It is a team work of specialists, script writers, video programme directors and other technicians. The involvement of the targeted audience from the very beginning to the final stages of the video cassette production is too important to neglect. At various stages of the programme, select audience will have to be involved in helping the process of giving a proper shape to the video cassette.

The reader-writer relationship has to be established from very beginning to achieve success in such ventures.
4.5 READABILITY YARDSTICK

Readability tests, readability formulas, or readability metrics are formulae for evaluating the readability of text, usually by counting syllables, words, and sentences. Readability tests are often used as an alternative to conducting an actual statistical survey of human readers of the subject text (a readability survey). Word processing applications often have readability tests in-built, which can be deployed on documents in-editing.

The application of a useful readability test protocol will give a rough indication of a work's readability, with accuracy increasing when finding the average readability of a large number of works. The tests generate a score based on characteristics such as statistical average word length (which is used as an unreliable proxy for semantic difficulty) and sentence length (as an unreliable proxy for syntactic complexity) of the work.

Some readability formulas refer to a list of words graded for difficulty. These formulas attempt to overcome the fact that some words, like "television", are well known to younger children, but have many syllables. In practice, however, the utility of simple word and sentence length measures make them more popular for readability formulas. Scores are compared with scales based on judged linguistic difficulty or reading grade level. Many readability formulas measure word length in syllables rather than letters, but only SMOG has a computerized readability program incorporating an accurate syllable counter. Since readability formulas do not directly take syntactic or semantic complexity into account, they are not considered definitive measures of readability.

Readability has, perhaps, to be more appropriately discussed under language and style in technical writing. Nevertheless it is important to draw attention to readability in this unit also, because it is an essential ingredient of the reader-writer relationship.

A document despite being extraordinarily rich in its contents may fail to serve its purpose in making the reader understand and use it, if it is drafted clumsily without clarity.

A good body of literature is available on research papers on readability yardstick. Since the 1920s more or less thirty, useful formulae have been devised that purport to show the general readability level of prose.

The two formulae most generally used today were developed by Robert Gunning and Rudolf Flesch. The former developed a formula to measure the difficulty of reading matter by the use of a readability yardstick.

4.5.1 Fog Index

This is Robert Gunning's own assessment of the achievements of the Fog Index after twenty years of use. Those interested in readability formulas will be happy to learn a little more not only about the history and development of the Fog Index but about the applications that have been made of it in business and
industry, and also in newspaper and government work. Mr. Gunning is well aware, of course, of some of the weaknesses of the index, but obviously he also has reason to be proud of its achievements.

In linguistics, the Gunning fog index measures the readability of English writing. The index estimates the years of formal education needed to understand the text on a first reading. A fog index of 12 requires the reading level of a U.S. high school senior (around 18 years old). The test was developed by Robert Gunning, an American businessman, in 1952.

The fog index is commonly used to confirm that text can be read easily by the intended audience. Texts for a wide audience generally need a fog index less than 12. Texts requiring near-universal understanding generally need an index less than 8.

**Calculating the Gunning fog index**
The Gunning fog index is calculated with the following algorithm:

Select a passage (such as one or more full paragraphs) of around 100 words. Do not omit any sentences;

Determine the average sentence length. (Divide the number of words by the number of sentences.);

Count the "complex" words, those with three or more syllables. Do not include proper nouns (for example, Ram), familiar jargon, or compound words. Do not include common suffixes (such as -es, -ed, or -ing) as a syllable;

Add the average sentence length and the percentage of complex words; and

Multiply the result by 0.4.

The complete formula is:

$$0.4[(\text{words/sentence}) + 100(\text{complex words/words})]$$

Until the 1980s, the fog index was calculated differently. The original formula counted each clause as a sentence. Because the index was meant to measure clarity of expression within sentences, it assumed people saw each clause as a complete thought. In the 1980s, this step was left out in counting the fog index for literature. This might have been because it had to be done manually. Judith Bogert of Pennsylvania State University defended the original algorithm in 1985. Nevertheless, some continue to point out that a series of simple, short sentences does not mean that the reading is easier.

**Examples**
The following paragraph has a Gunning Fog Index of 3.1.

Rock a bye baby, on the treetop.
When the wind blows, the cradle will rock.
When the bough breaks, the cradle will fall.
And down will come baby, cradle and all.
Analysis: There are 31 words in four sentences. There are no complex words.

\[
0.4 \times (31/4 + 100(0/31))
\]

\[
0.4 \times (7.75 + 0)
\]

Fog index = 3.1

Example 2

The following paragraph has a Gunning Fog Index of 7.07.

English has become the standard language around the world. This was the result of many factors. In the 1700s, the British affected English with the army, economy, science, politics and culture. In the mid-1900s, the United States caused change. It is the most used language in world business and science. It is a famous second language and an official language in most of Europe and in Commonwealth countries. It is also the case in groups around the world.

Analysis: There are 79 words in seven sentences. The 5 italic words are considered complex.

\[
0.4 \times (79/7 + 100(5/79))
\]

\[
0.4 \times (11.28 + 2.5)
\]

Fog index = 7.07

Gunning believes that easy reading matter should have a fog index of about 10, which incidentally corresponds to that of Reader's Digest. But in most technical writing, which is mostly concerned with exposition of complex ideas, a sentence length of about 20 and fog index of 12-17 is acceptable, though Gunning says a copy with Fog index of 13 or more, runs into the danger of being ignored or misunderstood.

4.5.2 Flesch Formula

The Flesch/Flesch–Kincaid readability tests are designed to indicate comprehension difficulty when reading a passage of contemporary academic English. There are two tests, the Flesch Reading Ease, and the Flesch–Kincaid Grade Level. Although they use the same core measures (word length and sentence length), they have different weighting factors, so the results of the two tests correlate approximately inversely: a text with a comparatively high score on the Reading Ease test should have a lower score on the Grade Level test. Both systems were devised by Rudolf Flesch.

"The Flesch-Kincaid" (F-K) Reading grade level was developed under contract to the United States Navy in 1975 by J. Peter Kincaid and his team. Other related US Navy research directed by Kincaid delved into high tech education (for example, the electronic authoring and delivery of technical information); usefulness of the Flesch-Kincaid readability formula; computer aids for editing
tests; illustrated formats to teach procedures; and the Computer Readability Editing System (CRES).

The F-K formula was first used by the US Army for assessing the difficulty of technical manuals in 1978 and soon after became the Department of Defense military standard. The commonwealth of Pennsylvania was the first state in the US to require that automobile insurance policies be written at no higher than a ninth grade level of reading difficulty, as measure by the F-K formula. This is now a common requirement in many other states and for other legal documents such as insurance policies. Today the Flesch–Kincaid formula is ubiquitous, and variations of the formula are used with more than a dozen languages. Microsoft Word still uses many of the style and grammar rules first developed for the CRES program.

**Flesch Reading Ease**

In the Flesch Reading Ease test, higher scores indicate material that is easier to read; lower numbers mark passages that are more difficult to read. Flesch divided his previous formula into the following steps:

1. Multiply the average sentence length by 1.015
2. Multiply the number of syllable per 100 words by 0.846
3. Add (1) and (2)
4. Subtract the sum from 206.835
5. The remainder gives the reading difficulty level.

The formula for the Flesch Reading Ease Score (FRES) test is

\[
206.835 - 1.015 \left( \frac{\text{Total words}}{\text{Total Sentences}} \right) - 84.6 \left( \frac{\text{Total Syllables}}{\text{Total words}} \right)
\]

The scores as derived above are located on a scale ranging from 0 to 100. At the bottom of the scale writing is so difficult that it is unreadable for all practical purposes. At the top the language is easy for any literate reader. A reading ease score of 0-30 is considered very difficult, 30-60 fairly difficult, 60-70 standard, 70-80 fairly easy.

**Flesch–Kincaid Grade Level**

These readability tests are used extensively in the field of education. The "Flesch–Kincaid Grade Level Formula" translates the 0–100 score to a U.S. grade level, making it easier for teachers, parents, librarians, and others to judge the readability level of various books and texts. It can also mean the number of years of education generally required to understand this text, relevant when the formula results in a number greater than 10. The grade level is calculated with the following formula:

\[
0.39 \left( \frac{\text{total words}}{\text{total sentences}} \right) + 11.8 \left( \frac{\text{total syllables}}{\text{total words}} \right) – 15.59
\]

There are different shades of opinions expressed for adopting these yardsticks as essential criteria for technical writing. The remarks of experienced writers are quoted below on their validity and usefulness.
Taneja writes, "Like all good inventions, readability yardsticks can cause harm when misused. They are to be regarded only as handy statistical tools to measure complexity in prose. They are useful to determine whether the writing is gauged to its readers. But they are not formulae for writing. So please remember to use yardstick as a guide only after you have written, but not as a pattern before you write. Good writing must be alive and interesting, not dull and cloudy. Do not kill it with a system by turning out dull, standardised writing that fails to attract readers."

"Writers who are aware of their readers and their purpose in writing are better able to judge the effectiveness of a specific sample of writing than any of the formulae yet devised." (Sherman)

### 4.6 USER STUDIES

In general, user studies have a wider meaning. However, Library & Information Science describes user studies in a different ways. In this particular subject user is confined for library user. The central idea in user studies is that users' satisfaction is the uppermost goal of any communication, just as customers' satisfaction is in any commercial transaction. In technical writing also, user benefit and satisfaction are the only goals.

Let us consider users satisfaction in three different areas of technical communication:
1. Library and information services
2. Publishing

#### 4.6.1 Library and Information Science

Users' behaviour in seeking information, use of various types of documents collected in libraries and working of information centres, developing user-oriented library and information products and services, etc. have become thrust areas of library and information science disciplines over the last three decades. The research effort and studies are being made to improve the quality of profession. The various research methods and techniques have also been developed to assess users' interest to build up collections in libraries and create user friendly databases for information retrieval. Retrieving information available in the collection and in-house and external databases, and such other sources, offering various types of users' services is a difficult task.

Among the several methods to develop user-oriented information services, bibliometric service offers good insights into measuring quality. Citations analyses have offered useful indicators to measure

- (i) the quality of research of individual scientists,
- (ii) ranking research articles and papers, journals and leading institutions contributing to research, and
- (iii) define acquisition policy for building most useful journal titles in research libraries, and many others. These indicators are also useful
measures to writers to assess their own impact on their readers. In other words, bibliometric studies provide writers a useful method for understanding and estimating audience requirements and slant their writings to meet the purpose of users.

Citation analysis, however, is applicable only in some types of writing situations, such as professional writing wherein citation practices have become a normal feature. Publishing and book selling also offer some useful hints to writers to gauge the readers' reaction to their writing.

### 4.6.2 Publishing

Publishing is the process of production and dissemination of literature or information. It is the activity of making information available for public view. Authors may be their own publishers in some cases. They may be originators and developers of content and provide media to deliver and display the content.

Traditionally, the term refers to the distribution of printed works such as books and newspapers. With the advent of digital information systems and the Internet, the scope of publishing has expanded to include electronic resources, such as the electronic versions of books and periodicals, as well as micropublishing, websites, blogs, video games etc.

Publishing includes the stages of the development, acquisition, copy-editing, graphic design, production–printing, and marketing and distribution of newspapers, magazines, books, literary works, musical works, software and other works dealing with information, including the electronic media.

The dimensions of publishing trends in relation to the relationship with readers and writer may be illustrated as under:

Publishers have resorted book and periodicals in paperback format for general publishing and common interest. This is more economic device for publishing of information. Some of the selected areas of specialized books publishing are:

- **Reference books**: encyclopedias, dictionaries, directories, compendia of historical data, bibliographies;

- **Professional books**: esoteric knowledge in specific disciplines, business or trade;

- **Textbooks**: designed to fit the specific needs of students at schools and higher education;

- **Children's books**: picture books, science and learning, juvenile fiction;

Technical, scientific, law and medical books; various updating the specialized in fields where information and knowledge grow fast; and entertainment, self-improvement, how-to-do, religion erotica and hobby, including popular science, fiction, etc.
Titles of best sellers of fiction and non-fiction books are periodically published by New York Times. In its weekly book review section, several best-seller lists are published. Hardbacks and paperbacks are separated. The non-fiction best-seller list is dominated by biographies of celebrities. Among the best-sellers of non-fiction books, was Alvin Toffler's 'Third Wave' that was a best-seller in the eighties. Publishing houses in the western countries are diversifying their activities to include periodical publishing, cable television, film production and distribution, etc. The main purpose of diversifying appears to be a financial necessity. Journal publishing which one of the main activities has been of learned bodies, professional association and academia, are increasingly becoming the province of commercial publishers.

Electronic publishing is introducing a completely new avenue for business in publishing and book trade. Marketing of books and information are becoming much specialised activities and specialists in this area are being promoted by large publishers and book sellers.

The current trends of publishing have great implications for writers, particularly in technical writings. A large number of publications are coming out with new skills in writings. The reader-writer relationship is emerging in today’s world in a new way.

4.6.3 Mass Communication

Mass communication is the term used to describe the academic study of the various means by which individuals and entities relay information through mass media to large segments of the population at the same time. It is usually understood to relate to newspaper and magazine publishing, radio, television and film, as these are used both for disseminating news and for advertising.

It is a process through which the information base of a culture is created, distributed and shared. Mass media are institutions that are formed specifically to engage in the mass communication process. These mass communication institutions play indispensable roles through packaging, disseminating, distributing, popularising, validating and commercialising the cultural information base. Mass media such as newspapers, radio, television, films have long played a functional role in packaging and transmitting cultural information. Many other organisations whose primary function is not mass communication in the usual sense of the term, also possess their own facilities for disseminating information to local, national and international audience.

Awareness, attitude, opinion, knowledge and behaviour of the public in specific issues of political, social and economic, cultural interests are measured and analysed to conduct audience research in the areas of mass communication by specialist institutions. There are certain research techniques to analyses public reactions and opinions on specific issues on mass thinking. These techniques can also be employed by technical writers in certain categories of writing, especially while contributing to newspapers, script writing for television and broadcasting, to assess their impact on the audience and to discern the relationship. These techniques are also helpful to cultivate the views of the public, readers.
4.7 SUMMARY

The most critical skill required in today's environment is the ability to communicate, both verbally and in writing. Technical writing is a major component of work environment. Technical writing is a field of professional writing on technical subjects. It is quite different from fiction or journalism. The goal of expressive writing is to express one's feelings through description and narration. However, if we want to read about rocket science or brain surgery, we need a technical writer to tell us exactly what they mean.

The reader-writer relationship in different contexts of technical writing has illustrated in this unit. The following are some important concept mentioned in this unit:

The dual roles of generators and users in the communication transfer chain have been discussed. Response and feedback for establishing reader-writer relationship in typical contexts like instructional writing, study/investigation reports, promotional materials and script writing for video programmes also given in this unit. The unit also deals with readability yardsticks with reference to formulas for providing guidance to technical writers; and user studies. Citations analysis, technical writing, publishing trends and mass communication are also discussed. It has relevance to cultivating reader-writer relationship in the context of technical writing.

4.10 SELF CHECK EXERCISES

1. Describe briefly how generators and users of information play a dual role in communication transfer chain.

2. Distinguish between direct and indirect response and feedback.

3. Briefly explain the three tests for readers' response and feedback for instructional materials.

4. Briefly describe reader-writer relationship involved in

(a) Instructional documents
(b) Investigation reports
(c) Promotional materials and
(d) Script for a video programme.

5. What are readability formulas? Are they necessary for technical writing?

6. Explain briefly how user studies can contribute to cultivating reader-writer relationship.
Unit-2 Language as a medium for communication of thoughts

5.0 Introduction
5.1 Objectives
5.2 Different Aspects of Language
   5.2.1 Language-Definitions
   5.2.2 Origin of Language, Language beginnings, Language Acquisition,
       Language Sounds and Meanings, Speed and complexity.
   5.2.3 Language: Our Medium of Understanding
   5.2.4 Language and Education
   5.2.5 Language and culture

5.3 Function of Language
5.4 Characteristics of Human Language
   5.4.1 Use of Sound Signals
   5.4.2 Arbitrariness
   5.4.3 Cultural Transmission
   5.4.4 Displacement
   5.4.5 Structure Dependence
   5.4.6 Creativity

5.5 Language Variation: Regional Dialects, Caste Dialects, Social Class Dialects and Sex Differences
5.6 Properties of Language
5.7 Kinds of Languages
5.8 Language and Communication
5.9 Communication
5.10 Differences between Oral and Written Communication
5.11 Information communication revolutions
5.12 Summary
5.13 Self-check Exercise
5.0 INTRODUCTION

Language is a means of conveying information. It is the power of language to influence thinking. This is why we have many words that mean basically the same thing, because they all have slight differences or are used in different circumstances.

In other words, language is the identity of an individual, of a community and of a nation. We can easily sense the warmth of its existence and the ‘pervasiveness’ of its application in our everyday life. And it is this vividness of language that lured us to explore its magical power in the world of communication.

5.1 OBJECTIVES

The library is a rich source of knowledge. This knowledge is available in various forms like printed, non-printed and digital format. The communication of thought or knowledge is possible through a certain medium. We know that a medium is essential for communication of thoughts or ideas. The language is the medium for communicating thoughts.

The present unit is based on the language and its application for communication of thought. This unit is helpful to understand the meaning of language and communication. By using this unit you will be able to:

- know the meaning of language, its functions and chief characteristics;
- describe the difference between written and spoken communication.
- know the meaning of communication, its theory.

5.2 Different Aspects of Language

5.21 Language-Definitions

Some of the important definitions as follow:

Simeon Potter rightly remarks “Language stands in its right place in the Dewey Decimal Classification system between sociology and natural sciences because it is a social activity on the one hand and a scientific system on the other”.

“Language is a purely human and non-instinctive method of communicating ideas, emotions and desires by means of voluntarily produced symbols.” (Edward Sapir)

The language of a class or social position is potentially a prison-house, “a sealed-off and impermeable monoglossia.” (Mikhail Bakhtin)

To the question: “WHO is speaking?” Mallarme, the French poet, answered, “Language is speaking.”
Language determines one's entire way of life, including one's thinking and all other forms of mental activity. To use language is to limit oneself to the modes of perception already inherent in that language. The fact that language is only form and yet molds everything goes to the core of what ideology is. (Benjamin Whorf)

Its systematic nature in order to be complete needs only to be valid, and not to be true. Language effects the original split between wisdom and method. "Freedom of speech" does not exist; grammar is the invisible "thought control" of our invisible prison. With language we have already accommodated ourselves to a world of unfreedom. The tendency to take the conceptual as the perceived and to treat concepts as tangible is as basic to language as it is to ideology. (Roland Barthes)

“"A language [is] a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements.” (Noam Chomsky)

There are approximately 6000 languages known in the world today. The various languages like Hindi, English, Urdu, Sanskrit, Russian etc. are being used in India. We often read books in different languages. These books contain various thoughts and they are being expressed by using language as a medium. Unfamiliarity with a language can be a major barrier in listening. Language can sometimes be very context specific. Some people might be used slang in specific ways and words too might have different codes and meanings. Therefore, it is important to make sure that we speak the language we are conversing in with reasonable clarity.

The whole world is full of thought. The known and unknown knowledge exist on the globe. We need a global language to communicate knowledge. Thus need for a global language is evident. We also know that English is the dominant cross-cultural language. In order to use information resources available on the Internet a language is essential. Most of the available resources are in English language. Due to Internet and media, English is increasingly affecting all other languages. More English terms and grammar are being adopted in other languages.

5.2.2 ORIGIN OF LANGUAGE

A language is a particular kind of system for encoding and decoding information. Since language (s) became an object of study (logos) by the ancient grammarians, the term has had many definitions. The English word derives from Latin lingua, "language, tongue," with a reconstructed Proto-Indo-
European root of "tongue" a metaphor based on the use of the physical organ in speech. The ability to use speech originated in remote prehistoric times, as did the language families in use at the beginning of writing. The processes by which they were acquired were for the most part unconscious.

The origin of language, known in linguistics as *glottogony*, a technical term formed from the Greek roots of the same meaning, refers to the acquisition of the ability to use language by an earlier stage in the evolution of mankind. The term and the existence of the topic presume that *Homo sapiens* evolved from some non-human ancestor who did not possess language capabilities [1].

We know that language has numerous theories of its origin. There is no way, at present, to prove" or "disprove" any of these theories. But, although, how language began is a puzzling question; why language began is much clearer. Understanding the origin of language, being both one of *Homo sapiens* most useful and consequential biological traits and one that distinguishes it from other species, poses difficulties, since, unlike writing, spoken language leaves no explicit concrete evidence of its nature or even its existence, requiring scientists to resort to indirect methods.

Linguists agree that there are no existing primitive languages and that all modern human populations speak languages of comparable complexity. While existing languages differ in terms of the size of and subjects covered by their lexicons, all possess the grammar and syntax necessary for communication and can invent, translate, or borrow the vocabulary necessary to express the full range of their speakers' concepts. Nearly all children possess the capacity to learn language and no child is born with a biological predisposition favoring any one language or type of language over another.

The evolution of modern human language required both the development of the anatomical apparatus for speech and also neurological changes in the brain to support language itself, but other species have some of these capabilities without full language ability. The emergence of language use is tied to the full acquisition of these capabilities, but archaeological evidence does not provide an entirely clear picture of these events.
The term “language” has branched by analogy into several meanings. The most obvious manifestations are spoken languages such as English or Spoken Chinese. However, there are also written languages and other systems of visual symbols such as sign languages. In cognitive science the term is also sometimes extended to refer to the human cognitive facility of creating and using language. Essential to both meanings is the systematic creation and usage of systems of symbols, each pairing a specific sign with an intended meaning, established through social conventions.

**Language beginnings**

Sign language provided a stepping stone. The Early humans used sign language instinctively. Then the gesture became conventionalized and was sometimes accompanied by sounds. Consequently they opted for ‘action language’. Finally in the long run Sounds became more important than the gestures. Modern supporters of the gesture theory emphasize points –

- Language is not inevitably spoken.
- Gestures are universal and obvious.
- Signs are easier to acquire than ‘full’ languages.
- Language and gesture may be linked in the brain.

Language is a tool to understand our concept system. We are not normally aware of our concept system. We think and act along certain lines, which are not so obvious.

**Language Acquisition**

‘Language-acquisition' can be interpreted as meaning either "the acquisition of language" or "the acquisition of a language". Learning a first language is something every child does successfully, in a matter of a few years and without the need for formal lessons. With language so close to the core of what it means to be human, it is not surprising that children's acquisition of language has received so much attention. Anyone with strong views about the human mind would like to show that children's first few steps are steps in the right direction.

**Language Sounds and Meanings**

The phonic medium can be studied from three points of view:

- Articulatory phonetics
There are several theories of phonology. They may be distinguished as being either phonemic or non-phonemic theories, according to whether they take phonemes to be the basic elements of phonological analysis or not. Languages differ considerably as to the phonetic features that they make distinctive and the phonetic features which, if they have them at all, they treat as non-distinctive. This remains true, regardless of the theory of phonology within which it is stated.

**Speed and complexity**

Need to communicate faster and to convey more in each message is influencing the language changes. Technology itself encourages abrupt and abbreviated language use, because in some communication modes it is necessary in order to get across in reasonable time.

### 5.2.3 Language: Our Medium of Understanding

Language is a recognized as a natural medium for acquiring knowledge, literacy and understanding. This process is facilitated through an individual independent expression in his/her own tongue. It is the principal medium of learning, understanding and self expression. Language has always remained central to human existence. It is the medium through which human emotions, views, ideas and interests are expressed. It gives wings to our imaginations and structures our thought process.

A child first responds to sounds and then gradually learns words i.e. acquire language. Language is the principal medium of learning, understanding and self expression and of education as well.

### 5.2.4 Language and Education

Language and education are closely associated with each other. It is the language that is responsible for promotion of education. All policy on education have stressed on the use of mother tongue as the medium of instruction along with the importance of one’s independent expression in his/her own tongue. Education policy of 1968, decided that first language to be studied must be mother tongue or regional language. The gap between home language and
school language has increased. The Dialogue between different Indian languages has diminished. Medium of understanding should be home language so that one must be able to construct their knowledge. Learning should not be burden but a joyful experience.

The mother tongue as a medium of instruction can eliminate the linguistic and cultural gaps caused by difference between home language and learning language. In this context we define mother tongue as the language of the home, neighborhood, peer group and kinship network, regional language(s) as the language(s) widely spoken in the street. Thus it may be different from child’s mother’s tongue.

Imparting education, both pedagogically and socially, in the child’s mother tongue has positive results. Bringing the home langue into schools not only ensure education for all but also archive quality learning. Until we have the mother tongue as a medium of learning it is not possible to universalize education. India is a multi-lingual and multicultural country. As indicated in the UNESCO Universal declaration on cultural diversity (2001) “Like cultural diversity, linguistic diversity should be viewed as the common heritage of humanity, and all persons have “the right or express themselves and to create and disseminate their work in the language of their choice and particularly in their mother tongue. It is said “As long we have the language, we have the culture As long as we have the culture, we can hold on to the language”.

5.2.5 Language and culture

Language is the product of culture. It is an important part of human behaviour, governed by tradition and culture. The connection between the human capacities for culture and language has been noted as far back as classical antiquity. As language and culture are both in essence symbolic systems, 20th century cultural theorists have applied the methods of analyzing language developed in the science of linguistics to also analyze culture.

5.3 FUNCTION OF LANGUAGE

Language, perhaps began because human beings needed a greater degree of cooperation with each other in order to survive, and this cooperation required an effective communication system. Therefore, the primary function of language is to convey information. In fact, it is the function of language that we find in the books in the libraries. Language can also be used to communicate
feelings and emotions. Human beings also use language for purely aesthetic reasons. The main function of the language is for communication. It is basically a medium of communication. We can easily be able to communicate each other through language only.

I. Three Basic Functions are generally noted: there is perhaps nothing more subtle than language is, and nothing has as many different uses.

A. Without a doubt, identifying just these three basic functions is an oversimplification, but an awareness of these functions is a good introduction to the complexity of language.

B. the Functions of Language (i.e., its purpose; what it does; its uses)

1. Informative language function: essentially, the communication of information.

2. Expressive language function: reports feelings or attitudes of the writer (or speaker), or of the subject, or evokes feelings in the reader (or listener).

3. Directive language function: language used for the purpose of causing (or preventing) overt action.

II. It is rare for discourse just to serve only one function; even in a scientific treatise, discursive (logical) clarity is required, but, at the same time, ease of expression often demands some presentation of attitude or feeling - otherwise the work might be dull.

A. Most ordinary kinds of discourse are mixed. Consider the following example. Suppose you want your listeners to contribute to the Multiple Sclerosis Society.

B. There are several possible approaches:

1. Explain the recent breakthroughs in the scientist's understanding of the disease (informative) and then ask for a contribution (directive).

2. Make a moving appeal (expressive) and then ask for a contribution (directive).

3. Command it (directive).

4. Explain the good results (informative), make a moving appeal (expressive), and then ask (directive).

5. Generally speaking, step 3 (specifically stating that which is desired as outcome) is the least effective means. Usually, just making a moving appeal is the most effective for the general population; explaining the recent research is the most effective for an educated audience. Asking for the contribution is often not necessary, since the prospective contributor surmises this step.
C. Several other uses of language

1. The ceremonial--(also ritual language use) probably something quite different from simply mixing the expressive and directive language functions because performative aspects are included as well.

2. Performative utterances: language which performs the action it reports.

3. Phatic language: "Elevator talks" and street-corner conversations accomplishing a social task.

4. Most of the examples we have been talking about are not merely of academic interest, even though we cannot take time out to trace the far reaching consequences.

5.4 CHARACTERISTICS OF HUMAN LANGUAGE

In modern times, a large number of artificial languages have been devised, requiring a distinction between their consciously innovated type and natural language. The latter are forms of communication considered peculiar to humankind. To understand human language one needs to see what is special and unique to language. One of the best ways to answer this question is to compare human language with animal communication, and see where the similarities and differences lie.

5.4.1 Use of Sound Signals

Human language is a signaling system which utilizes sound to express meanings. However, this is not a unique characteristic of human language, as several insects, birds and animals also use sounds to communicate.

5.4.2 Arbitrariness

In animal communication, there is frequently a connection between the signals and the messages sent. For instance, an animal who wishes to warn an opponent may simulate an attacking attitude. In human language, the reverse is true, and there is no link between the signal sent and the message intended. That is, the symbols used are arbitrary.

5.4.3 Cultural Transmission

It is said that human beings are biologically programmed to acquire "language". However, they learn a specific language only by exposure to it. That is,
language is handed down by one generation to another. A child brought up in isolation, away from human beings, does not acquire language. In animal systems, a far greater proportion of communication is genetically inbuilt.

5.4.4 Displacement
Most animals can communicate about things in the immediate environment only. For instance, an animal will utter its danger cry only when danger occurs. But human beings can communicate about events which are separated in time and space.

5.4.5 Structure Dependence
Animals have a stock of basic sounds (a cow has under ten, while gorillas and chimpanzees have between twenty and thirty) which they can use only once. That is, the number of messages an animal can send is restricted to the number of basic sounds, or, in the more complex systems, a few simple combinations of sounds. And there is no known internal organisation within this system. But human language is not a haphazard list of individual sounds. Most sounds become meaningful only when they are combined with other sounds. This organisation of language into two layers - a layer of sounds, which combine into a layer of larger units (such as words) - is known as duality of structure. A communication system with duality is much more flexible than one without it, because many more messages can be sent.

Human beings can understand that these sentences are structurally equivalent. Animals, as far as we know, do not use structure dependent operations.

5.4.6 Creativity
The most important distinction between human and animal communication is that human beings are essentially creative in their use of language. On the other hand, animals have a limited number of messages that they can send or receive. This type of restriction is not found in human language which is essentially a creative process i.e., human beings can produce absolutely new utterances whenever they feel like it. A person can utter a sentence which has never been said before, in the most unlikely circumstances, and still be understood. Even in
every day routine communication, a person is not obliged to say the same thing over and over again.

There is another dimension to the essential creativity of human communication, and this dimension we may call functional creativity. This basically refers to the ability of human beings to evolve more complex communicative systems, as the complexity of their life increases. As human beings have progressed from nomadic life, to the more stable homestead and agricultural society, and finally to the highly complex urban society. The language has also evolved to meet the demands of each type of society.

5.5 LANGUAGE VARIATION

The two persons of the same mother tongue can talk to one another and understand each other quite easily. Yet, they do not speak exactly the same language in same way. However, beyond these individual differences, the language of a group of people may show regular variations from that used by other groups who speak the same language. For example, the Hindi spoken by people living in Bundelkhand is systematically different from that spoken in Malwa. The two groups of people are, therefore, said to speak different dialects of the same language. These systematic or dialectal differences may be due to regional separation, socio-economic status, caste, ethnic group, sex, and so on.

**Regional Dialects**

The dialectal diversity tends to increase proportionally to the degree of communicative isolation between the groups. We take the case of Hindi spoken in different parts of India; we will find differences in the level of sounds, as well as vocabulary and grammar.

**Caste Dialects**

In many parts of India, society is stratified into different castes and linguistic differences are observed among them. However, increasing education and urbanization has narrowed down these linguistic differences.

**Social Class Dialects**
Besides regional dialects, dialects can also vary due to differences in social class. In fact all dialects are both regional and social, since all speakers have a social background and a regional location. Social classes, however, cannot be clearly defined, because they are simply aggregates of people with similar social and economic characteristics; and social mobility, i.e., movement up or down the social hierarchy is always possible.

Sex Differences
Linguistic research has shown that in many societies, the speech of men differs from that of women. In some conservative societies this can be due to segregation of the sexes.

5.6 The properties of language
The properties of language are arbitrary and related symbols.

5.6.1 Arbitrary symbols
A key property of language is that its symbols are arbitrary. Any concept or grammatical rule can be mapped onto a symbol. In other words, most languages make use of sound, but the combinations of sounds used do not have any necessary and inherent meaning; they are merely an agreed-upon convention to represent a certain thing by users of that language. This arbitrariness applies to words even with an onomatopoetic dimension (i.e. words that to some extent simulate the sound of the token referred to). Non-onomatopoetic words can stand just as easily for the same meaning. Onomatopoetic words may have an inherent relation to their referent, but this meaning is not inherent; thus they do not violate arbitrariness.

5.6.2 Related symbols
The meanings of signs may be arbitrary, but the process of assigning meaning is not; it is the activity of the entire society; individuals are not allowed to change them arbitrarily, even though they may contribute some new meanings. A continuous thread of socially recognized meaning requires that the allowed meanings of individual signs be related. These types of relatedness allow a finite set of signs to be combined into a potentially infinite number of meaningful utterances.
5.7 Kind of languages
There are different kinds of languages. These are as follows:

5.7.1 Natural language
Human languages are usually referred to as natural languages, and the science of studying those falls under the purview of linguistics. A common progression for natural languages is that they are considered to be first spoken and then written, and then an understanding and explanation of their grammar is attempted.

Languages live, die, move from place to place, and change with time. Any language that ceases to change or develop is categorized as a dead language. Conversely, any language that is in a continuous state of change is known as a living language or modern language.

The concepts of Ausbausprache, Abstandsprache and Dachsprache are used to make finer distinctions about the degrees of difference between languages or dialects.

5.7.2 Artificial languages
The artificial language may be explained in the following ways:

5.7.2.1 Constructed language
Some individuals and groups have constructed their own artificial languages, for practical, experimental, personal or ideological reasons. International auxiliary languages are generally constructed languages that strive to be easier to learn than natural languages; other constructed languages strive to be more logical ("loglangs") than natural languages; a prominent example of this is Lojban. Constructed languages are not necessarily restricted to the properties shared by natural languages. This part of ISO 639 also includes identifiers that denote constructed (or artificial) languages. In order to qualify for inclusion, the language must have a literature and be designed for the purpose of human communication. Specifically excluded are reconstructed languages and computer programming languages.

5.7.2.2 International auxiliary language
Some languages, most constructed, are meant specifically for communication between people of different nationalities or language groups as an easy-to-learn
second language. Several of these languages have been constructed by individuals or groups. Natural, pre-existing languages may also be used in this way; their developers merely cataloged and standardized their vocabulary and identified their grammatical rules. These languages are called naturalistic.

5.7.2.3 Controlled natural language
Controlled natural languages are subsets of natural languages whose grammars and dictionaries have been restricted in order to reduce or eliminate both ambiguity and complexity. The purpose behind the development and implementation of a controlled natural language typically is to aid non-native speakers of a natural language in understanding it, or to ease computer processing of a natural language.

5.7.2.4 Formal language
Mathematics and computer science use artificial entities called formal languages (including programming languages and markup languages, and some that are more theoretical in nature). These often take the form of character strings, produced by a combination of formal grammar and semantics of arbitrary complexity.

5.7.2.5 Programming language
A programming language is a formal language endowed with semantics that can be utilized to control the behavior of a machine, particularly a computer, to perform specific tasks. Programming languages are defined using syntactic and semantic rules, to determine structure and meaning respectively. Programming languages are employed to facilitate communication about the task of organizing and manipulating information, and to express algorithms precisely. Some authors restrict the term "programming language" to those languages that can express all possible algorithms; sometimes the term "computer language" is applied to artificial languages that are more limited.

5.7.2.6 Animal language
The term "animal languages" is often used for non-human systems of communication. Linguists do not consider these to be "language", but describe them as animal communication, because the interaction between animals in such communication is fundamentally different in its underlying principles from human language. In several publicized instances, non-human animals have been taught to understand certain features of human language. Chimpanzees, gorillas, and orangutans have been taught hand signs.
5.7.2.7 Hybrid Languages

Today, peoples are using two different languages in a single sense. This is popularly known as Hinglish, Spanglish etc.

5.8 Language and communication

No communication exists without language. Language and communication are intimately tied to each other. Language makes communication possible in every situation. Language is the body of communication. Communication takes place in the ear of the listener not in the mouth of the speaker.

Communication is a process of transferring information from one entity to another. Communication processes are sign-mediated interactions between at least two agents which share a repertoire of signs and semiotic rules. Communication is commonly defined as "the imparting or interchange of thoughts, opinions, or information by speech, writing, or signs". Although there is such a thing as one-way communication, communication can be perceived better as a two-way process in which there is an exchange and progression of thoughts, feelings or ideas (energy) towards a mutually accepted goal or direction (information).

It is a process whereby information is enclosed in a package and is channeled and imparted by a sender to a receiver via some medium. The receiver then decodes the message and gives the sender a feedback. All forms of communication require a sender, a message, and a receiver. Communication requires that all parties have an area of communicative commonality. There are auditory means, such as speech, song, and tone of voice, and there are nonverbal means, such as body language, sign language, paralanguage, touch, eye contact, and writing.

Language is the development of the basic form of communication between human beings, and in a society. And just as it is the basic form, it is also the most developed. We cannot communicate in any real sense without language, other than through gestures; we do communicate through some non-verbal forms like the visual arts - painting and sculpture - and through dance, but the culmination of true, articulate, communication is through language. It could take a number of forms, of course. It could be unvarnished, work a day prose, it could be poetry, it could be drama; but all of these are forms of language, written, spoken and read.
Human Language and Communication have the following properties:

**Displacement**: Capacity to produce messages that can refer to past and future time, and to other locations.

**Arbitrariness**: There is no one-to-one correspondence between a linguistic form and its meaning. Meaning is always arbitrary and maintained by convention.

**Productivity**: The ability to be creative and to produce utterances not heard before.

**Cultural transmission**: Language does not develop automatically if there is no culture to transmit it to the young members.

**Discreteness**: The sounds used in language are meaningfully distinct and discrete.

**Duality**: Distinct sounds and distinct meanings. It is one of the most economical features of human language, since with a limited set of distinct sounds we can produce a very large number of sound combinations. As Saussure says "Language is a system of interdependent terms in which the value of each term results solely from the simultaneous presence of the others."

5.9 Communication

Communication is the process of sending and receiving information among people. Sometimes it is called communicology and relates to all the ways we communicate, so it embraces a large body of study and knowledge. The communication discipline includes both verbal and nonverbal messages. A body of scholarship all about communication is presented and explained in textbooks, electronic publications, and academic journals. In the journals, researchers report the results of studies that are the basis for an ever-expanding understanding of how we all communicate.

Communication happens at many levels (even for one single action), in many different ways, and for most beings, as well as certain machines. Several, if not all, fields of study dedicate a portion of attention to communication, so when speaking about communication it is very important to be sure about what aspects of communication one is speaking about. Definitions of communication range widely, some recognizing that animals can communicate with each other as well as human beings, and some are narrower, only including human beings within the different parameters of human symbolic interaction.

**Types of communication**
Professor Albert Mehrabian (UCLA, 1967) identified three major parts that convey meaning in human face to face communication: body language, voice tonality, and words. He conducted research to determine how people make meaning when a speaker says one thing but means another. Although the exact percentage of influence may differ due to variables such as the perceptions or biases of the listener and the speaker, communication as a whole is meant to convey meaning and thus, in some cases, can be universal. A system of signals, such as voice sounds, intonations or pitch, gestures or written symbols can communicate thoughts or feelings.

Human spoken and written languages can be described as a system of symbols (sometimes known as lexemes) and the grammars (rules) by which the symbols are manipulated. The word "language" is also used to refer to common properties of languages. Language learning is normal in human childhood. Most human languages use patterns of sound or gesture for symbols which enable communication with others around them. There are thousands of human languages, and these seem to share certain properties, even though many shared properties have exceptions.

**Nonverbal communication**

Nonverbal communication is the process of communicating through sending and receiving wordless messages. Such messages can be communicated through gesture, body language or posture; facial expression and eye contact, object communication such as clothing, hairstyles or even architecture, or symbols and info-graphics, as well as through an aggregate of the above, such as behavioral communication. Nonverbal communication plays a key role in every person's day to day life, from employment to romantic engagements. Speech may also contain nonverbal elements known as paralanguage, including voice quality, emotion and speaking style, as well as prosodic features such as rhythm, intonation and stress. Likewise, written texts have nonverbal elements such as handwriting style, spatial arrangement of words, or the use of emoticons. A portmanteau of the English words emotion (or emote) and icon, an emoticon is a symbol or combination of symbols used to convey emotional content in written or message form.

Other communication channels such as telegraphy fit into this category, whereby signals travel from person to person by an alternative means. These signals can in themselves be representative of words, objects or merely be state
projections. Trials have shown that humans can communicate directly in this way without body language, voice tonality or words.

G. W. Porter divides non-verbal communication into four broad categories:

**Physical:** This is the personal type of communication. It includes facial expressions, tone of voice, sense of touch, sense of smell, and body motions.

**Aesthetic:** This is the type of communication that takes place through creative expressions: playing instrumental music, dancing, painting and sculpturing.

**Signs:** This is the mechanical type of communication, which includes the use of signal flags, the 21-gun salute, horns, and sirens.

**Symbolic:** This is the type of communication that makes use of religious, status, or ego-building symbols.

**Static Features for Non-Verbal Communication**

**Distance:** The distance one stands from another frequently conveys a non-verbal message. In some cultures it is a sign of attraction, while in others it may reflect status or the intensity of the exchange.

**Orientation:** People may present themselves in various ways: face-to-face, side-to-side, or even back-to-back. For example, cooperating people are likely to sit side-by-side while competitors frequently face one another.

**Posture:** Obviously one can be lying down, seated, or standing. These are not the elements of posture that convey messages. Are we slouched or erect? Are our legs crossed or our arms folded? Such postures convey a degree of formality and the degree of relaxation in the communication exchange.

**Physical Contact:** Shaking hands, touching, holding, embracing, pushing, or patting on the back all convey messages. They reflect an element of intimacy or a feeling of (or lack of) attraction.

**Dynamic Features Non-Verbal Communication**

**Facial Expressions:** A smile, frown, raised eyebrow, yawn, and sneer all convey information. Facial expressions continually change during interaction and are monitored constantly by the recipient. There is evidence that the meaning of these expressions may be similar across cultures.

**Gestures:** One of the most frequently observed, but least understood, cues is a hand movement. Most people use hand movements regularly when talking.
While some gestures (e.g., a clenched fist) have universal meanings, most of
the others are individually learned and idiosyncratic.

**Looking:** A major feature of social communication is eye contact. It can
convey emotion, signal when to talk or finish, or aversion. The frequency of
contact may suggest either interest or boredom.

**Visual communication**
Visual communication as the name suggests is communication through visual
aid. It is the conveyance of ideas and information in forms that can be read or
looked upon. Primarily associated with two dimensional images, it includes:
signs, typography, drawing, graphic design, illustration, color and electronic
resources. It solely relies on vision. It is form of communication with visual
effect. It explores the idea that a visual message with text has a greater power to
inform, educate or persuade a person. It is communication by presenting
information through visual form.

**Understanding the Field of Communication**
The field of communication is typically broken into three distinct camps:
human communication, mass communications, and communication disorders.
Human Communication or Communication Studies is the study of how
individuals communicate.

**Oral Communication**
Oral communication is a process whereby information is transferred from a
sender to receiver usually by a verbal means but visual aid can support the
process. The receiver could be an individual person, a group of persons or even
an audience. There are a few of oral communication types: discussion,
speeches, presentations, etc. However, often when you communicate face to
face the body language and your voice tonality has a bigger impact than the
actual words that you are saying.
In an oral communication, it is possible to have visual aid helping you to
provide more precise information. Often enough, we use a presentation
program in presentations related to our speech to facilitate or enhance the
communication process.

**Communication Modeling**
The following are the models of communication:
The first major model for communication came in 1949 by Claude Shannon and Warren Weaver for Bell Laboratories. 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.

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 simply views communication as a means of sending and receiving information. The strengths of this model are simplicity, generality, and quantifiability.

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 Schram (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).

The 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. In light of these weaknesses, Barnlund (2008) proposed a transactional model of communication. 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.

**Non human communication**

Communication in many of its facets is not limited to humans, or even to primates. Every information exchange between living organisms i.e. transmission of signals involving a living sender and receiver can be considered a form of communication. Animal communication is any behaviour on the part of one animal that has an effect on the current or future behavior of another animal.

**5.10 Differences between Oral and Written Communication**

Most of us intuitively understand that there are differences between oral and written language. All communication includes the transfer of information from one person to another, and while the transfer of information is only the first step in the process of understanding a complex phenomenon, it is an important first step. Writing is a fairly static form of transfer. Speaking is a dynamic transfer of information. To be an effective speaker, you must exploit the dynamism of oral communication, but also learn to work within its limitations. While there is a higher level of immediacy and a lower level of retention in the spoken word, a speaker has more ability to engage the audience psychologically and to use complex forms of non-verbal communication

The written language can be significantly more precise. Written words can be chosen with greater deliberation and thought, and a written argument can be extraordinarily sophisticated, intricate, and lengthy. These attributes of writing are possible because the pace of involvement is controlled by both the writer and the reader. The writer can write and rewrite at great length, a span of time
which in some cases can be measured in years. Similarly, the reader can read quickly or slowly or even stop to think about what he or she has just read. More importantly, the reader always has the option of re-reading; even if that option is not exercised, its mere possibility has an effect upon a reader's understanding of a text. The written word appeals more to a contemplative, deliberative style.

Speeches can also be precise and indeed they ought to be. But precision in oral communication comes only with a great deal of preparation and compression. Once spoken, words cannot be retracted, although one can apologize for a mistake and improvise a clarification or qualification. One can read from a written text and achieve the same degree of verbal precision as written communication. But word-for-word reading from a text is not speech-making, and in most circumstances audiences find speech-reading boring and retain very little of the information transmitted.

On the other hand, oral communication can be significantly more effective in expressing meaning to an audience. This distinction between precision and effectiveness is due to the extensive repertoire of signals available to the speaker: gestures, intonation, inflection, volume, pitch, pauses, movement, visual cues such as appearance, and a whole host of other ways to communicate meaning. A speaker has significantly more control over what the listener will hear than the writer has over what the reader will read. For these techniques to be effective, however, the speaker needs to make sure that he or she has the audience's attention--audiences do not have the luxury of re-reading the words spoken. The speaker, therefore, must become a reader of the audience.

Reading an audience is a systematic and cumulative endeavor unavailable to the writer. As one speaks, the audience provides its own visual cues about whether it is finding the argument coherent, comprehensible, or interesting. Speakers should avoid focusing on single individuals within an audience. There are always some who scrunch up their faces when they disagree with a point; others will stare out the window; a few rude (but tired) persons will fall asleep. These persons do not necessarily represent the views of the audience; much depends upon how many in the audience manifest these signals. By and large, one should take the head-nodders and the note-takers as signs that the audience is
following one's argument. If these people seem to outnumber the people not paying attention, then the speech is being well-received. The single most important bit of evidence about the audience's attention, however, is eye contact. If members of the audience will look back at you when you are speaking, then you have their attention. If they look away, then your contact with the audience is probably fading.

Speeches probably cannot be sophisticated and intricate. Few audiences have the listening ability or background to work through a difficult or complex argument, and speakers should not expect them to be able to do so. Many speakers fail to appreciate the difficulties of good listening, and most speakers worry about leaving out some important part of the argument. One must be acutely aware of the tradeoff between comprehensiveness and comprehension. Trying to put too much into a speech is probably the single most frequent error made by speakers.

This desire to "say everything" stems from the distinctive limitations of speeches: after a speech, one cannot go back and correct errors or omissions, and such mistakes could potentially cripple the persuasiveness of a speech. A speaker cannot allow himself or herself to fall into this mentality. At the outset, a speaker must define an argument sharply and narrowly and must focus on only that argument. There are certainly implications of an argument that are important but cannot be developed within the speech. These aspects should be clearly acknowledged by the speaker, but deferred to a question-and-answer period, a future speech, or a reference to a work that the audience can follow-up on its own. Speakers must exercise tight and disciplined control over content.

As a rule of thumb, the audience will remember about one-half of what was said in a twenty-minute talk. After twenty-minutes, recall drops off precipitously. Oral arguments should therefore be parsed down as much as possible. There are very few circumstances in which an audience will recall a great deal of the information in a speech longer than twenty minutes. Most evidence suggests that audience recall declines precipitously after 16 and one-half minutes.
Oral communication uses words with fewer syllables than the written language, the sentences are shorter, and self-referencing pronouns such as I are common. Oral communication also allows incomplete sentences if delivered properly, and many sentences will begin with "and," "but," and "except."

The upshot of these differences is that one should not think about speeches as oral presentations of a written text. Speeches are genuinely different from written prose, and one should not use the logic of writing as a basis for writing a speech. In libraries, the readers communicate with the authors through their books which are in the written mode. In this section, we look at some of the similarities and differences between the two modes of communication - spoken and written.

Therefore, since most written language is public (i.e., published) the language is planned, edited, redrafted before it appears in print. Spoken language, on the other hand, is composed spontaneously as it is spoken, and is mostly unplanned and relatively unpredictable.

It follows that the written medium is permanent, as it is published. We, therefore, do not have to understand a written text at the first reading. It can be re-read, skimmed through; sections can be omitted and referred to later. This is very different from spoken language, which has to be processed in real time, in lock-step with the speaker. Also since written language is permanent, it can be transmitted across time and space. This cannot happen in the case of spoken language, apart from recorded radio talks and lectures.

The written language reflects, to a large extent, the elements and rules that together constitute the grammar of the language. Written language is more conservative than the spoken language. When we write something, particularly in a formal style, we are more apt to obey the "prescriptive rules" taught in school. Spoken language is much less structured than written language. It contains many incomplete sentences, often simply sequences of phrases which are connected by and, but, then, etc.

However, both spoken and written language show stylistic variation from formal to informal style. Spoken language shows more variation than written language. It ranges from the formal language of lectures and speeches to casual and intimate conversation between individuals who know each other well, and share a similar background. Written language shows relatively less stylistic
variation and more homogeneity, since it is used mostly for formal purposes. Written language in casual style such as for personal letters is used much less, compared to the massive amount of formally published material that characterizes modern industrial societies.

Another feature of written language is that it is decontextualized, i.e., it has to stand on its own. Writers are uncertain what they can assume their readers know and readers are usually unable to ask the writer for clarification. Spoken language, on the other hand, is context dependent.

All written language is on the standard language side of the scale. Instance of non-standard written language (dialect poetry for example) is the exception rather than the rule. And often when non-standard language is written in novels, it is in quotation marks, as the written representation of spoken language. Or it may be used for stylistic purposes.

In fact, there is a special relationship between writing and the standardization of language. This is because standardization implies codification and planning of the language by dictionary markers, grammar book writers, and so on.

Finally, in libraries, one of the most important functions of written language depends on its ability to create durable and accurate records for reference in the present and the future. And this storage function of written language has to be learned by ordinary people. It is a common complaint made by teachers and libraries that students often have no idea how to exploit the information storage potential of libraries. They need to know the different systems of cataloguing and indexing, systems of abstracting services, and computer-assisted search systems. By familiarizing themselves with the storage function of written language as well, students can make best use of libraries.

5.11 Information communication revolutions

Over time, technology has progressed and has created new forms of and ideas about communication. These technological advances revolutionized the processes of communication. Researchers have divided how communication was transformed into three revolutionary stages:

In the 1st Information Communication Revolution, the first written communication began, with pictographs. These writings were made on stone, which were too heavy to transfer. During this era, written communication was not mobile, but nonetheless existed.
In the 2nd Information Communication Revolution, writing began to appear on paper, papyrus, clay, wax, etc. Common alphabets were introduced, allowing the uniformity of language across large distances. Much later the Gutenberg printing-press was invented. Gutenberg created this printing-press after a long period of time in the 19th century. In the 3rd Information Communication Revolution, information can now be transferred via controlled waves and electronic signals.

Communication is thus a process by which meaning is assigned and conveyed in an attempt to create shared understanding. This process requires a vast repertoire of skills in intrapersonal and interpersonal processing, listening, observing, speaking, questioning, analyzing, and evaluating. It is through communication that collaboration and cooperation occur.

There are also many common barriers to successful communication, two of which are message overload (when a person receives too many messages at the same time), and message complexity. Communication is a continuous process.

5.12 SUMMARY

Library is a storehouse of knowledge. This knowledge is available in various forms in library. A library is primarily made up of books. A person working in a library is surrounded by books. We made you aware of the crucial aspect of any book in this chapter, i.e., Language and communication.

Language is defined in terms of its main functions and chief characteristics. Here we have discussed language and its origin, variation, kinds etc. The differences between written and spoken language are also discussed. The communication, its model and theory has also been discussed in this chapter. The ICT revolutions have given in this chapter.

5.13 Self Check Exercise

1. What is a language?
2. What are its main functions, and its chief characteristics?
3. Why do different speakers who apparently seem to speak the same language vary so much in their accent, vocabulary and even sentence structure?
4. What are the functions of language?
5. What are the reasons for people speaking differently from one another?
6. Write 4 differences between spoken and written communication.
7. What is creativity?
1.0 Introduction

1.1 Objectives

1.2 Functional Style of a Language
   1.2.1 Types of Functional English Language
   1.2.2 Sentences
   1.2.3 Paragraphs

1.3 Semantics

1.4 Syntax

1.5 Diction

1.6 Writing Different Documents
   1.6.1 Research Proposal
   1.6.2 Research Paper/Report
   1.6.3 Financial Proposal

1.7 Summary

1.8 Self-check Exercise
1.0 Introduction

Human beings are considered to be most powerful amongst all species because of their power to express their thoughts, which has led them to so much development over a vast period of time. Language science or Linguistics has also undergone a wide development over these years. There are score of languages now spoken all over the world. However, English language has developed into one strong and common language in which all business and communication is conducted, globally. Even in domestic affairs of countries like India, English has occupied an important place as though it is the main language of this country. Most of the education starting from K-12 to higher and professional education is imparted in English today. Due to a majority of technical terminology being in English, learning of this language has become all the more important for any student, as well as teaching of its functional aspects has become essential in all courses of study.

Every language has different styles of expression. Primarily, it is studied as a medium of literary expression, as in various literary works. It is also studied from its functional aspect in different disciplines as its applicability may be in that field. In this unit we will deal with English from a functional perspective for the masters students of library and information science, as to what elements of this language have to be known to them in their day-to-day functioning as library administrators or library managers or library and information science scholars.

1.1 Objectives

In this unit you will learn about the concept and meaning of functional style of English language and its types. You will also know about the types of sentences, paragraphs with respect to functional English. Some discussion about the semantics, syntax and diction of English language in this unit will help you understand the functional aspects of English in your professional life. As evident from the title “Functional English”, learners who are functional with English will be able to communicate effectively in a wide range of meaningful context – in life, work, learning and their communities.

1.2 Functional Style of a Language

While primary style of any language is the style from its literary application point of view, its functional style is considered as another style or sub-style from professional or day-to-day business application point of view. There are certain characteristics of this style of expression like its semantics, syntax, grammar, sentence and paragraph construction, their types etc. We can derive a lot of information from the functional style of any language.

Every writer has his own style of writing. It depends upon his place of origin, i.e., geographical origin, his verbal style of communication, his level of education and understanding, his comprehension about the subjects he writes etc. So we can say that the functional style of a language and its expression depends upon various situations or conditions under which a person communicates with others. Classification of the functional style of any language is a difficult task. Functional style of a language is that style of
language that is practiced for writing different documents for different purposes, in business or professional life. It is identified by its characteristics. It is a style of one to one, or one to many, or many to one, or many to many communication i.e., communication style between different people or different groups of people. It implies that functional style of a language discharges a specific objective of communication in the entire communication system.

Primarily, the application of functional style a language is made in literary standards. Usually, the system of functional style of a language for the literary language remains standard and unchanged for a period of time. Yet with the changing times, there have been changes in this system also. The development of all styles of languages is influenced by the changes in standard rules of English language style. Besides, the functional style of a language is also influenced by the changes in society. Developments in science and cultural developments in human life also influence the functional style of a language.

The theory of functional styles implies searching for differential properties of different levels of communication and also setting up definite goals while choosing a needed level of communication. The number of functional styles in the English language cannot be regarded as an absolute thing; it’s rather arbitrary, conventional. English, as any developed language, contains an open set of sublanguages corresponding to different speech spheres and characterized by a relatively limited amount of language units. These sublanguages are partially correlated. They are determined by different spheres of communication and the latter implies functional difference. Each style of the literary language makes use of a set of language means, the interrelation of which is peculiar to the given style. It is the coordination of the language means and stylistic devices that shapes the distinctive features of each style, but not the language means or stylistic devices themselves. Each style, however, can be recognized by one or more leading features, which are especially conspicuous. So, a functional style is a system of expressive means and vocabulary serving a definite aim of communication.

**Style of Writing:** Style of writing is the manner in which a writer chooses among different strategies to address an issue and an audience. A style not only reveals the writer's personality or voice, but it also shows how he or she sees the audience of the writing. The writing style reveals the choices the writer makes in syntactical structures, diction, and figures of thought. Similar questions of style exist in the choices of expressive possibilities in speech. The personal style of a writer is a combination of different units of the language in which he expresses. His way of expression in that particular language makes it as his identification or establishes his identity. That means his style of expression becomes his identity and by reading a particular work, the reader can identify who the writer is even without having to look for the writer’s name.

A writer controls not only the density of prose but also its distribution. Within the rules of grammar, the writer can arrange words in many ways. A sentence may state the main proposition first and then modify it; or it may contain language to prepare the reader before stating the main proposition.
Varying the style of writing may avoid monotony. However, in technical writing, using different styles to make two similar utterances makes the reader ask whether the use of different styles was intended to carry additional meaning.

Stylistic choices may be influenced by the culture. In the modern age, for instance, the loose sentence has been favored in all modes of discourse. In classical times, the periodic sentence held equal or greater favor, and during the Age of Enlightenment, the balanced sentence was a favorite of writers.

### 1.2.1 Types of Functional Style of English Language

The functional style of English language can be categorized into three types. They are:
- **Formal Style or Writing / Bookish Style**
- **Informal Style or Colloquial Style; and**
- **Neutral Style**

Let us now look at them in detail.

**a. Formal Style or Writing / Bookish Style:** Formal: Apart from literary works (*belles lettres*), formal style is used for academic writing and business writing. The English bookish literary language comprises the following functional style:
- i. the “*belles letters*” or fiction style: literary content like poetic works, prose, fiction, literary letters etc.
- ii. the scientific prose style: the scientific communication like scholarly communication like research papers, journal articles; research proposals, scientific research and technical reports, patents, books, monographs, etc.
- iii. the style of official documents: business letters, official communications like resumes, appointment letters, business reports, proposals, financial matters etc.
- iv. the journalistic/publicistic and newspaper style: newspaper articles, news items, reports etc.

For our purpose we will consider the scientific prose style, and official documents as functional style here, which are explained in the section dealing with writing research papers, proposals and financial proposals etc. towards the end of the unit.

**b. Informal Style or Colloquial Style:** Some authors call colloquial functional style a “free style” because it contains some deviations from the strict regularity of the literary speech norm. Colloquial functional style is a speech style and consequently mostly found in dialogue. It is a style of everyday use. The vocabulary is more free, the syntax more
simple, the pronunciation in oral speech more careless. It is mostly used
in personal letters to friends, family and relatives also.

Example 1:

This is to inform you that your book has been rejected by our publishing
company as it was not up to the required standard. In case you would like us to
reconsider it, we would suggest that you go over it and make some necessary
changes.

Example 2:

You know that book I wrote? Well, the publishing company rejected it. They
thought it was awful. But hey, I did the best I could, and I think it was great. I'm
not gonna redo it the way they said I should.

The difference between the two is obvious. The first one is formal, and the
second is informal. But what is it that makes them formal and informal?

It is the style of writing, or the way we use words to say what we want to say.
Different situations call for different ways of putting words together. The way
we write in academic and scientific settings differs greatly from the way we
write to a friend or close one. The tone, vocabulary, and syntax, all change as
the occasion changes. This difference in the styles of writing is the difference
between formality and informality, or the difference between formal and
informal writing.

Following is a list of some of the main differences between informal and formal
writing:

Informal: May use colloquial words/expressions (kids, guy, awesome, a lot,
etc.)

Formal: Avoid using colloquial words/expressions (substitute with children,
man/boy, wonderful, many, etc.)

Informal: May use contractions (can't, won't, shouldn't, etc.).

Formal: Avoid contractions (write out full words - cannot, will not, should not,
etc.).
Informal: May use first, second, or third person.

Formal: Write in third person (except in business letters where first person may be used).

Informal: May use clichés (loads of, conspicuous by absence, etc.)

Formal: Avoid clichés (use many, was absent, etc.)

Informal: May address readers using second person pronouns (you, your, etc)

Formal: Avoid addressing readers using second person pronouns (use one, one's, the reader, the reader's, etc.)

Informal: May use abbreviated words (photo, TV, etc)

Formal: Avoid using abbreviated words (use full versions - like photograph, television, etc.)

Informal: May use imperative voice (e.g. Remember....)

Formal: Avoid imperative voice (use Please refer to.....)

Informal: May use active voice (e.g. We have notice that.....)

Formal: Use passive voice (e.g. It has been noticed that....)

Informal: May use short and simple sentences.

Formal: Longer and more complex sentences are preferred (short simple sentences reflects poorly on the writer)

Informal: Difficulty of subject may be acknowledged and empathy shown to the reader.

Formal: State your points confidently and offer your argument firm support.
These are just some of the differences between formal and informal writing. The main thing to remember is that both are correct, it is just a matter of tone and setting. Formal English is used mainly in academic writing and business communications, whereas Informal English is casual and is appropriate when communicating with friends and other close ones. Choose the style of writing keeping in mind what you are writing and to whom. But whichever style you write in - formal or informal - be sure to keep it consistent, do not mix the two.

c. **Neutral Style:** Neutral style of writing does not follow any particular style. It can be simply like day-to-day communication, either formal or informal. It can follow the verbal style.

**Forms of Discourse:** Writing styles are applied to writing of text which is also called as discourse. It can be distinctly categorized as four forms such as exposition, narration, description and argumentation. Each of these represents a shifting concern on the part of a writer.

**Exposition:** When a writer is concerned with setting forth facts then the form is known as exposition.

**Narration:** When the writer presents the facts in terms of temporal action then the form is known as narration.

**Description:** When the same is expressed in terms of space also, it is known as description.

**Argumentation:** When the discourse intends to resolve the conflict of facts through *inductive and deductive reasoning*, then it is known as argumentation.

Above forms of discourse do not exist as pure forms. They, rather, are intermixed to display conspicuously one dominant form.

**Components of Discourse:** Any linguistic expression in any of the literary forms and styles comprises essentially of words, sentences and paragraphs. Each of them can be described as a subset and superset of each. It is to say that while words are formed by grouping together of alphabets and a group of words put together meaningfully form a sentence. And a group of related sentences form a paragraph. Let us look into each unit in some detail as below.

**Words:** Language essentially consists of words. The total stock of words of the English language, or any language is called ‘Lexicon’. They can never be final. As the domains of human experience extend, the words in a language also keep increasing. The basic processes by which new terms are created and added to English language are Coinage; Borrowing (from other languages); Compounding; Blending; Clipping; Backformation; Conversion; Acronyms; Derivation; and Multiple processes.

**1.2.2 Sentences:** A sentence is an arrangement of words that makes a complete sense, and is acceptable to the speakers of the language. In technical terms, a sentence is a formal unit that divides discourse (text) into finite and
separable parts. In speech it is signaled by a final juncture or pause; and in English language writing by beginning the words in a capital letter and ending them with a period or punctuation mark i.e., the full stop. Grammatically, a sentence is a unit with a subject and a predicate that contains a finite verb. For example:

**Subject** | **Predicate**
---|---
Students | learn
The students | learn in school
The students of class IX | learn to play guitar in music class.

The subject refers to a person, place or a thing about which something is being said in the sentence. It may consist of one or more words. The predicate says something about the subject. It may consist of just a verb and some other elements. The normal word-order in English is subject followed by predicate. Since there can be no sentence without a verb, the smallest English sentence must have the structure as “subject and verb”.

**Types of Sentences:** Sentences have been classified as simple, compound and complex sentences in English grammar. Let us look at them in some detail as below.

**Simple sentence:** a simple sentence contains only one predicate. That means it can have only one finite verb. For example:

They *prayed* with devotion.
The group *enacted* well.
Shall I *bring* it?

**Compound Sentence:** A compound sentence is derived by joining two or more sentences by a connecting word (conjunction) like and, but, or, etc. For example:

Madhu ate ice cream *but* Sonu chose milk shake.
They went to Delhi *and* took a flight to Dharamsala.
You must return the book before due date *or* pay fine towards the delay.

Here the conjunctions but, and, or join the two sentences respectively each consisting of a subject and a predicate.

**Complex Sentence:** In a complex sentence one main clause and at least one subordinate or dependent clause are combined together. For example:

She ensured *that* all arrangements were perfectly made.
The crowd cheered Hanna Montana *when* she performed on stage.
One has to learn functional skills *which* will be useful in their day-to-day work.

These sentences consist of a main clause and a subordinate clause. In this case the words that, when, which are connecting words for the subordinate clauses.

While studying these forms of sentences, one has to understand the principles of coordination and subordination. In addition, it is also necessary to recognize
the notions of sentence length, cumulative sentences, periodic sentences, fragments, questions, passives, and balance parallelism.

1.2.3 Paragraphs: As described above, paragraphs are a group or collection of related sentences. Paragraph is also a way to divide a continuous discourse (text) into units of convenient segments to make it readable and meaningful. Generally there are four kinds of paragraphs: introductory, developmental, transitional and concluding. Let us look each of them briefly.

Introductory paragraphs: These paragraphs are written in order to give a hold of the discourse. A well-written introductory paragraph helps in catching the reader’s attention. It also helps in establishing the tone and its subject and its limitations. It also states briefly the precise thesis of discourse.

Developmental paragraphs: These paragraphs are the most important ones in a composition. They provide support to the discourse. The paragraphs of development must support the stated or implied thesis statement, and the material within it must support one controlling idea. A well written developmental paragraph has the following characteristics:
   i. It has a stated or implied topic sentence suggesting the controlling idea of the composition.
   ii. It has unity, a single dominant idea.
   iii. It has coherence, the paragraph’s sentences are connected in such a way that the supporting material flows smoothly and logically, contributing to the unity of the paragraph.
   iv. It has logical organization and adequate development of supporting material to give an understanding of the controlling idea.
   v. It often has a concluding statement, repeating the controlling idea of the paragraph, and adding emphasis and finality to it.

The developmental paragraphs use adequate support of devices like transitional words and phrases, anaphoric relations and rhetorical devices for coherence purpose.

Transitional Paragraphs: These paragraphs can be formed between two developmental paragraphs. It involves the topic sentence of one paragraph which at the same time refers to the concluding statement of the previous paragraph, thereby reiterating the first paragraph’s main idea giving the gist of the second paragraph.

Concluding Paragraphs: The function of concluding paragraphs is essentially the same as that of the concluding statement to the paragraph. While the concluding statement to a paragraph repeats the controlling idea of the paragraph and add emphasis and finality, the concluding paragraphs emphatically sum up the major ideas of the thesis or discourse that support the compositions, restate the focus and provide a note of conviction and finality to the discourse. As the introductory paragraphs are important in making an initial impression on the readers’ mind, so also the concluding paragraphs play an important role in making a lasting impression about the discourse. They are a kind of emphatic restatement of the central idea of the thesis. Avoiding worn out statements like “As it is evident from above…” and introduction of new ideas in concluding paragraphs has to be taken care of.
**Expressive Devices:** Those words or phrases that are used to embellish the expression of a discourse are called as expressive devices. They render aesthetic sense to any discourse or literary discourse in particular. *Synonyms, metaphors, similes, personification, oxymoron, paradoxes, metonymy, synecdoche, irony, hyperbole, and pun* are known as expressive devices in English language.

**Components of Grammar**

The grammar of a language has several components. These can be described as follows:

a) The *phonetics* that governs the structure of sounds;

b) The *morphology* that governs the structure of words;

c) The *syntax*, which governs the structure of sentences

d) The *semantics* that governs the meanings of words and sentences.

We are concerned here primarily with the syntax and semantics.

**1.3 Semantics**

Semantics is the technical term used to refer to the study of meaning. It is the study of the meaning of linguistic expressions. When we look at the history and etymological development of English as a language, we comprehend that the term semantics is a recent addition to the language. In linguistics, *semantics* is the subfield that is devoted to the study of meaning, as inherent at the levels of words, phrases, sentences, and larger units of discourse (referred to as *texts*). The basic area of study is the meaning of signs, and the study of relations between different linguistic units: homonymy, synonymy, antonymy, polysemy, paronyms, hypernymy, hyponymy, meronymy, holonymy, exocentricty / endocentricty, linguistic compounds. A key concern is how meaning attaches to larger chunks of text, possibly as a result of the composition from smaller units of meaning. Traditionally, semantics has included the study of *sense* and denotative *reference*, truth conditions, argument structure, thematic roles, discourse analysis, and the linkage of all of these to syntax.

Formal semanticists are concerned with the modeling of meaning in terms of the semantics of logic. Thus the sentence *John loves a bagel* can be broken down into its constituents (signs), of which the unit *loves* may serve as both syntactic and semantic head.

**Montague grammar:** In the late 1960s, Richard Montague proposed a system for defining semantic entries in the lexicon in terms of lambda calculus. In these terms, the syntactic parse of the sentence above would now indicate *loves* as the head, and its entry in the lexicon would point to the arguments as the agent, *John*, and the object, *bagel*, with a special role for the article "a" (which
Montague called a quantifier). This resulted in the sentence being associated with the logical predicate loves (John, bagel), thus linking semantics to categorial grammar models of syntax. The logical predicate thus obtained would be elaborated further, e.g. using truth theory models, which ultimately relate meanings to a set of Tarskiian universals, which may lie outside the logic. The notion of such meaning atoms or primitives is basic to the language of thought hypothesis from the 70s. Despite its elegance, Montague grammar was limited by the context-dependent variability in word sense, and led to several attempts at incorporating context, such as:

- situation semantics ('80s): truth-values are incomplete, they get assigned based on context
- generative lexicon ('90s): categories (types) are incomplete, and get assigned based on context

**The dynamic turn in semantics:** In Chomskian linguistics there was no mechanism for the learning of semantic relations, and the nativist view considered all semantic notions as inborn. Thus, even novel concepts were proposed to have been dormant in some sense. This view was also thought unable to address many issues such as metaphor or associative meanings, and semantic change, where meanings within a linguistic community change over time, and qualia or subjective experience. Another issue not addressed by the nativist model was how perceptual cues are combined in thought, e.g. in mental rotation.

**Theories of Semantics**

**Lexical & Computational Semantics:** This theory is an effort to explain properties of argument structure. The assumption behind this theory is that syntactic properties of phrases reflect the meanings of the words that head them. With this theory, linguists can better deal with the fact that subtle differences in word meaning correlate with other differences in the syntactic structure that the word appears in. The way this is gone about is by looking at the internal structure of words. These small parts that make up the internal structure of words are referred to as semantic primitives.

- **Lexical Semantics:** A linguistic theory that investigates word meaning. This theory understands that the meaning of a word is fully reflected by its context. Here, the meaning of a word is constituted by its contextual relations. Therefore, a distinction between degrees of participation as well as modes of participation are made. In order to accomplish this distinction any part of a sentence that bears a meaning and combines with the meanings of other constituents is labeled as a semantic constituent. Semantic constituents that cannot be broken down into more elementary constituents is labeled a minimal semantic constituent.

- **Computational Semantics:** Computational Semantics is focused on the processing of linguistic meaning. In order to do this concrete algorithms and architectures are described. Within this framework the algorithms and architectures are also analyzed in terms of decidability, time/space complexity, data structures which they require and communication protocols.
1.4 Syntax

Syntax is the grammatical arrangement of words in sentences, in a systematic and an orderly manner. The rules for forming admissible sentences is studied under syntax. It can also be defined as a set of rules that govern how words are combined to form phrases and sentences. So in linguistics, syntax is the study of structure of phrases, sentences and language.

Modern research in syntax attempts to describe languages in terms of such rules. Many professionals in this discipline attempt to find general rules that apply to all natural languages. The term syntax is also sometimes used to refer to the rules governing the behavior of mathematical systems, such as logic, artificial formal languages, and computer programming languages.

Early History: Works on grammar were written long before modern syntax came about; the Astādhyāyī of Pāṇini is often cited as an example of a premodern work that approaches the sophistication of a modern syntactic theory. In the West, the school of thought that came to be known as "traditional grammar" began with the work of Dionysius Thrax. For centuries, work in syntax was dominated by a framework known as grammaire générale, first expounded in 1660 by Antoine Arnauld in a book of the same title. This system took as its basic premise the assumption that language is a direct reflection of thought processes and therefore there is a single, most natural way to express a thought. That way, coincidentally, was exactly the way it was expressed in French.

Modern Theories: There are a number of theoretical approaches to the discipline of syntax. One school of thought, founded in the works of Derek Bickerton, sees syntax as a branch of biology, since it conceives of syntax as the study of linguistic knowledge as embodied in the human mind. Other linguists (e.g. Gerald Gazdar) take a more Platonistic view, since they regard syntax to be the study of an abstract formal system. Yet others (e.g. Joseph Greenberg) consider grammar a taxonomical device to reach broad generalizations across languages. Korsakov's school of thought suggests philosophic understanding of morphological and syntactic phenomena. At foundations of their linguistic ideas, lies classical philosophy which treats reality as consisting of things, their qualities and relationships. From here the followers of Korsakov's school assert the subdivision of words by the parts of speech. Syntactic problems also get their enlightenment in the terms of philosophic processes. Some more approaches to the discipline are listed below.

Generative grammar: The hypothesis of generative grammar is that language is a structure of the human mind. The goal of generative grammar is to make a complete model of this inner language (known as i-language). This model could be used to describe all human language and to predict the grammaticality of any given utterance (that is, to predict whether the utterance would sound correct to native speakers of the language). This approach to language was pioneered by Noam Chomsky. Most generative theories (although not all of them) assume that syntax is based upon the constituent structure of sentences.
Generative grammars are among the theories that focus primarily on the form of a sentence, rather than its communicative function.

Among the many generative theories of linguistics, the Chomskyan theories are:

- Transformational Grammar (TG) (Original theory of generative syntax laid out by Chomsky in *Syntactic Structures* in 1957)
- Government and binding theory (GB) (revised theory in the tradition of TG developed mainly by Chomsky in the 1970s and 1980s).
- Minimalist program (MP) (a reworking of the theory out of the GB framework published by Chomsky in 1995)

Other theories that find their origin in the generative paradigm are:

- Generative semantics (now largely out of date)
- Relational grammar (RG) (now largely out of date)
- Arc Pair grammar
- Generalized phrase structure grammar (GPSG; now largely out of date)
- Head-driven phrase structure grammar (HPSG)
- Lexical-functional grammar (LFG)

**Categorial grammar:** Categorial grammar is an approach that attributes the syntactic structure not to rules of grammar, but to the properties of the syntactic categories themselves. For example, rather than asserting that sentences are constructed by a rule that combines a noun phrase (NP) and a verb phrase (VP) (e.g. the phrase structure rule $S \rightarrow NP \ VP$), in categorial grammar, such principles are embedded in the category of the head word itself. So the syntactic category for an intransitive verb is a complex formula representing the fact that the verb acts as a functor which requires an NP as an input and produces a sentence level structure as an output. This complex category is notated as $(NP \ S)$ instead of $V$. $(NP \ S)$ is read as "a category that searches to the left (indicated by \) for a NP (the element on the left) and outputs a sentence (the element on the right)". The category of transitive verb is defined as an element that requires two NPs (its subject and its direct object) to form a sentence. This is notated as $(NP/(NP \ S))$ which means "a category that searches to the right (indicated by /) for an NP (the object), and generates a function (equivalent to the VP) which is $(NP \ S)$, which in turn represents a function that searches to the left for an NP and produces a sentence)."

**Dependency grammar:** Dependency grammar is a different type of approach in which structure is determined by the relations (such as grammatical relations) between a word (a *head*) and its dependents, rather than being based in constituent structure. For example, syntactic structure is described in terms of whether a particular noun is the subject or agent of the verb, rather than describing the relations in terms of phrases.

Some dependency-based theories of syntax:

- Algebraic syntax
- Word grammar
- Operator Grammar
- Meaning-Text Theory
**Stochastic/probabilistic grammars/network theories:** Theoretical approaches to syntax that are based upon probability theory are known as stochastic grammars. One common implementation of such an approach makes use of a neural network or connectionism. Some theories based within this approach are:

- Optimality theory
- Stochastic context-free grammar

**Functionalist grammars:** Functionalist theories, although focused upon form, are driven by explanation based upon the function of a sentence (i.e. its communicative function). Some typical functionalist theories include:

- Functional grammar (Dik)
- Prague Linguistic Circle
- Systemic functional grammar
- Cognitive grammar
- Construction grammar (CxG)
- Role and reference grammar (RRG)
- Emergent grammar

**1.5 Diction**

It refers to the writer's or the speaker's distinctive vocabulary choices and style of expression in a poem or story. Diction also refers to the word enunciation — the art of speaking clearly so that each word is clearly heard and understood to its fullest complexity and extremity. This secondary sense concerns pronunciation and tone, rather than word choice and style.

Diction has multiple concerns; register (words being either formal or informal in social context) is foremost. Literary diction analysis reveals how a passage establishes tone and characterization, e.g. a preponderance of verbs relating physical movement suggests an active character, while a preponderance of verbs relating states of mind portrays an introspective character. Diction also has an impact upon word choice and syntax.

Diction comprises eight elements: Phoneme, Syllable, Conjunction, Connective, Noun, Verb, Inflection, and Utterance.

**Phoneme:** In a language or dialect, a phoneme is the smallest segmental unit of sound employed to form meaningful contrasts between utterances. Thus a phoneme is a group of slightly different sounds which are all perceived to have the same function by speakers of the language or dialect in question. An example of a phoneme is the /k/ sound in the words kit and skill. (In transcription, phonemes are placed between slashes, as here.) Even though most native speakers don't notice this, in most dialects, the k sounds in each of these words are actually pronounced differently: they are different speech sounds, or phones (which, in transcription, are placed in square brackets). In our example, the /k/ in kit is aspirated, [kʰ], while the /k/ in skill is not, [k]. The reason why these different sounds are nonetheless considered to belong to the same phoneme in English is that if an English-speaker used one instead of the other, the meaning of the word would not change: using [kʰ] in skill might sound odd, but the word would still be recognized. By contrast, some other phonemes
could be substituted (creating a minimal pair) which would cause a change in meaning: producing words like still (substituting /t/) , spill (substituting /p/) and swill (substituting /w/). These other sounds (/t/, /p/ and /w/) are, in English, different phonemes. In some languages, however, [kʰ] and [k] are different phonemes, and are perceived as such by the speakers of those languages. Thus, in Icelandic, /kʰ/ is the first sound of kátur 'cheerful', while /k/ is the first sound of gátur 'riddles'.

In some languages, each letter in the spelling system represents one phoneme. However, in English spelling there is a poor match between spelling and phonemes. For example, the two letters sh represent the single phoneme /ʃ/, while the letters k and c can both represent the phoneme /k/ (as in kit and cat).

Phones that belong to the same phoneme, such as [t] and [tʰ] for English /t/, are called allophones. A common test to determine whether two phones are allophones or separate phonemes relies on finding minimal pairs: words that differ by only the phones in question. For example, the words tip and dip illustrate that [t] and [d] are separate phonemes, /t/ and /d/, in English, whereas the lack of such a contrast in Korean (/tʰata/ is pronounced [tʰada], for example) indicates that in this language they are allophones of a phoneme /t/.

Some linguists (such as Roman Jakobson, Morris Halle, and Noam Chomsky) consider phonemes to be further decomposable into features, such features being the true minimal constituents of language. Features overlap each other in time, as do suprasegmental phonemes in oral language and many phonemes in sign languages. Features could be designated as acoustic (Jakobson) or articulatory (Halle & Chomsky) in nature.

**Syllable:** A syllable is a unit of organization for a sequence of speech sounds. For example, the word water is composed of two syllables: wa and ter. A syllable is typically made up of a syllable nucleus (most often a vowel) with optional initial and final margins (typically, consonants). Syllables are often considered the phonological "building blocks" of words. They can influence the rhythm of a language, its prosody, its poetic meter, its stress patterns, etc.

Syllablic writing began several hundred years before the first letters. The earliest recorded syllables are on tablets written around 2800 BC in the Sumerian city of Ur. This shift from pictograms to syllables has been called 'the most important advance in the history of writing'.

A word that consists of a single syllable (like English dog) is called a monosyllable (such a word is monosyllabic), while a word consisting of two syllables (like puppy) is called a disyllable (such a word is disyllabic). A word consisting of three syllables (such as wolverine) is called a trisyllable (the adjective form is trisyllabic). A word consisting of more than three syllables (such as rhinoceros) is called a polysyllable (and could be described as polysyllabic), although this term is often used to describe words of two syllables or more.

The general structure of a syllable consists of the following segments:

- Onset (obligatory in some languages, optional or even restricted in others)
Rime
Nucleus (obligatory in most languages)
Coda (optional in some languages, highly restricted or prohibited in others)

Conjunction: In grammar, a conjunction is a part of speech that connects two words, sentences, phrases or clauses together. This definition may overlap with that of other parts of speech, so what constitutes a "conjunction" should be defined for each language. In general, a conjunction is an invariable grammatical particle, and it may or may not stand between the items it conjoins. The definition can also be extended to idiomatic phrases that behave as a unit with the same function as a single-word conjunction (as well as, provided that, etc.).

Coordinating conjunctions: Coordinating conjunctions, also called coordinators, are conjunctions that join two or more items of equal syntactic importance, such as words, main clauses, or sentences. In English the mnemonic acronym FANBOYS can be used to remember the coordinators for, and, nor, but, or, yet, and so. These are not the only coordinating conjunctions; various others are used, including "and nor" (British), "but nor" (British), "or nor"(British), "neither" ("They don't gamble; neither do they smoke"), "no more" ("They don't gamble; no more do they smoke"), and "only" ("Can we perform? Only if we practice").

Here are the meanings and some examples of the FANBOYS coordinating conjunctions in English:

for: presents a reason ("He is gambling with his health, for he has been smoking far too long.") (though "for" is more commonly used as a preposition)
and: presents non-contrasting item(s) or idea(s) ("They gamble, and they smoke.")
nor: presents a non-contrasting negative idea ("They don't gamble, nor do they smoke.")
but: presents a contrast or exception ("They gamble, but they don't smoke.")
or: presents an alternate item or idea ("Every day they gamble, or they smoke.")
yet: presents a contrast or exception ("They gamble, yet they don't smoke.")
so: presents a consequence ("He gambled well last night, so he smoked a cigar to celebrate.")

Correlative conjunctions: Correlative conjunctions are pairs of conjunctions that work together to coordinate two items. English examples include both...and, [n]either...[n]or, and not [only]...but [also], whether... or.
Examples:

Either do your work or prepare for a trip to the office.
Not only is he handsome but he is also brilliant.
Neither the basketball team nor the football team is doing well.
Both the cross country team and the swimming team are doing well. Whether you stay or go is your decision.

Subordinating conjunctions: Subordinating conjunctions, also called subordinators, are conjunctions that introduce a dependent clause. The most common subordinating conjunctions in the English language include the following: after, although, as much as, as long as, as soon as, because, before, if, in order that, lest, since, so that, than, that, though, unless, until, when, whenever, where, wherever, whether, and while. Complementizers can be considered to be special subordinating conjunctions that introduce complement clauses (e.g., “I wonder whether he’ll be late. I hope that he’ll be on time”). Some subordinating conjunctions (until, while), when used to introduce a phrase instead of a full clause, become prepositions with identical meanings.

In many verb-final languages, subordinate clauses must precede the main clause on which they depend. The conjunction comes from the Latin root to intervene. The equivalents to the subordinating conjunctions of non-verb-final languages such as English are either

- clause-final conjunctions (e.g. in Japanese), or
- suffixes attached to the verb and not separate words

Such languages in fact often lack conjunctions as a part of speech because:

- the form of the verb used is formally nominalised and cannot occur in an independent clause
- the clause-final conjunction or suffix attached to the verb is actually formally a marker of case and is also used on nouns to indicate certain functions. In this sense, the subordinate clauses of these languages have much in common with postpositional phrases.

In other West-Germanic languages like German or Dutch, the word order after a subordinating conjunction is different from the one in an independent clause, e.g. in Dutch want (for) is coordinating, but omdat (because) is subordinating. Compare:

Hij gaat naar huis, want hij is ziek. – He goes home, for he is ill.
Hij gaat naar huis, omdat hij ziek is. – He goes home because he is ill.

Similarly, in German, "denn" (for) is coordinating, but "weil" (because) is subordinating:

Er geht nach Hause, denn er ist krank. – He goes home, for he is ill.
Er geht nach Hause, weil er krank ist. – He goes home because he is ill.

Connective: In logic, a logical connective (also called a logical operator) is a symbol or word used to connect two or more sentences (of either a formal or a natural language) in a grammatically valid way, such that the compound sentence produced has a truth value dependent on the respective truth values of the original sentences.
Each logical connective can be expressed as a function, called a truth function. For this reason, logical connectives are sometimes called truth-functional connectives. The most common logical connectives are binary connectives (also called dyadic connectives) which join two sentences whose truth values can be thought of as the function's operands. Also commonly, negation is considered to be a unary connective.

Logical connectives along with quantifiers are the two main types of logical constants used in formal systems such as propositional logic and predicate logic.

Noun: In linguistics, a noun is a member of a large, open lexical category whose members can occur as the main word in the subject of a clause, the object of a verb, or the object of a preposition.

Lexical categories are defined in terms of how their members combine with other kinds of expressions. The syntactic rules for nouns differ from language to language. In English, nouns may be defined as those words which can occur with articles and attributive adjectives and can function as the head of a noun phrase.

In traditional English grammar, the noun is one of the eight parts of speech.

Types of Nouns: Proper nouns and common nouns
A proper noun or proper name is a noun representing unique entities (such as London, Jupiter, or Toyota), as distinguished from common nouns which describe a class of entities (such as city, planet, person or car).

Countable and uncountable nouns: Count nouns are common nouns that can take a plural, can combine with numerals or quantifiers (e.g., one, two, several, every, most), and can take an indefinite article (a or an). Examples of count nouns are chair, nose, and occasion.

Mass nouns (or non-count nouns) differ from count nouns in precisely that respect: they can't take plural or combine with number words or quantifiers. Examples from English include laughter, cutlery, helium, and furniture. For example, it is not possible to refer to a furniture or three furnitures. This is true even though the pieces of furniture comprising furniture could be counted. Thus the distinction between mass and count nouns should not be made in terms of what sorts of things the nouns refer to, but rather in terms of how the nouns present these entities.

Collective nouns: Collective nouns are nouns that refer to groups consisting of more than one individual or entity, even when they are inflected for the singular. Examples include committee, herd, and school (of fish). These nouns have slightly different grammatical properties than other nouns. For example, the noun phrases that they head can serve as the subject of a collective predicate, even when they are inflected for the singular.
Concrete nouns and abstract nouns: Concrete nouns refer to physical entities that can, in principle at least, be observed by at least one of the senses (for instance, chair, apple, Janet or atom). Abstract nouns, on the other hand, refer to abstract objects; that is, ideas or concepts (such as justice or hatred). While this distinction is sometimes exclusive, some nouns have multiple senses, including both concrete and abstract ones; consider, for example, the noun art, which usually refers to a concept (e.g., Art is an important element of human culture) but which can refer to a specific artwork in certain contexts (e.g., I put my daughter’s art up on the fridge).

Some abstract nouns developed etymologically by figurative extension from literal roots. These include drawback, fraction, holdout, and uptake. Similarly, some nouns have both abstract and concrete senses, with the latter having developed by figurative extension from the former. These include view, filter, structure, and key.

In English, many abstract nouns are formed by adding noun-forming suffixes (-ness, -ity, -tion) to adjectives or verbs. Examples are happiness (from the adjective happy), circulation (from the verb circulate) and serenity (from the adjective serene).

Verb: In syntax, a verb, from the Latin verbum meaning word, is a word (part of speech) that conveys action (bring, read, walk, run, learn), or a state of being (exist, stand). In most languages, verbs are inflected (modified in form) to encode tense, aspect, mood and voice. A verb may also agree with the person, gender, and/or number of some of its arguments, such as its subject, or object.

Verbs can be classified according to their valency as:
- **Intransitive** (valency = 1, monovalent): the verb only has a subject. For example: "he runs", "it falls".
- **Transitive** (valency = 2, divalent): the verb has a subject and a direct object. For example: "she eats fish", "we hunt nothing".

This intransitive and transitive are typical, but the impersonal and objective are somewhat different from the norm.

Inflection: In grammar, inflection or inflexion is the modification of a word to express different grammatical categories such as tense, grammatical mood, grammatical voice, aspect, person, number, gender and case. Conjugation is the inflection of verbs; declension is the inflection of nouns, adjectives and pronouns.

Inflection can be overt or covert within the same language. An overt inflection expresses grammatical category with an explicitly stated suffix. The Latin ducam, meaning "I will lead", includes an explicit suffix, -am, expressing person (first), number (singular), and tense (future). This is an overt inflection. In English, the word "lead" is not marked for either person or number, and is only marked for tense in opposition to "led" (i.e. is not specifically future
The whole clause, however, achieves all the grammatical categories by the inclusion of extra words. This is covert inflection (or periphrasis).

The process typically distinguishes lexical items (such as lexemes) from functional ones (such as affixes, clitics, particles and morphemes in general) and has functional items acting as markers on lexical ones.

Lexical items that do not respond to overt inflection are invariant or uninflected; for example, "must" is an invariant item: it never takes a suffix or changes form to signify a different grammatical category. Its category can only be determined by its context. Uninflected words do not need to be lemmatized in linguistic descriptions or in language computing. On the other hand, inflectional paradigms, or lists of inflected forms of typical words (such as sing, sang, sung, sings, singing, singer, singers, song, songs, songstress, songstresses in English) need to be analyzed according to criteria for uncovering the underlying lexical stem (here s*ng-); that is, the accompanying functional items (-i-, -a-, -u-, -s, -ing, -er, -o-, -stress, -es) and the functional categories of which they are markers need to be distinguished to adequately describe the language.

Constraining the cross-referencing of inflection in a sentence is known as concord or agreement. For example, in "the choir sings", "choir" and "sings" are constrained to the singular number; if one is singular, they both must be.

Languages that have some degree of overt inflection are inflected languages. The latter can be highly inflected, such as Latin (overtly), or weakly inflected, such as English (covertly), depending on the presence or absence of overt inflection. And, historically, English was traditionally described as a non-inflected Indo-European language.

In English most nouns are inflected for number with the inflectional plural affix -s (as in "dog" → "dog-s"), and most English verbs are inflected for tense with the inflectional past tense affix -ed (as in "call" → "call-ed"). English also inflects verbs by affixation to mark the third person singular in the present tense (with -s), and the present participle (with -ing). English short adjectives are inflected to mark comparative and superlative forms (with -er and -est respectively). In addition, English also shows inflection by ablaut (mostly in verbs) and umlaut (mostly in nouns), as well as long-short vowel alternation.

For example:
- **Write, wrote, written** (marking by ablaut variation, and also suffixing in the participle)
- **Sing, sang, sung** (ablaut)
- **Foot, feet** (marking by umlaut variation)
- **Mouse, mice** (umlaut)
- **Child, children** (ablaut, and also suffixing in the plural)

**Utterance:** An **utterance** is a complete unit of speech in spoken language. It is generally but not always bounded by silence. It can be **represented** and
1.6 Writing Different Documents

a. Research Proposal

Research, in the broadest terms, is that we do whenever we gather some information to answer a question that solves a problem. Writing is an important part of learning, thinking and understanding. In order to undertake a research work, be it for reporting as a research paper or a research report in the form of a dissertation or thesis or a project report, one has to first write a proposal. Proposals can be for different purposes viz., for carrying out academic or scientific research, for seeking financial assistance, for undertaking a research project, for seeking financial assistance in a research project or study, etc. A research proposal is basically a framework that is presented to the research committee or a funding body that acts as an 'intellectual connector' between the proponent and the evaluator. The purpose of a research proposal is to present a clear picture of the thoughts, ideas and plans of the researcher or the proponent to the research evaluation or the funding committee. So, a research proposal has to also present an account of the intended or expected outcome from the work. The style of drafting a research proposal or a research paper/report plays an extremely important role in evaluating the document. The researcher should note that the evaluators are usually pressed for time and hence the research proposal should bear the following characteristics in order to facilitate the evaluators for a better evaluation.

- clarity and brevity
- relevance and focus
- originality and novelty

Some of the important points regarding the main sections of a good research proposal are as follows:

Cover page: The cover page of the proposal should bear the topic of research in clear, big, bold letters. It should also bear the name of the researcher, details of the institution where he intends to register himself for research study.

Synopsis: A synopsis of the intended study is drafted after the cover page. The ideal word limit of synopsis is usually 250-350 words. This is a brief description of the intended study which is explained in detail in the proposal following synopsis. It contains the following information.

- Research problem
- Research methodology – target population, sample, geographical span etc.
- Research tools, statistical tools and techniques
- Time frame
- Financial assistance, if any
- Definitions or meanings of key terms used. These are about 5-6 main terms that will be used in the course of research.
Main body of the proposal: The following are the sub-sections that should be covered in the main body of the research proposal.

Importance of the research proposal: Research is conducted for the betterment of society. In this democratic era, focus is more on good research that will contribute towards societal development. Hence the researcher has to explain clearly about his contribution to the society by way of this research. The researcher should clearly state the significance of his research topic, how it is relevant in the present times, what are the current trends related to his area of research. He should also explain how his research will add to the already existing body of knowledge, what is the value addition to the field of study and discipline, what are the intended improvements and expected developments from his research.

Objectives: The researcher should clearly state the objectives of the proposed research. The following are the characteristics of research objectives.

- clarity
- brevity
- focus
- clear and strong relation between the proposed topic and objectives
- ideally 4-6 objectives

Literature Survey: By knowing what and how much work has already been done on the proposed topic or related to the proposed topic, we fulfill the main aim of this section, i.e., avoiding repetition or duplication or 're-inventing the wheel'. The researcher also comes to know about many things like research trends, various research methodologies used by other researchers, scale, scope and extent of research on the proposed topic or at least related to his research topic. Relevant studies previously carried out can be cited from various sources and resources like scholarly publications like books and journals, secondary and tertiary sources, Internet-based information sources etc. If a pilot study has already been conducted by the researcher, it can also be stated in this section. The research can explain as to how different his research will be from the various literatures he has cited, and what would be the advantages from his research study in comparison with previous ones. Ideally 75-100 references can be cited in this section. They can be briefly explained in 5-10 lines each.

Research Methodology: The research methodology explains the pattern of method that will adopted for conducting research. It will have the following contents.

- Research model i.e., survey model, historical research, descriptive research, exploratory study etc.
- The research tool, i.e., attitude measurement tool/questionnaire/interview questions, etc.
- Hypothesis (es), if any.
- Details of target population and sample size
- Method of data collection
- Time frame and geographical span
• Description of research tools and statistical tools and techniques that will be deployed for data analysis depending upon whether the research proposed will be qualitative or quantitative.
• Data representation details – graphs, tables, charts, flow charts, diagrams, figures etc.

Chapterization: The researcher is expected to provide an intended chapterization here. Usually a research report like dissertation or thesis should have 5-7 chapters excluding the references and bibliography.

References and Bibliography: The researcher should follow the desired citation style depending upon his discipline of research. In arts and humanities, Modern Language Association (MLA) style of citation is followed. In social sciences, American Psychological Association (APA) style is preferred. In engineering sciences, Institution of Electrical and Electronics Engineers (IEEE) style is followed. In sciences, generally American Chemical Society (ACS) style is followed or the desired style is clearly communicated by the registering institution or the publisher in case of research papers. Medical literature is cited in their respective style. Works cited in the research proposal or the research report should be listed in the references section, while the works referred during the course of work can be listed in bibliography.

Appendix: Usually a research proposal need not have annexures viz., copy of research tool etc. But if it is ready by the time the proposal is being submitted, it can be appended. Appendices can also have a tentative list of possible respondents. etc.

b. Research Paper/Report

Writing a research paper or a research report is an important part of research process. A research paper can be of different kinds. It can be a theory based paper or a practical/fact-finding paper based on a problem and its solution. The paper can be either conceptual case study or comparative study or an evaluative study or an exploratory study, based on data, where data can either be primary or secondary. A research paper can be broadly divided into three major sections viz., the introduction, main body and conclusion, apart from the abstract and references sections. A research paper starts with the title, subtitle (if any), names and affiliations of author(s) and their contact details. Usually, an abstract, either brief or detail, precedes the introduction. Let us look into the possible contents of each of these sections.

Introduction: It contains introduction to the research topic or research problem, various reasons and rationale for selecting the topic, its significance with respect to present research trends and times, justification of research topic or problem.

Main body: This section consists of previous/existing related literature review, if any. It contains detailed description of the topic of research, for example description of theories or principles on which it is based, etc. Research methodology that was adopted for the study is also explained here. Then it contains a profile of the research target, the data characteristics, and data
representation in terms of various tables, charts, graphs, and other illustrations or figures, followed by the data analysis. Findings of the data analysis are reported at the end of this section.

**Conclusion:** This section contains the inferences from the findings and conclusion drawn. The reasons for reaching to the conclusion expressed are also reported. Many times, the authors also express the limitations and constraints experienced during the course of study, in this section. Suggestions or measures for improving the research, or suggestions and scope for further research are also reported here. Acknowledgements, if any, are expressed after the conclusion.

This section is followed by a list of references and works cited, further readings, bibliography, written according to the desired style of citation, as detailed in the section on research proposal. Sometimes, the research paper may also contain appendices viz., a copy of survey tool, list of respondents (in case of survey based research), illustrations or even raw data.

A major difference between a research proposal and a research report is that the proposal is drafted before the actual research is undertaken and submitted for evaluation and approval of the research committee.

A research paper is like a micro form of a research report. Whereas, a research report contains all the sections in a much more detailed fashion.

c. **Financial Proposal**

As is clear from the name, this proposal is for seeking financial assistance for carrying out research or for adding or making changes in order to bring development in the present condition, undertaking developmental projects or research projects etc. It is usually submitted to non-government funding agencies. Library, being a not-for-profit unit, attracts less funding from its parent bodies as it is not a revenue-generating unit. In order to modernize and develop the library collection and its services, funding and seeking financial assistance becomes all the important to a library. A library can seek financial assistance for several purposes like modernization of library infrastructure, modernization of library collection, library automation, digitization projects etc. The following is an example of a financial assistance proposal for automating a library.

Introduction: This section will explain the need for automation of library services, its objectives like improvement in users facilities etc. This section will also contain a brief description of the library in proposal, its present status in terms of collection, services and users, details about the parent institute or body of the library, details of various options for library automation, software and hardware availability in market, library requirements in terms of library automation and staff etc.

Objectives: The library would like to automate its services for the following reasons.
- to save time of users
- to save time of library staff
• to save money (in terms of physical materials) spent on various resources
• resource sharing and networking with other libraries
• decreasing manual mistakes
• benefits of bar-coding or RFID implementation viz., error-free stock verification, theft-checking and control etc.
• OPAC facility – users can concurrently view the library catalogue and on their desktops or laptops from remote locations.

Main body: In this section details of the present status of library in terms of number of books and periodicals, scholarly journals, number of users, user services, number of staff, location of library and availability of space are explained. A brief profile of library including its establishment, historical account, development, collection, holdings, infrastructure, users, ration of users and books, library user services may also be given, followed by the requirements.

A. Computer Equipment

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Quantity</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Unit Cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Price</td>
</tr>
<tr>
<td>a. Library software</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Computer Server</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Client PCs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Printers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Scanners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Bar-code scanners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Bar-code stationary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. RFID Surveillance Gates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. RFID Chips</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j. Network cabling etc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Justification: All the above mentioned equipment are necessary for automation of library services.

B. Staff

<table>
<thead>
<tr>
<th>Staff</th>
<th>Quantity</th>
<th>Estimated Cost (salary per year)</th>
</tr>
</thead>
</table>

a. Data Entry Operators
b. Information Scientist
c. Computer operators
d. Helpers

**Justification:** Data entry operators are required to make entries of library records in the library software. An Information Scientist is required to supervise, check and ensure smooth progress of automation work. Computer operators are required to handle various hardware, software and network related jobs of library automation.

C. Miscellaneous / Other Requirements

<table>
<thead>
<tr>
<th>Other Equipment</th>
<th>Quantity</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit Cost</td>
<td>Price</td>
</tr>
<tr>
<td>a. Computer tables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Chairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. UPS with batteries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Air Conditioners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Generator</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Justification:** Computer furniture viz., tables and chairs are essential. UPS is required to run computers without interruption during load-shedding and fluctuating power supply/voltage. Air Conditioners are required to maintain optimum temperature as computer server, client PCs, UPS and batteries emit high amount of heat. Generator is required to provide backup and alternative power supply source to library during automation.

*The quantity and estimated cost vary and depend upon the size, location, space availability, collection etc. factors.*

**Grand Total = A+B+C**

In the above mentioned proposal some expenditure viz., computer hardware, software license, furniture etc. are one-time in nature. While expenditure like annual maintenance cost of the library software, staff salary, UPS batteries, computer stationary like bar-code labels and RFID chips etc. are recurring in nature. Hence, while drafting a financial proposal, such factors should be taken into consideration. This is just a model proposal given here for example. A real proposal will depend upon the actual position and status of the proponent library.

1.7 Summary
In this unit, we have learnt about functional style of language, sentences, paragraphs, grammar, syntax, semantics and diction. These details will help us to effectively use a language, English in general in our day-to-day lives, for various purposes. We have also seen how various documents are drafted viz., research proposals, writing research papers and financial proposals. Effective and efficient use of language will help us communicate our thoughts and ideas in a better manner, resulting in better output.

1.8 **Self-check Exercise**


2. Write a note on sentence construction.

3. Classify 'sentences' based on their meaning.

4. How can you write a good paragraph?

5. Describe and explain 'semantics'.

6. Write a note on 'syntax'.

7. Write a brief note on 'diction'.

8. Write a detailed note on drafting a good research proposal.

9. Describe the format of a research paper.

10. Draft a financial proposal for digitizing the special collection in your library.
Unit 2

Readability and Text

2.0 Introduction
2.1 Objectives
2.2 Readability and Text
  2.2.1 Factors Affecting Readability
    2.2.1.1 Physical Factors
    2.2.1.2 Reader’s Factors
    2.2.1.3 Vocabulary
    2.2.1.4 Text Structure
    2.2.1.5 Text Coherence and Cohesion
    2.2.1.6 Syntax
  2.3 Readability Analyzer
    2.3.1 Readability Test
  2.4 Uses of Readability
  2.5 Summary
  2.6 Self-check Exercise
2.0 Introduction
Since long a librarian’s role has been the acquisition, storing and organization of library reading material. He is efficiently trained to perform this job so that the users are facilitated properly in accessing the reading material. But due to various changes that have been taking place in the information environment and information and communication technologies, there has been an exponential growth in the body of literature on various subjects and topics. There is a lot of information and a plethora of books available on every subject and topic. This places a huge pressure on the user in choosing the right kind of material for reading. These changes have also brought about changes in the role of a librarian also. They have made the job of a librarian even more demanding. The role of a librarian has proliferated to an extent where he now as to evaluate the quality of the reading material and suggest the best to his readers, depending upon the readability of the content. This role of a librarian is more evident in the academic sector rather than research sector, especially in case of school libraries and undergraduate institutions. This role is in great demand from a librarian in case of public libraries also.

2.1 Objectives
In this unit you will learn about readability and text, factors affecting readability viz., the physical factors, readers’ factors, vocabulary, text structure, text coherence and cohesion, and relation between syntax and readability. You will also learn about readability analyser, readability test and uses of readability. After knowing all these you will be in a position to evaluate the reading material for their readability.

2.2 Readability and Text
Readability is what makes some texts easier to read than others. George Klare (1963) defines readability as “the ease of understanding or comprehension due to the style of writing.” This definition focuses on writing style as separate from issues such as content, coherence, and organization. In a similar manner, Gretchen Hargis and her colleagues at IBM (1998) state that readability, the “ease of reading words and sentences,” is an attribute of clarity.
The creator of the SMOG readability formula G. Harry McLaughlin (1969) defines readability as: “the degree to which a given class of people find certain reading matter compelling and comprehensible.” This definition stresses the interaction between the text and a class of readers of known characteristics such as reading skill, prior knowledge, and motivation.

Edgar Dale and Jeanne Chall’s (1949) definition may be the most comprehensive: “The sum total (including all the interactions) of all those elements within a given piece of printed material that affect the success a group of readers have with it. The success is the extent to which they understand it, read it at an optimal speed, and find it interesting.”

Readability is an important feature of text that tells about its legibility, understandability and usefulness by the reader. It is a result of writing style. If the style of writing is not proper, it will affect the readability of the text, thereby affecting the usefulness of the work. A lot of research is being conducted over the relationship of text and its readability, as to how to help in faster reading and understandability of text and how to measure the readability of text. Readability is a measure of a text's level of legibility, coherence, and understandability. It depends upon many factors that influence the writing style. These will be discussed in detail in the following section.

2.2.1 Factors Affecting Readability

A number of factors influence the readability of a text. These include:

d. Physical factors such as typeface, font size, spacing and layout;
e. Reader factors such as prior knowledge, reading ability, and motivation of the reader;
f. Vocabulary difficulty;
g. Text structure;
h. Text coherence and cohesion; and
i. Syntax.

2.2.1.1 Physical factors: There are a number of features not directly related to the reader which may affect readability (some of these features may interact with characteristics of the reader, e.g. a picture may be motivating or demotivating). Obviously, if the print on the page is difficult to read either because it is too small or the font is an odd one, then this will contribute to reading difficulty. Clear design and layout is also important and again the
reader must be taken into consideration. What may be suitable for a younger reader (comic book style, large print, etc) would be patronising for others. Background knowledge (about content and text structure) is an important component of the reading process. The first person to use this idea in educational texts was probably Ausubel. Ausubel suggested that "use of appropriate.....advance organizers in the teaching of meaningful verbal material would lead to more effective retention" (1960:269). His first results were not conclusive however, but Ausubel & Fitzgerald (1962) did find statistically significant results with students of "relatively poor verbal ability". Ausubel quite reasonably suggested that "[t]he pedagogic value of advance organizers obviously depends in part upon how well organized the learning material itself is."(1960:271). It seems reasonable to suggest that well written texts pitched at the right level for the intended audience might not need an advance organizer (or might need a reduced one). However, even articles written for readers who are presumably well capable of reading and understanding the text are often provided with advance organizers of one kind or another; the abstract usually provided at the beginning of an academic journal article is an example).

Use of images and illustrations: Royer and Cable found that illustrations facilitated recall of information presented in abstract passages. They also suggest that "illustrations are likely to prove beneficial only in the situation where the text material to be learned is difficult to comprehend" (1976:206). Illustrations should have a purpose and need not be used merely to embellish easily read texts. In fact Samuels (1970) in his review of earlier literature on the use of illustrations in basal readers aimed at teaching L1 reading concluded that "pictures, when used as adjuncts to the printed text, do not facilitate comprehension". So although a picture may be worth a thousand words perhaps it depends on exactly which thousand words they are. Samuels also suggests that pictures may be useful for their effect on attitude and that pictures and text could be used separately - in separate parts of a book for example - to be referred to as needed. This idea can easily be incorporated into computer based texts. Hypertext links can call up pictures if the reader needs them. Different readers could proceed at their own pace calling up facilitative non-text aids as they wish.
Use of extra-textual features and aids: Use of extra-textual aids may facilitate comprehension but, more than that, they may also show readers how they themselves can use and create their own aids in the form of charts, diagrams etc. to help them comprehend a text. This, in the end, may be a much more valuable exercise. When readers begin to analyse a text and transfer information to another medium or format they are processing information at a much deeper level (Craik & Lockhart, 1972) and in the process learning the language. There are many ways that graphic aids may be used for learning and their usefulness are normally indicated by the text types and the information they contain, (see Johnson, 1989) but even the simple process of getting readers to underline key items helped their understanding (Fass & Schumacher, 1978). It might be noted here that students from certain cultures where texts are considered with some reverence should be encouraged to treat printed texts with less respect. The aids that a teacher or materials writer chooses to make available will depend not only on the readability of the text for the students he has in mind but also on the specific aspects of the textual features he wishes to highlight or reading strategies he wishes to induce. Reutzel provides a list of reasons for using these aids:

One problem with text is that because it is normally read in a linear fashion it constrains how mental models are built. Pictures are not constrained in such a way (there may be other constraints such as conventions of iconography). Pictures may particularly facilitate comprehension of visuo-spatial concepts but Glenberg & Langston suggest that "pictures help the comprehension and retention of text in a variety of ways" (1992:131) and that:

"...pictures assist in the construction and management of mental models in working memory. Furthermore, mental models support the noticing of relationships that are implicit in the text, thus assisting in the creation of a representation that is "richer" or more "elaborate" than would ordinarily be available from a representation of the text itself." (Glenberg & Langston, 1992:131,132)

They also suggest that pictures may ease the search for referents and that they may serve as a type of external memory (1992:149). However they operate they seem to be powerful facilitators of comprehension. But they should not be used just to repeat information explicitly stated in the text. If we wish to use them to facilitate comprehension maximally for the readers we have in mind they should be used also to illustrate features for which text is not the best means as in non-linear spatial organization of ideas (e.g. represents hierarchical rhetorical organisation of the text), concepts which may be deduced from the text but which are not explicitly stated, and background knowledge which the writer assumes the reader to have but which may not be the case.

2.2.1.2 Reader Factors: Readers understand more of a text when they know something of the content schema. Bransford & Johnson (1972) found that knowledge of the subject matter of a text was of fundamental importance in
understanding the text; Steffensen, Joag-Dev & Anderson (1979) found that
texts based on known cultural background knowledge were easier to understand
than similar texts based on different cultures; Carrell (1987) found similar
results in investigating the effects of both cultural and formal schemata.
A distinction is sometimes made between formal and content schemata (Carrell,
1987) but we can deal with formal schemata under rhetorical organisation.
Apart from the distinction between content (background knowledge) and
cultural schemata, other distinctions have been made; Context/ concreteness-
abstractness, Bransford & Johnson, (1972); context/ transparency, Carrell
(1983); familiarity, Anderson, Reynolds, Schallert & Goetz (1977), Carrell
(1983), but it is unclear whether these distinctions have any basis in reality and
for present purposes we can conflate these categories.

It is easy to lose sight of the importance of background knowledge and its effect
on readability. Although it is often assumed that writers have particular readers
in mind, they may not appreciate the difficulties readers face when there is a
lack of shared background knowledge. Writers in specialist fields often assume
more background knowledge in their readers than is warranted. What is obvious
to specialists may not be so for others:

"If readers lack prior content knowledge in the domain, ideas presented
in the text may seem disconnected even though connections among the ideas
seem "obvious" to domain experts". (Goldman 1997:367)

Secondly readability can only be assessed by adopting some measure of how
the text has been comprehended by a reader or group of readers and
comprehension must involve schemata: integrating new textual information
with background knowledge.

"Whether we are aware of it or not, it is this interaction of new
information with old knowledge that we mean when we use the term
comprehension" (Anderson & Pearson, 1988:37)

Since content is so important it is not surprising that it influences the way the
text is organised - for example that introducing topic early in a paragraph
facilitates reading (Kieras, 1978,1980), a feature which is mirrored at sentence
level in the normal organisation of given/new, topic comment.

2.2.1.3 Vocabulary: There does not seem to be much agreement in the earlier
literature about how vocabulary knowledge influences the reading process.
Intuitively it would seem that vocabulary would be of great importance. There
are many researchers who have cited vocabulary as being of prime importance
in both L1 and L2 studies (Davis,1971; Kruse, 1979; Chall, 1958; Loban, 1970;
Yorio, 1971 and Phillips, 1974, cited by Adams 1982), but there are others who disagree. Duffy and Kabance found that "Simplifying vocabulary and sentences has little, if any, effect on performance even though the readability, according to formula is greatly improved" (1982:738). They found that their data "add[ed] substance to the hypothesis that word and sentence difficulty are correlative but not causative factors in comprehension" (1982:744).

Freebody and Anderson found that "performance was lower when the passages contained difficult vocabulary, and in half of these cases the effect was significant" (1983:291). However, they caution that "it takes a surprisingly high proportion of difficult vocabulary to produce reliable decrements in comprehension measures." (1983:291)

Davison and Kantor argue that "Readability formulas....fail to give any adequate characterization of readability, except in a purely statistical sense from which no particular valid conclusions can be drawn for creating readable texts" (1982:207).

So perhaps there are many factors related to vocabulary difficulty to which traditional readability formulae are not sensitive and which may be very complex to investigate. Readability formula have been criticised for omitting many factors such as syntactic complexity and rhetorical organisation. To these we could also add factors which make a word hard or difficult to process - factors which go some way beyond the length of the word or the number of syllables it contains. Bernhardt (1984) is also sceptical about the presumed relationship between word length and difficulty pointing out that graphemic uniqueness of a word may make it much more accessible than shorter words "such as the, them, they, their, there, this, that, and those [which for L2 readers] are extremely difficult words despite their length." She points out "eye movement protocols generated by native readers of German and by highly experienced readers of German indicate that many short function words such as articles and prepositions are processed for duration in excess of 1000 milliseconds - in other words, for durations approximately three times longer than average processing time for longer words in connected discourse. These data indicate that the relationship between word length and word difficulty
positively correlated by the concept of readability appears to be tenuous.”

(Bernhardt 1984:323)

It surely seems to be that it is this inability to process larger stretches of text which slows readers down. Laufer makes a similar point:

"Since the amount of information that can be cognitively manipulated at one point of time by controlled processing is limited, focussing on slightly or completely unfamiliar words will take up some cognitive capacity that would otherwise be used for higher level processing of the text. Automatic recognition of a large vocabulary, or a large sight vocabulary, or the other hand, will free one's cognitive resources for (1) making sense of the unfamiliar or slightly familiar vocabulary and (2) interpreting the global meaning of the text."

(Laufer, 1997a:22,23)

Beyond a certain percentage of unknown words (or chunks), processing becomes quite laborious and strategies which otherwise might help (inferencing etc) also become useless. We have to accept that whether we are talking about words or lexical phrases, vocabulary is a fundamental consideration in assessing difficulty (and in fact has long been used for grading EFL readers - see Nuttall (1982) for a table of British EFL readers and their vocabulary levels).

This is the first and most important point. It should not be too difficult to arrive at some rough estimate of what percentage of words are unknown. One can simply get the readers to scan the text and underline the words they do not know. One can use a cloze test. Or if one had an estimate of the reader's vocabulary size one could simply eliminate the words the readers are expected to know and count up the rest. There are various tests available for estimating vocabulary size (see Read, 1997 for a review). But these are rough and ready methods because a word may not simply be known or unknown.

Difficulty from the point of view of the reader is not just a question of knowing or not knowing a word. (leading to the simplistic notion that a count of unfamiliar words will give an index of difficulty) There is a cline of word knowledge from the idea of having seen it before to knowing and being able to use the word in all its forms and collocations. This is less easily measured (but see Read 1997:317).

The second is to identify which words or chunks are likely to cause difficulty for, or be unknown to, specific readers. Williams and Dallas (1984) examined vocabulary difficulties in content area textbooks and identified the following problems a) difficult words used in definitions (e.g. too many abstract words,
definitions which are too broad rather than narrowly related to the meaning in context, few examples), b) idiomatic expressions (difficult to infer the meaning from constituent vocabulary), c) homonyms (especially problematic where they occur in a high density) d) specialised vocabulary from 'imported text'. Their approach was not to predict vocabulary difficulty but rather to give the texts they were investigating to the readers for whom they were intended and to analyse certain aspects of vocabulary by a multiple choice test. Readability formulae are an attempt at a shortcut but evaluating texts through testing (or other procedures such as think aloud) with their target readership is the only way of ascertaining whether they are suitable and the only way of investigating specific causal variables of text difficulty.

2.2.1.4 Text Structure: There is evidence that knowledge of the structure of a text facilitates comprehensibility and recall. In investigating both structure and content variables, Thorndyke (1977) found that "Comprehensibility and recall were found to be a function of the amount of inherent plot structure in the story, independent of passage content. Recall probability of individual facts from passages depended on the structural centrality of the facts: Subjects tended to recall facts corresponding to high-level organizational story elements rather than lower-level details." (1977:77)

This fitted in with a great deal of other work on schema theory (Bartlett, 1932; Rumelhart, 1975; Schank & Abelson, 1977). Kintsch, Mandel & Kozminskey (1977) used scrambled stories to investigate text macrostructure. They concluded:
".....the reader's story schema permits him to reorganize the scrambled story, if that story corresponds to his schema" and "...that the macrostructure of a story is formed during reading, as part of the comprehension process..." (1977:552)

Taylor (1980) found that children who were more sensitive to text structure recalled more expository material than those who were less able to use organisational structure of expository text. Likewise, Meyer, Brandt & Bluth (1981) investigating a reading strategy (identifying and using an author's prose organisation) found " a strong relationship between comprehension skills and the use of the top-level structure in text." (1981:82). McGee (1982), and Richgels, McGee, Lomax & Sheard (1987) came to similar conclusions.

All of these studies are concerned with high level organisation concerning whole stories or long stretches of expository prose. But it is clear that there are lower levels of organisation from the paragraph level down to relations between individual sentences and clauses. And, not surprisingly, clear structure on these levels also facilitates comprehension. Kieras investigated structure in simple
paragraphs. He found that "paragraphs that violate the coherence and topicalization conventions yield longer reading times, poorer recall, and distortion of apparent theme" (1978:27)

All the above studies were conducted with native English speakers. Carrell investigated the effect of different prose organisations on the reading comprehension of 'English as Second Language' i.e., ESL readers of various L1 backgrounds. She asked "whether different groups of ESL readers possess the formal schemata against which to process these various rhetorical structures [and] whether there is a differential impact of these various rhetorical structures on different ESL readers." (Carrell, 1984:449) She found that 

"as [...] for native English readers, some variations in discourse type influence the amount of information recalled from prose by ESL readers. Further, the more highly organised types of discourse are generally more facilitative of recall than the less organised collection of descriptions." (Carrell, 1984:458) Urquhart (1984) investigated the effect of rhetorical ordering (specifically, time-ordered and space ordered texts) on readability and, unsurprisingly, concluded that well ordered texts were easier to read.

### 2.2.1.5 Text Coherence:

Most readers are aware that some texts, whatever their content, seem to "hang together" better than others and are therefore easier to read. In part this is a function of how they conform to expectations about text types (rhetorical organisation) but is mainly a function of how they "cohere".

"Understanding a discourse may be regarded as the construction of a mental representation of the discourse by the reader. An acceptable discourse representation has a property that distinguishes it from the representation a reader might make of an arbitrary set of utterances: The representations of the segments in the discourse are linked coherently." (Sanders et al 1997:1,2)

We need to be able to compare texts from a clausal relations point of view in order to be able to say that one text is more difficult than another. A simple way might be to count the ratio of conjunctions per number of sentences (marked relations presumably being easier to understand than unmarked ones). But there may be a problem here because relations are signalled by other devices than conjunctions such as lexis and repetition (see Hoey, 1983, Hoey & Winter 1986) and causal verbs (Singer 1995). A more sophisticated method would be to take into account:

vi. The ratio of explicitly marked relations to those that have to be inferred, and

vii. The type of relations used. (On the assumption that certain relations are easier to process than others)
Signalling of clause relations is generally discussed at a micro level (relations between propositions, clauses or sentences) but relationships at a super-ordinate or macro-level are also signalled by such markers. So these markers also help readers who know how to use them (Meyer, Brandt & Bluth, 1981) to establish the rhetorical framework of the text.

What we really need to identify is whether explicitly stated relations are easier to process than ones which have to be inferred, whether certain relations are more difficult to process than others, and if so which relations they are. Irwin and Pulver (1984) suggest some answers to these questions: "results ... indicate that students ....are more likely to comprehend a causal relationship when it is stated explicitly" "this seems to indicate a way in which the language of ... textbooks might be made more comprehensible." "irreversible causal relationships are more likely to be understood than are reversible ones." (Irwin and Pulver 1984:405)

A list of relations which are more difficult to process is one thing but it would be even better to know why they are more difficult. Sanders et al (1992) attempt at drawing up a taxonomy of coherence relations seems promising in this regard. They propose that relations can be defined in terms of four factors; a) basic operation (causal or additive) b) source of coherence (semantic or pragmatic) c) order of the segments and d) polarity. It may be that the last two provide clues as to difficulty, non basic order and negative polarity being more difficult to process. This would be an interesting research question.

Geva states that "skilled and less skilled readers have been shown to differ in the degree to which they infer logical relations in text (Bridge & Winograd, 1982; Evans & Balance, 1980; Geva, 1986, Geva & Ryan, 1985; Irwin, 1980)." (Geva, 1992:732). If this is the case it might be possible to identify texts too rich in relations the readers have not acquired for them to be readable (a process teachers already do on an intuitive basis).

2.2.1.6 Text Cohesion: We have seen that coherence relations may be inferred or explicitly signalled by conjunctions or other devices. Other forms of signalling give the text cohesion and indicate that it is coherent without giving actual clues to the precise relations that hold between propositions. These cohesive ties may also affect readability as we shall now see. Whereas coherence is assigned to a text by a reader, cohesion is a property of the text itself. Of the cohesive devices (reference, substitution, ellipsis, conjunction and
lexical) identified by Halliday and Hasan (1976), the most common by far are reference and lexical (see Binkley, 1988:112).

Not surprisingly studies have found the closer referents were to their pronouns, the easier they were to process (e.g. Clark & Sengul, 1979: Cirilo, 1981). Since then, others factors influencing the ease of resolution of anaphors have been found:

"... whether the antecedent is in focus (e.g. Garrod, Freudenthal, & Boyle, 1994) ......syntactic constraints (e.g., Nicol & Swinney, 1989; Swinney & Oesterhout, 1990), syntactic prominence (e.g., Gernsbacher & Shroyer, 1989), as well as pragmatic constraints (e.g., Garnham & Oakhil, 1985; Hirst & Brill, 1980; Tyler & Marslen-Wilson, 1982)" (O'Brien, et al 1997:2)

Hoover (1997) has also reviewed the literature on this, and concludes that factors which facilitate reading are whether there is continuity of reference, whether pronouns are "in focus" and whether there was a parallel syntactical function between the pronoun and the referent (pronouns and referent which were grammatical subjects were easier to process). Also "pronouns that referred to the agent rather than the patient of the preceding sentence were easier to process, regardless or their syntactic position." (1997:201)

Although cohesive devices are clues to the coherence of a text, a text is only coherent to the reader if the textual relations are clear to him. This can only be investigated with the co-operation of the reader not by just examining a text.

However, we can identify some features of cohesion which are more difficult for some readers to interpret. Cooper (1984) in a comparison of practised and unpractised readers found:

"The features which discriminated most clearly between practised and unpractised readers were lexical cohesion (in particular hyponymy,[..]) and cataphoric reference; but both groups were unsure with synonyms. Grammatical cohesion achieved by anaphoric reference (e.g. locative reference..), substitution and ellipsis did not appear to present much difficulty to either group. We concluded again that practised readers are distinguished from unpractised readers by their relatively superior lexical competence. Practised readers not only have larger vocabularies, but have greater knowledge of lexical relationships. In particular, they have a better grasp of the ways in which writers use words to create and maintain textual relationships by exploring features like hyponymy and synonymy." (Cooper, 1984:131)

And Berman identified and number of factors she thought might cause problems:

"We suggest, next, that the FL reader needs maximal 'transparency' in marking the relations between one part of the text and another. That is certain kinds of
cohesive devices [ ] may render a text opaque to the FL reader. These may take the form of deletion - for instance, by means of gapping, lack of relative pronouns in English relative clauses, wh+be deletion in post-nominal modifiers, etc. - or of substitution of, say, nominal one or verbal do as grammatical substitutes for repeated lexical material, as well as of lexical substitution." (Berman, 1984:42)

Whilst these may cause difficulty, they do not seem to be promising candidates on which to base any indicator of readability. So we can probably dismiss reference, substitution and ellipsis as major factors contributing to text difficulty. What remains (conjunction having been dealt with under clause relations) is lexical cohesion and is a vocabulary effect.

2.2.1.7 Syntax: Traditional indices estimate text difficulty by measuring sentence length. Here, in considering the effect of syntax, we have a similar problem to that of vocabulary; correlation and causation. It is not surprising that sentence length correlates with difficulty. Apart from memory considerations, longer sentences are likely to contain more complex structures such as coordination and subordination (Beaman 1984).

As long ago as 1964 Coleman pointed this out: "It is almost certain that sentence (or clause) length can predict readability only because it is correlated with more fundamental predictors of syntactic complexity such as nesting, transformational complexity, and others (Miller & Chomsky, 1963)." (Coleman 1964:190)

If it is indeed true that certain structures do cause more difficulty than others, what we would like to know is which they are and why they cause difficulty. Chomsky, C. (1969) provided a theoretical consideration of linguistic complexity. However, it is difficult to see how this can be translated into a workable (i.e. fast and simple) model for assessing readability. It may also be true that learners from different L1 backgrounds find different structures more or less difficult, but for the moment we will think about the question in general terms.

Coleman (1964) found that transforming nominalizations, adjectivalizations and passives to their active verb transforms improved comprehensibility of texts. Others found similar results (Bhatia, 1984) and it has long been an article of faith that structures such as nominalizations are difficult to decode (Klare, 1985; Price, 1984). Berman uses the notion of "heaviness" to describe items which may cause processing difficulties.
Heaviness may also occur where the basic NVN or 'kernel' structure is violated by a process such as nominalization - there are grounds for believing that nominalizations are often more complex than corresponding sentences with simple verbs or adjectives." (Berman, 1984:142-3)

One problem with trying to simplify texts syntactically (whether for experimental purposes or to facilitate readability) is that it is difficult to change a text on one level without changing it on another. Simply breaking long sentences up into smaller ones while it may affect conventional readability indices does not make a text more readable. Thus making sentences shorter will necessarily increase the number of sentences thereby perhaps increasing the number of clausal relations which have to be inferred or explicitly signalled. The distance between anaphors and their antecedents may also increase rendering anaphor resolution more difficult.

It is also a common assumption that written language is more complex than spoken. Beaman has demonstrated that this is not the case. But one difference between written and spoken language which may cause difficulties is the increased lexical density manifested through non-finite subordinate clauses and complex noun phrases. (Halliday, 1979, cited in Beaman, 1984:50).

Many students learn English for scientific and technical purposes. The genres involved are often far different from much of what the students have previously been exposed to either in their own language or in the texts which have been used in their previous language learning activities. These genres are often characterised by nominalization of processes and the use of complex noun phrases (Bloor & Bloor, 1995:222). And it may be the case that any syntactic device to pack more propositional content into fewer words (e.g. nominalization, use of verbal nouns (Rutherford 1987:50,51)) contributes to processing difficulties.

2.3 Readability Analyser

A Readability Analyser is a fast text analyser which provides multiple indices for estimating the readability of a text. Unlike other indices, it does not rely on discredited methods which use word or sentence length, or syllable counts. Traditional indices provide no indication of where readability difficulties may lie in a text: they merely give a score for the entire text. The Readability Analyser relies on word collocation to generate indices of how well a text is written. It also provides colour coded clues as to how a text could be rendered more readable.


2.3.1 **Readability Test:** Readability tests, readability formulas, or readability metrics are formulae for evaluating the readability of text, usually by counting syllables, words, and sentences. Readability tests are often used as an alternative to conducting an actual statistical survey of human readers of the subject text (a *readability survey*). Word processing applications often have in-built readability tests, which can be deployed on documents in-editing.

The main function of readability tests is to give a quick assessment about the density of writing. Readability tests cannot tell how easily a reader can understand the information in the text. Yet, the application of a useful readability test protocol will give a rough indication of a work's readability, with accuracy increasing when finding the average readability of a large number of works. The tests generate a score based on characteristics such as statistical average word length (which is used as an unreliable proxy for semantic difficulty) and sentence length (as an unreliable proxy for syntactic complexity) of the work.

Some readability formulas refer to a list of words graded for difficulty. These formulas attempt to overcome the fact that some words, like "television", are well known to younger children, but have many syllables. In practice, however, the utility of simple word and sentence length measures make them more popular for readability formulas. Scores are compared with scales based on judged linguistic difficulty or reading grade level. Many readability formulas measure word length in syllables rather than letters, but only SMOG has a computerized readability program incorporating an accurate syllable counter.

Since readability formulas do not directly take syntactic or semantic complexity into account, they are not considered definitive measures of readability.

Legibility is closely related to readability. ASTM D7298, Standard Test Method for Measurement of Comparative Legibility by Means of Polarizing Filter Instrumentation, is *one test method* for determining the ability to read printed material.

Readability tests can be performed manually by counting and doing a mathematical calculation, or by using word-processing software. There are several popular readability tests and indexes, viz.,

v. Accelerated Reader ATOS
vi. Automated Readability Index (ARI)
vii. Coleman-Liau Index
viii. Dale-Chall Readability Formula
ix. Flesch-Kincaid readability tests:
x. Flesch Reading Ease
xi. Flesch–Kincaid Grade Level
xii. Fry Readability Formula
xiii. Gunning-Fog Index
xiv. Lexile Framework for Reading
xv. Linsear Write
xvi. LIX
xvii. Raygor Estimate Graph
xviii. SMOG (Simple Measure Of Gobbledygook)
xix. Spache Readability Formula

Let us now see some of the tests and indexes in some detail.

**ATOS:** Accelerated Reader (AR) is a daily progress monitoring software assessment in wide use by primary and secondary schools for monitoring the practice of reading. It was created by Renaissance Learning, Inc. Currently, there are two versions: a desktop version and a web-based version in Renaissance Place, which hosts the company’s web software for Accelerated Reader and a number of other software products (e.g. Accelerated Math).

Accelerated Reader is an assessment that primarily determines whether or not a child has read a book. The software provides additional information to students regarding reading rates, amount of reading, and other variables related to reading. Renaissance Learning does not require or advocate the use of incentives with the assessment, although it is a common misperception.

There are three steps to using Accelerated Reader. First, students choose and read a fiction or non-fiction book, textbook, or magazine. Teachers monitor reading including guided, paired, literature-based, and textbook reading. Second, students take a quiz. Teachers can create their own quizzes for those not available in Accelerated Reader. Third, the teacher receives information that is intended to assist, motivate reading, monitor progress, and target instruction. Reports regarding reading level and comprehension skills are available through the software.

ATOS, similar to Lexile is a readability formula that results in a readability level for books. Unlike Lexile, ATOS is an open and free to use readability level. The purpose of ATOS is to assist with guiding students to books suited to
their reading abilities. Renaissance Learning reports that "ATOS is the first formula to include statistics from actual student book-reading (more than 30,000 students, reading almost 1,000,000 books), not just data based on short test passages." Books with quizzes in Accelerated Reader are analyzed during the quiz creation process and assigned an ATOS readability level.

Specifically, ATOS Readability Formula for Books is the readability formula that provides reading levels based on the entire contents of books. ATOS for Books with Estimated Word Count is a variation of the original formula that does not require the entire text of a book (it requires at least 3 samples of 150 words and an estimate of the entire book's word count). ATOS for Text is a formula for short stories, magazine and newspaper articles, test items, and other materials. The ATOS Analyzer is software that "provides an ATOS reading level for text submitted for analysis."

ARI: The Automated Readability Index (ARI) is a readability test designed to gauge the understandability of a text. Like the Flesch-Kincaid Grade Level, Gunning Fog Index, SMOG Index, Fry Readability Formula, and Coleman-Liau Index, it produces an approximate representation of the US grade level needed to comprehend the text.

The formula for calculating the Automated Readability Index is given below:

As a rough guide, US grade level 1 corresponds to ages 6 to 8. Reading level grade 8 corresponds to the typical reading level of a 14 year-old US child. Grade 12, the highest US secondary school grade before college, corresponds to the reading level of a 17 year-old.

Unlike the other indices, the ARI, along with the Coleman-Liau, relies on a factor of characters per word, instead of the usual syllables per word. Although opinion varies on its accuracy as compared to the syllables/word and complex words indices, characters/word is often faster to calculate, as the number of characters is more readily and accurately counted by computer programs than syllables.

Gunning-Fog Index: To calculate the Gunning Fog Index of a passage, do the following:

- Count the number of words in the paragraph: W
- Count the number of sentences in the paragraph: S
- Count the number of words of three syllables or more: T
- Apply the following formula: \[
\text{Gunning-Fog Index} = \left(\frac{W}{S} + \frac{T}{W \times 100}\right) \times 0.4
\]
The Gunning Fog Index gives the number of years of education that your reader needs to understand the paragraph. Typically, in technical documentation, aim for a Gunning Fog Index between 10 and 15. The Gunning Fog Index formula implies that short sentences written in plain English achieve a better score than long sentences written in complicated language.

**Flesch Reading Ease Scale:** The readability of a passage on the Flesch Reading Ease Scale can be calculated in the following way:

- Calculate the average sentence length: \( L \)
- Calculate the average number of syllables per word: \( N \)
- Calculate the score between 0 and 100%.

The higher the score, the easier the text is to understand. Aim to maximize the score. The Flesch Reading Ease Scale measures readability as follows:

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Very easy to read. Average sentence length is 12 words or less. No words of more than two syllables.</td>
</tr>
<tr>
<td>65</td>
<td>Plain English. Average sentence length is 15 to 20 words. Average word has two syllables.</td>
</tr>
<tr>
<td>0</td>
<td>Extremely difficult to read. Average sentence length is 37 words. Average word has more than two syllables.</td>
</tr>
</tbody>
</table>

**Flesch-Kincaid Grade Index:** This index computes readability based on the average number of syllables per word and the average number of words per sentence. The score indicates the number of years of combined primary and secondary education that a reader needs to understand a text. For example, a score of 8.0 means that a reader can understand the text after eight years of combined primary and secondary education. Standard writing achieves around 7.0 to 8.0 on the Flesch-Kincaid Index.

**2.4 Uses of Readability:** Readability is important in at least four main areas, viz.,

- Improving the accessibility of website texts.
- Providing comprehensible input for language learning purposes;
- Providing criteria for the selection, adaptation or writing of materials for content instruction;
- Comparing texts used for examination purposes;
1. Improving the accessibility of website texts: The W3C Web Content Accessibility Guideline 14 states: "Ensure that documents are clear and simple so that they may be more easily understood.

Consistent page layout, recognizable graphics, and easy to understand language benefit all users. In particular, they help people with cognitive disabilities or who have difficulty reading. (However, ensure that images have text equivalents for people who are blind, have low vision, or for any user who cannot or has chosen not to view graphics.)

Using clear and simple language promotes effective communication. Access to written information can be difficult for people who have cognitive or learning disabilities. Using clear and simple language also benefits people whose first language differs from your own, including those people who communicate primarily in sign language.

14.1 Use the clearest and simplest language appropriate for a site's content. [Priority1]

14.2 Supplement text with graphic or auditory presentations where they will facilitate comprehension of the page. [Priority3]

14.3 Create a style of presentation that is consistent across pages. [Priority3]"

The W3C Core Techniques for Web Content Accessibility Guidelines 1.0 include the following recommendations:

"5.1 Writing Style

The following writing style suggestions should help make the content of your site easier to read for everyone, especially people with reading and/or cognitive disabilities. Several guides ... discuss these and other writing style issues in more detail.

- Strive for clear and accurate headings and link descriptions. This includes using link phrases that are terse and that make sense when read out of context or as part of a series of links (Some users browse by jumping from link to link and listening only to link text.) Use informative headings so that users can scan a page quickly for information rather than reading it in detail.

- State the topic of the sentence or paragraph at the beginning of the sentence or paragraph (this is called "front-loading"). This will help both people who are skimming visually, but also people who use speech synthesizers. "Skimming" with speech currently means that the user jumps from heading to heading, or paragraph to paragraph and listens to just enough words to determine whether the current chunk of information (heading, paragraph, link, etc.) interests them.

If the main idea of the paragraph is in the middle or at the end, speech users may have to listen to most of the document before finding what they want.
Depending on what the user is looking for and how much they know about the topic, search features may also help users locate content more quickly.

- Limit each paragraph to one main idea.
- Avoid slang, jargon, and specialized meanings of familiar words, unless defined within your document.
- Favor words that are commonly used. For example, use "begin" rather than "commence" or use "try" rather than "endeavor."
- Use active rather than passive verbs.
- Avoid complex sentence structures.

*To help determine whether your document is easy to read, consider using the Gunning-Fog reading measure .... This algorithm generally produces a lower score when content is easier to read. As example results, the Bible, Shakespeare, Mark Twain, and TV Guide all have Fog indexes of about 6. Time, Newsweek, and the Wall St. Journal an average Fog index of about 11.*

However, using the Gunning-Fog reading measure has its limitations, as discussed elsewhere. Using the Readability Analyser provides a better index and a visible means of seeing where text readability problems may lie.

2. **Providing comprehensible input:** Even without invoking the input hypothesis (Krashen, 1985), it is obvious that learners cannot learn through reading if what they are trying to read is almost incomprehensible. Even trying to read material which is accessible with difficulty is likely to be demotivating unless the reader is spurred on by special interest or aided by a great deal of relevant background knowledge. Demotivation soon leads to abandonment of the effort. But reading provides some learners with most of their best input for learning purposes. Providing reading material at the right level not only provides input from which students can learn, it provides more of it since reading efficiency is enhanced and more is read. Readers can get a sense of achievement from reading longer stretches of text and success breeds success. For these reasons finding suitable texts is extremely important and probably more important than providing the variety of text types often found in L2 reading materials.

"Krashen suggests that "narrow reading, and perhaps narrow input in general, is more efficient for second language acquisition" (Krashen 1981:23). Reading teachers usually provide short and varied selections which never allow students to adjust to an author's style, to become familiar with the specialized vocabulary of the topic, or to develop enough context to facilitate comprehension. Rather, such selections force students to move from frustration to frustration." (Carrell & Eisterhold 1988:86)

Finding suitable texts, of interest to the reader and at a suitable level of difficulty is extremely important. Using the Readability Analyser can assist in
finding texts of a suitable level and, if necessary help in the adaptation of these texts.

3. Content Instruction: Many (perhaps most) learners of English as a second language need English for access to content. "the provision of comprehensible input to non-native learners is the principal task of teachers, not only in second or foreign language classrooms, but also in many other educational programs throughout the world in which L2 learners must learn subject matter via the medium of L2." (Chaudron 1983:440)

In many educational and training establishments thought is given to the comprehensibility of textbooks and training materials. Many teaching materials (for content instruction) are also written or adapted in these institutions with particular students in mind. An awareness of the factors which influence comprehensibility can help materials writers produce better instructional materials. Although it is not the place of language teachers to say how subject matter should be taught, they can help to sensitise subject matter instructors to the difficulties students have in learning in a second language and make suggestions as to how instructional materials can be made more accessible. A strong case has also been made for content based language instruction, (Brinton, Snow & Wesche, 1989) and teachers need to be able to assess the difficulty of content based materials in order to decide what difficulties their students are likely to encounter with such texts, how to use them for language learning purposes and how to make them more accessible (not necessarily by altering the texts themselves).

Using the Readability Analyser can assist in writing or adapting instructional materials at suitable level.

4. Testing reading comprehension: Factors which affect readability must be taken into account in the testing of reading comprehension. First of all there is the question of trying to ensure that parallel tests are equivalent. Different texts used in parallel tests have to be shown to be of equivalent difficulty. Along with other factors, this will clearly affect the reliability of the tests. The effect of background knowledge on performance in reading tests will also have an effect on results (Perkins & Jones, 1985; Perkins & Brutten, 1988; Alderson & Urquhart, 1988), as may cultural knowledge:

"Another area in which the impact of cultural differences has been recognized is testing. In discussing the assessment of oral language proficiency and language dominance, Burt and Dulay (1978) point out that background information is a factor that must be considered: In order not to confound linguistic proficiency and knowledge of the world, the content of a language measure...... must not be outside the experience of the students being tested, not
Cultural factors may be said to include expectations about text structure (Floyd & Carrell, 1987; Johnson, 1981) and reading strategies (Pritchard, 1990; Parry, 1996) so tests should also take account of the different populations of students taking the test.

Much of this is not new. Such considerations were pointed out by Steffensen & Joag-Dev in 1984:

"Recent TESL and foreign-language pedagogy has moved away from the idea that comprehension involves abstracting meaning that is in some sense present on the page and is recognizing the creative contribution made by the reader. Interference is now understood as extending beyond the affective domain to the denotative values of words, and the propositional content at the sentence and text level.

While such an awareness is a major step forward, teachers, publishers and test developers can move beyond recognizing interference to minimizing it and maximizing students' success in bridging to the target culture. Text developers can perform an important service by employing writers with a detailed (or native) knowledge of the students' cultural background to produce reading materials and by using ethnic reviewers to screen out potential misunderstandings. Finally, evaluators must recognize that tests will more accurately reflect the reading ability of non-native groups vis-à-vis their native speaking peers if passages with heavy cultural loadings are avoided." (Steffensen & Joag-Dev 1984:61)

2.5 Summary

In this unit, we have learnt the concept of readability of text. We have also seen what are the factors that affect the readability of text viz., the physical factors, reader factors, text cohesion, text coherence, syntax etc. We have also learnt that the readability of text can be measured, if not accurately, up to certain extent, in order to get an idea of how readable is the text in context. Various readability tests and indices were also discussed. If these factors are kept in mind while writing a text, it will be more purposeful and useful.

2.6 Self Check Exercise

- Write a note and readability and text.
- Describe in detail the physical factors affecting readability.
• Write a detailed note about the reader’s factor that affects readability.
• How does syntax affect readability?
• What is the role of text coherence and text cohesion in readability?
• Explain the relationship between text structure and readability.
• What do you understand by readability analyzer?
• What is the importance of readability testing? How will it be helpful?
• Name various readability tests and indices.
• Explain any two readability tests.
1.0 Introduction

Technical writing is an umbrella term for numerous types of writing, including theses, dissertations, journal articles, reports,
periodicals, even formal e-mails... the list goes on. But usually the author is trying to inform the audience, the writing is formal, the work non-fiction, and they follow a certain format. Everyone starts technical writing as early as elementary school, with book reports and essay plans. These days, most technical jobs (especially in engineering, science, and technology) involve some form of writing, from operations/training manuals to website pages to letters to clients; technical writing is a large area. This blog will indicate the highlights of what it is all about.

As technical writing generally involves instructions or explanations, the writing is always formal. There is no informal, everyday speech language (i.e., I’ll, won’t, can’t). The writing style is direct and exact – tells the audience clearly and concisely what they need to know. Assume that the audience knows nothing of the subject matter (i.e., that your knowledge is greater than theirs), and so justify and explain where necessary. Use the minimum amount of words possible (no wordy explanations); your audience are busy people who want to learn the information quickly and precisely. Use the active voice – as well as being definite, this cuts down on wordiness. (A word of caution here, this is not always possible, especially in some types of document, but use where you can.)

Usually reference material is involved and needs to be incorporated in such a way – as a reference list or end/footnotes – such that the reader can easily find it if need be. ALL abbreviations must be defined so that the reader knows exactly what is being referred to.

For instructional manuals or report writing, companies and schools normally have a set template that needs to be adhered to – for schools that could be APA, MLA, or Chicago. This ensures that every paper or set of instructions are uniform and all blend together – this is especially important for the overall image of a company.
So for technical writing, be concise, informative, formal and main the same format the Technical writing can be a very useful form of writing and communication for projects, lab reports, instructions, diagrams, and many other forms of professional writing. It can be helpful to take a course in technical writing because through spending extensive time studying how to perfect the style of writing, it can help engineers become much better at the skill and be able to better communicate with individuals about how do to something or explain what they are doing. Since a lot of the work that electrical engineers do is largely based upon technical documents, such as designing audio equipment, which uses many different types of parts, this could help improve both the ability to comprehend and write the documents. In order to design electronic equipment, a lot of reviewing of data sheets is necessary, and being able to read these is very important. Also, many engineers are required to write detailed reports on the work that they are doing, and through a technical writing course. We would better be able to write in a way that could connect with managers and help them understand better what tasks and goals they are trying to accomplish.

In order for an employee to reach their maximum strength in a skill, it would be useful to take a class to improve their knowledge of the topic. Through taking a course in technical writing, electrical engineers could better understand how to make instructions for projects and explain to others the purpose and outcome of projects. In electrical engineering, there are many projects that require extremely detailed instruction, and in order for uninformed people to understand this instruction, it has to be written in a clear, concise way. Through a course in technical writing, it could help for you to become very good at writing these types of documents and create a much more effective work environment. With better technical
documents, things would be able to be communicated more quickly, efficiently, and productively.

1.1 Objectives
After going through this unit you will be able to:
- To define the Aberrations
- Mistakes in Technical Writing
- Mistakes to avoid in Technical Writing
- Rules of writing and effective writing

1.2 Importance of Technical Writings

The teams or departments that deal with technical writing are often referred to as Information Development, User Assistance, Technical Documentation, or As for the technical writers, they are referred to as API Writers, information developers, documentation specialists, documentation engineers, or technical content developers. Advanced technical writers, who have gathered experience through experience shift to for specialized fields such as API writing, information architecture or documentation management.

It was not until 1953 that two companies were actually formed that took forward the practice of technical writing and improved on it. These companies were: the Society of Technical Writers, and the Association of Technical Writers and Editors. Finally, it was in 1957 that these two organizations decided to merge and thus, the Society of Technical Writers and Editors was formed. This organization is currently known as the Society for Technical Communication (STC).

Technical writing is a medium through which particular information is conveyed to a target audience for some pre-conceived purpose.
Technical writing is a mode of communication, a kind of intermediate between the manufactures and the audience. It translates complex technical language into instructions that are delivered in simple language so that they may be helpful to the consumers and may enable them to perform their tasks properly. It is not necessary that this technical information be conveyed only to people related to the technical field. Therefore, technical writers should always keep in mind that their write-ups must be comprehensible to the people with non-technical backgrounds. Hence, technical writing must use explanatory yet simple language. It is very important to understand the goals and the mind set of target audience so that they can convey their messages easily. In the recent times Technical Writing has become very important in the fields of computer hardware and software, chemistry, the aerospace industry, robotics, finance, consumer electronics, and biotechnology. It is the method by which technical information on any topic is exchanged from one person to another. Hence, it is also known as technical communication.

1.3 ABERRATIONS

In general sense the aberration means the act of departing from the right, normal, or usual course; the act of deviating from the ordinary, usual, or normal type; deviation from truth or moral correctness; the act of wandering; deviation from the natural state, or from a type; or, a partial alienation of reason. It can be further defined by George Gopen and Judith Swan as “The fundamental
purpose of technical writing is not the mere presentation of information and thought but rather its actual communication. It does not matter how pleased an author might be to have converted all the right data into sentences and paragraphs; it matters only whether a large majority of the reading audience accurately perceives what the author had in mind.”

Technical writers come at each new project with a mission: to deliver clear, concise instructions for their readers. Advanced and beginning technical writers alike can find themselves struggling with a few common mistakes. When a writer chooses the wrong word or format, their readers might become frustrated or lost in a foreign subject matter. Technical writer responsibilities include creating a smooth reading experience. There are several problem areas that could compromise that ideal experience for a beginner.

1.4 Technical Writing Mistake

1.41 Using an Advanced Vocabulary

If a technical writer is too familiar with his subject matter, jargon might start creeping into his copy. On the other hand, freelance technical writers with little experience will often begin quoting complex words from the subject-matter expert (SME) to cover for their own lack of knowledge. Both situations result in a struggling reader. Writers who recognize this problem in their work should try reading the finished project to a friend or family member with no background in the area. Ask them to point out which words went straight over their heads, then edit accordingly.
1.42 Lack of Preparation

Technical writers who find themselves pressed for time might begin a project before adequately researching their topic. Writers who don't understand their own words can hardly expect their readers to grasp new concepts. In the long run this short cut can actually add extra time to a project. The technical writer might realize half way through his work that he misrepresented a crucial concept in the beginning. Even if that pit fall is avoided, half-hearted attempts will rarely squeeze by without requests for revisions, and repeat assignments from the same client will be unlikely.

1.43 Overusing Pronouns and Passive Voice

These rules of good style not only reflect the writer's skill level, they also provide a clear reading experience. Bad technical writing uses passive sentences that skip over important information. Excessive pronouns can also leave the reader confused and wondering what "it" might refer to this time. Use specific words and action verbs to communicate clearly.

1.44 Skipping the Glossary

Glossaries might not always be required, but they are almost always a good idea. Technical writers should not assume that the readers will remember every technical term or acronym the first time it is introduced. Rather than having to explain the same terms several times, create a alphabetical glossary that can be referenced whenever needed.
Technical writers on all levels of experience and education should make a regular effort to improve their skills, and brush up on technical writing tips. Even the best technical writers can become so entrenched in a specific industry that they forget what common knowledge to the outside world is. A habitual self-review for bad habits and confusing language will keep technical writers on their toes and communicating efficiently.

### 1.5 MISTAKES TO AVOID

Inexperienced technical writers typically make a number of avoidable mistakes, including parroting the SME and hard-coding cross-references (x-refs). Here is a description of the mistakes to avoid.

#### 1.5.1 Not Understanding the Product or Application

This problem takes two forms: In the first, the subject-matter experts (SMEs) write the preliminary documentation, and then the writer does nothing but edit it (this is the worst kind of writer and I am assuming that, if you are reading this, you are not one of them). In the second, the writer does all the writing, but repeats verbatim the words of the SME in the document. Technical writers know they've done this when they write sentences that they don't fully understand.

When you review your document, try to read it from the user's point of view. Imagine that you are reading it for the first time. If your document contains any sentences that you don't understand, assume that your reader won't understand them either. Rewrite them.

#### 1.5.2 Parroting the Subject-Matter Expert (SME)

All professions and companies have a vocabulary that is meaningful only to those in the company or the profession. A common mistake
among both SMEs and writers is to assume that the user understands the vocabulary.

To illustrate, I once shared an office with a software developer who was in charge of seeing that the separate parts of the application worked together. Every so often, someone would come in to report that a particular software function had abended. When I asked these people what abended meant, they were at such a complete loss for words it was as though I had asked them to define the word and. I could see that abend held so much meaning for them that they were unable to condense all of its concepts into a single definition.

A short time later, I reviewed a document that contained the word abend. I called in the writer and asked him what it meant. He looked me in the eye and said, "I don't know," thus providing me with a golden opportunity to give my "Don't parrot the SME speech," which is:

As technical writers, it is our job to translate the complex and puzzling into something that everyone and anyone can understand. You and I represent Joe User. If you don't understand something, it is a sure bet that Joe User won't understand it either. Never repeat verbatim the words of the SME. Always ask for clarification.

Now I know it is embarrassing to stand in front of the SME asking questions that the SME clearly regards as stupid, but sometimes it's the only way to get information. You have to persist. And if you can't get the information from the SME, then you have to do other kinds of research. Check the Internet, go the library, read the standards. Do whatever it takes to ensure that each word, sentence, and paragraph in your document is meaningful to everyone.

Notice that my "Don't parrot the SME speech" also contains a concise definition of technical writing:
Technical writers translate the complex and puzzling into something that everyone and anyone can understand.

1.53 Working without a Plan

When you work without a plan, you create extra work for yourself or for someone else later on. Without a plan, you will find that new information cannot easily be incorporated into your documents as the project progresses or when the software is revised. In fact, without a plan, you will run into a host of problems. Your plan should include:

- a list of the documents or chapters that will be written, usually:
  - product description
  - installation guide
  - configuration guide
  - user guide (or system administration guide)
  - others
- the file-naming conventions that will be used
- the location in the network where the documents will be stored
- the method by which the documentation will be delivered to the customer, e.g.:
  - shipped (hard copy)
  - shipped (CD)
  - downloaded from a server
  - integrated with the application
- the method by which the customer will access the documentation, e.g.:
  - from a binder
  - from a web page or CD
  - through a help button in a GUI
As you begin to understand the product or application you are documenting, you must also plan the documents themselves:

- the look and feel of each document in relation to itself and to the other documents in the suite
- the content that will be the same in each document (boilerplate)
- the content of each document and chapter
- the order in which the information is to be presented

No Document-Numbering Plan

Most companies do in fact number their documents, but the number, such as CQZ3391-Y, is often meaningless. Since one of the purposes of a numbering plan is to make it easy for the ordering center to assemble a product and ship it to the customer, you should create a numbering plan that makes sense. A more intuitive numbering plan, therefore, is xxx-yyy-zzz, where:

- xxx is the application name
- yyy is the node name
- zzz is the product (hardware, software, or document) name

Thus, continuing with our network application example above, let's say that the QDO application is given the number of 654, the BBB node is given the number 175, and the IB node is given the number 176. All BBB products associated with the QDO application will be numbered 654-175-zzz (I'll get to the zzz in a moment) and all IB products will be numbered 654-176-zzz.

Now let's say that, for every node your company produces, you will create one or more of the following documents:

- product description
- site preparation guide
- acceptance testing procedures
- installation guide
- configuration guide
- user guide
- command reference guide
- alarms and notifications guide
- troubleshooting guide
- maintenance procedures

You can specify that each one of these documents will have a specific number. All of your company's product descriptions might be numbered, say, 801, and all site preparation guides 802. Number the remaining documents consecutively. With this numbering plan, the product description for the BBB node will be numbered 654-175-801, the product description for the IB node will be numbered 654-176-801, and the maintenance procedures will be numbered 654-yyy-810.

The document number should be displayed in your document. In my documents, I put the document number on the title page and in the footers.

No Revision-Numbering Plan

The revision number indicates which version of the document the customer is using, and which version you are writing. It is a good idea to have two sections to your revision number. The first part indicates the version of the application, and the second part indicates the revision number of the document. Thus:

- Version 1.0 is the original version of the document for the first version of the product or application
- Version 1.1 is the first revision
- Version 1.8 is the eighth revision
- Version 2.0 is a completely new release of the document for the second version of the product or application
The revision number should be displayed in your document. In my documents, I put the revision number on the title page and in the footers.

1.54 Not Using a Template

Of the many companies I have worked for over the years, nine of them were large enough and old enough to have fully developed templates, but only two of them did. Considering how much time (which, in business, is money) is saved by the use of templates, I am amazed that more companies don't use them.

Many people think that a template defines only the paragraph styles used in a document. In fact, a well-designed template contains not only paragraph styles, but also the layout for every page element (headers, footers, headings, tables, paragraphs, steps, notes, precautionary messages, etc.) and every book element (front cover, title page, TOC, chapters, glossary, back cover, etc.). All of these elements require a great deal of thought and quite a lot of time to design so that the template is easy for the writer to use and easy for the user to read.

If you design your documents from scratch for every project, they are likely to be poorly designed. Furthermore, the time you spend designing the templates must be added to the cost of each project, as well as the extra writing time demanded by a poorly designed document.

Templates create focus and reduce the amount of work. If you are documenting an application's alarm-clearing procedures, for example, you will find the job much easier if you are working with an alarm-clearing-procedures template. By pre-designing a document from cover to cover, and by including boilerplate text wherever possible, you allow writers to focus on the content of the document and not on its design.
Templates reduce errors. For example, the title of a book generally appears in several places throughout the document, such as on the front cover, on the title page, in the footers, and on the back cover. The problem is that book titles have a tendency to change several times during a project. Technical writers usually remember to change the title on the cover page, but often forget to change the title page, footers, and back cover. Templates allow you to link these elements so that if one element changes, all of the related elements change automatically.

Templates are reusable. Once you have created the first set of templates, you never have to create them again. You can reuse them in every project after that.

Templates establish your company's corporate brand in the marketplace. When documents are created from scratch for each project, every document you send to your customers will have a different look and feel. Why not create a template that allows customers to recognize your excellent documentation?

Templates help your customers feel comfortable. Unlike marketing documents, which are intended to impress your customers with your way-ahead-of-the-competition style, technical documents should reassure your customers with their predictability, comfort, and ease of use. Templates create a consistent style, which helps your customers know what they will find in your documents.

**Using a One-Size-Fits-All Template**

Of the companies that do create templates, many create a single template that is intended to be used for all documents, whether the document is a product description, for example, or a command reference guide. Such a template can become a constant source of irritation because it never quite suits its purpose. There are always more paragraph styles than are required in any one document and
these must continually be tweaked to meet the purpose of the
document. For example, a command reference guide needs styles
for commands, command responses, and parameters, but a product
description does not. Similarly, procedural documents such as
installation guides require styles for numbered steps, but a product
description does not. Furthermore, some documents—command
reference guides, for instance—often require narrower margins than
the other documents in the suite.
Rather than creating a single, multi-purpose template, create a
template for each type of document. While the look and feel of all
the documents should appear to be the same from the user's point of
view, subtle differences in the design of the templates will make the
documents easier to write.
Using a Bells-and-Whistles Template
Many companies do not have the skills in house to design their own
templates and so they outsource the job to another company. The
first mistake many of these outsourced companies make is to design
a single template, as described above. The second mistake they
make is to add so many unnecessary features to the template that it
is impossible to use.
I once worked for a telecommunications corporation that, despite its
longevity and size, was only just beginning to develop its policies
and procedures for document creation. At one point, the company
sent out a template to the writers, saying that we were required to
use it from now on. It had all sorts of fancy features like grid marks,
crop marks, tables to be used in this kind of document, tables to be
used in that, headings for this and headings for that, all kinds of
automatic document-management features (none of which worked),
and much, much more. Unfortunately, none of us could figure out
how to use it, and so we didn't.
It must have cost a small fortune to create such a feature-rich template, particularly since the work was not done in house, but outsourced to another company. I am told that the template is still not in use. What a waste of money!

A template should not only ensure that the documentation has the same look and feel, but it should also make the task of writing easier. The greater the number of fancy design features in a template, the more difficult it is for the writer to use. And since fancy design features do not benefit the customer by making the documentation easier to read, they are completely unnecessary.

You should design a template for each type of document your company creates. Each template should be designed so that it is easy to use. If this is the first time you have created templates, expect to spend about one month designing the first template and a week or two on the others. Expect to spend more time if you also plan to add boilerplate text to your templates. You will probably find that you have to tweak the templates frequently as you write the first version of the documentation. For example, if the standard text area in your templates is 6.5 inches, you might discover that commands are too long to fit. In this situation, you might decide that documents containing commands should have a text area of 7.5 inches.

For help in designing your templates, one of the first things you can do is open any reference book and examine how the publisher has designed it. Notice the position of the book elements and the page elements, then try to recreate them in your templates. Once you are an experienced template designer, you will find that you can create a whole suite of templates in less than a month. If you are a consultant, template design is an excellent skill to have and one that you will use frequently!
1.55 Hard-Coding the Table of Contents, Cross-References, and Caption Numbers

This error is the hallmark of the inexperienced writer. If you hard-code the table of contents (TOC), cross-references (x-refs), and caption numbers (i.e. you type them by hand rather than letting your desktop publishing software create them), they will be out of date, if not by the time your document is released, then as soon as it is updated by someone else. If you don't know how to create these things electronically, consult the help files of your desktop publishing software.

1.56 Multiple Tab Stops

This problem does not affect the user, but it irritates anyone who has to update your documents. This problem is often seen in longer system responses, such as

<table>
<thead>
<tr>
<th>Service</th>
<th>#</th>
<th>XCon</th>
<th>Working Path</th>
<th>WTR</th>
<th>Actual Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSL1</td>
<td>1</td>
<td>BR</td>
<td>OC-1</td>
<td>5</td>
<td>Working</td>
</tr>
</tbody>
</table>

Inexperienced writers tend to use the desktop publishing software’s default tab stops to align the columns in system responses, which can result in multiple tab stops between the text elements. But let's say that, in the next version of the software, another column of information is added in the middle of the system response. The writer will have to add, delete, or re-set all of the tab stops in order to realign the columns.

Always delete extra tab stops so that there is only one between each text element.

No Glossary

Many companies regard glossaries as nice to have rather than essential. But try to imagine reading your document for the first time. All those acronyms and technical terms increase the reading
difficulty of your document a thousand fold. Actually, maybe it's only a hundredfold. Regardless, out of compassion for your bewildered and busy reader, include a glossary with your document.

**Putting Information in the Wrong Order**

In step-action procedures, many writers first tell the user what to do, and then they tell them where to do it. In fact, you should first tell the user where to do the task, and then tell them what to do. This is called "situating the user."

Example

Incorrect: Select Style from the Format menu.
Correct: On the Format menu, select Style.

In non-procedural documents, start with the big picture and then narrow in on the details. For example, in the product description for the BBB, you would start by describing the QDO. You would then describe the BBB node's relationship with QDO and its relationship with the other nodes in the network. Each chapter begins with a short summary of the contents of the chapter, as illustrated in the following "quotation" from the first chapter of the non-existent QDO BBB Node Product Description:

The BBB node manages communication among the four nodes of the QDO network. The four nodes are:

- BBB
- QETO
- IB
- PBN

This chapter describes the QDO network and provides an overview of the functions of the four nodes.

**1.57 General Mistakes**

**Poor Spelling**
When you consider that the spell-check function has been around since the beginning of desktop publishing history, it is amazing that more people don't use it. I know I can't spell, and since the user guide for a popular help-authoring tool contains several spelling errors, I know that other writers can't either. There is no excuse for releasing documents that contain spelling errors. Do a spell-check!

**Future Tense**

Inexperienced writers often describe an application's response to the user's input as though it happens in the future. For example, they might write, "When you press Enter, a warning message will appear." In technical documentation, nothing happens in the future! The future tense causes the reader to worry. When will the message appear? What if it doesn't appear?

Always write in the present tense: "When you press Enter, a warning message appears."

Perhaps you are saying to yourself, "Well that would be fine if our warning messages took less than ten seconds to appear on the screen. That definitely requires the future tense!" Wrong. In such a situation, you would write, "When you press Enter, a warning message appears on the screen after ten seconds have elapsed."

Better yet, write this as a step-action procedure:

1. Press Enter. After ten seconds, a warning message appears.

**Conditional Tense**

I wouldn't be talking about this problem if I'd never seen it, but it is quite rare. The use of the conditional tense can occur in documents that are written before the application is complete—when the development team is not entirely sure how the application will respond to the user's input. For example, the SME might tell you, "When the user presses the ENTER key, a warning message should
appear on the screen." Unless you hear otherwise, always assume that the warning message does in fact appear. Of course, you should occasionally ask the SME to confirm that the application responds as described.

Contractions
Contractions are acceptable in many documents, including letters and web sites. Contractions help you to appear friendly and approachable. But the readers of a technical document will never regard you as friendly and approachable, no matter what you do. In fact, a friendly and approachable style in a technical document could make your readers feel patronized. Always use a formal style in technical documents.

Non-Parallel Structure In Bulleted Lists
Begin each item in a bulleted list with a word of the same grammatical type. If the first item in a list begins with a verb, for example, then all the items in the list must begin with a verb.

Uncertain Punctuation in Bulleted Lists
Do not use a period after items in a bulleted list unless they are complete sentences. But, if the list contains a mixture of clauses and complete sentences, put a period at the end of each list item.

Do not use the style wherein each list item ends with a semicolon, the penultimate item ends with a semicolon followed by the word and, and the final entry ends with a period.

Unclear Antecedent ("This")
Do not begin a sentence with the word This unless its antecedent is obvious.

Example
Incorrect: Put on the wrist strap that is attached to the equipment shelf. This prevents static from damaging the circuit board.
Correct: Put on the wrist strap that is attached to the equipment shelf. The wrist strap prevents static from damaging the circuit board.

Chapter Number Precedes Page Number
Do not use the page-numbering style wherein the chapter number precedes the page number. This style makes it hard for users to find a particular page. This page-numbering style made sense when only hard-copy documents were delivered to the customer because it allowed companies to release updates without having to reprint the whole document. Nowadays, however, the cost of sending hard-copy documentation to the customer is prohibitive and most companies therefore prefer to deliver their documentation electronically. Unless your company sends out hard-copy documentation, use consecutive page numbers.

And/Or
Do not use and/or in your sentences. It delays your readers by forcing them to parse the sentence in order to understand it. Instead, use . . . or . . . or both.

Example
Incorrect: Would you like sugar and/or milk with your coffee?
Correct: Would you like sugar or milk with your coffee, or both?

Jargon
All companies and all professions have their own vocabularies that should not be used in your documentation.

Examples
Incorrect: Abort the procedure.
Correct: Close the procedure.
Incorrect: Energize the VCR
Correct: Press the Power button on the VCR.
Incorrect: Kill the connection.
Correct: Close the connection.

Widowed Headings

All headings must be followed by text. Never place one heading directly after another without intervening text.

Incorrect Position of Warning Messages (Danger, Warning, Caution)

Any step that could cause injury, damage, or a loss of service or signal if performed carelessly or incorrectly must be preceded by a warning message. Do not place the warning after the step. Use Danger messages to prevent death or injury, Warning messages to prevent damage to equipment, and Caution messages to prevent a loss or degradation of signal or service.

1.6 RULES OF WRITING

1. To join two independent clauses, use a comma followed by a conjunction, a semicolon alone, or a semicolon followed by a sentence modifier.

2. Use commas to bracket nonrestrictive phrases, which are not essential to the sentence's meaning.

3. Do not use commas to bracket phrases that are essential to a sentence's meaning.
4. When beginning a sentence with an introductory phrase or an introductory (dependent) clause, include a comma.

5. To indicate possession, end a singular noun with an apostrophe followed by an "s". Otherwise, the noun's form seems plural.

6. Use proper punctuation to integrate a quotation into a sentence. If the introductory material is an independent clause, add the quotation after a colon. If the introductory material ends in "thinks," "saying," or some other verb indicating expression, use a comma.

7. Make the subject and verb agree with each other, not with a word that comes between them.

8. Be sure that a pronoun, a participial phrase, or an appositive refers clearly to the proper subject.

9. Use parallel construction to make a strong point and create a smooth flow.

10. Use the active voice unless you specifically need to use the passive.

11. Omit unnecessary words.

1.7 EFFECTIVE WRITING

Effective writing involves far more than following rules of grammar. There is a craft to creating phrases, sentences, and paragraphs that ensure communication. An editor, with the vantage point of a reader, can contribute to this craft by looking for opportunities to improve sentence structure.

Subjects and Verbs
A sentence can make three types of statements:
• A subject does something (active verb)
Researchers write reports.

- A subject has something done to it (passive verb)

The reports are reviewed by editors.

- A subject is equal to something else (linking verb)

Reports are Langley's research product.

In all three types of sentences, the subject and verb are the most important elements. Since the subject and verb are the most important elements in a sentence, improving their relationship, clarifying the subject, or making the verb more vigorous will improve the sentence.

Brevity and Conciseness

Technical writing should be concise, free of redundancy and unnecessary detail. Minimizing the number of words to achieve brevity does not necessarily result in conciseness and may destroy the emphasis, the pace, and perhaps the meaning of a passage. However, wordiness seems to be a common fault of technical writing, and editors should delete unnecessary or redundant words.

Wordiness

Many reference books contain sections containing lists of wordy, redundant, or trite expressions (for example, Skillin et al. 1974, p. 407ff; and Rowland 1962, chapter XIV). We suggest that writers and editors occasionally peruse such lists in order to remain sensitive to unnecessary wordiness.

Shortening Text

Occasionally, a passage may be wordy, to the point of being difficult to read, or it may exceed a limiting number of words (for
example, NASA limits abstracts to 200 words). Linton (1962) suggests five ways to economize:

Shortening Titles
Conciseness is especially important in titles; a short title improves the appearance of the cover and a precise title indicates what readers can expect to find inside the cover. Brevity and preciseness must be balanced so that in a minimum number of words, the title is correct (it presents the topic of the paper), complete (it expresses the limits of the paper), comprehensible (potential readers will understand it), and concise (it is as efficient as possible).

Comparisons
Comparisons are of major importance in technical writing; experimental results are compared with predictions, results at standard or control conditions with results at test conditions, full-scale data with model-scale data, and characteristics of one configuration with those of another. Such comparisons can be complicated and therefore should be expressed as simple, straightforward constructions.

1.8 The importance of information planning and design
When you need to get a User's Guide or a Help system ready for your product there's a great temptation to start writing straight away. It's often the case that creating the user documentation has been left to quite a late stage in the product development cycle anyway, so everything is in a rush. It's difficult for everyone concerned, particularly the technical writers. There is a better way.
The key to creating effective technical communication is understanding the user audience, and understanding the tasks they need to perform. The earlier you can start thinking about the
audience - and ideally meeting them as well - the better. The more you know about the people using your product and about their information needs the easier it is to meet those needs with documentation that gets read. Once you fully understand your audience's point of view - or the points of view of all your different audiences - explaining the technology in ways that are useful and meaningful becomes easy.

Planning ahead and designing your information can also offer opportunities for more efficient document development methods, such as single sourcing and content re-use, and adopting a standards-based approach.

Information Design

Well designed information may be hard to describe but it's easy to recognize. Perhaps you recently bought a sophisticated piece of technological equipment, such as a DVD recorder. It's possible that the recorder came with a detailed user manual and that although you tried your best you couldn't make head or tail of it. You just wanted to record a programme and you didn't have the patience to wade through a lot of irrelevant technical jargon. You can't use the recorder properly because you haven't been able to learn what to do from the manufacturer’s manual. That manual is an example of poorly designed information - it didn't take account of you, the end-user, or of what you wanted to do, or how and when you wanted to do it.

On the other hand, perhaps the DVD recorder came with a Quick Reference Card. On one side it showed you how to record a programme in three or four steps, and on the other side it showed you how to play back something you'd recorded. That's exactly what you needed - nothing more, nothing less. That's an example of well designed information.
Information design is an all-embracing approach to more effective communication. It brings together strands from many disciplines including graphic design, typography, cognitive psychology, linguistics and ergonomics, as well as writing and rhetoric. Information design can apply to much more than product documentation, for example the design of utility bills, product labeling, medicine package inserts, signage inside buildings and on the streets, and much more.

In the world of software systems, the term information architecture is often used to describe ways of providing better information systems by refining the electronic data processing systems that record, store, manipulate or generate information. Information design has very little to do with electronic systems themselves, but may make use of a range of electronic techniques to deliver information to users. Delivering complex systems of user information, for example delivering multiple versions of documents in multiple formats and languages requires extensive planning and design, and is sometimes also referred to as information architecture.

Information design is a task-based and user-centric approach for technical communication which focuses on user needs and user outcomes rather than on product development. Effective documentation helps people achieve their goals; in the same way that effective airport signage helps people catch their flights.

1.9 SUMMARY

This unit has been designed or developed to give an overview about aberration in technical writing, because technical writing is a special field. This unit deals with the Aberrations in technical writing and
the mistakes normally being made by the technical writers. These mistakes may be related with vocabulary, grammar and other important aspects such as using templates. This also covers the other important aspects such as Rules of Writing, Effective Writing and the importance of information planning and design.

1.10 **Self-check Exercise**

1. What is aberration?
2. What are mistakes normally a technical writer does? Explain with examples.
3. Write in detail about grammatical mistakes in technical writing.
4. Explain in detail about information design and planning.
UNIT 2

Technical Writing: Definition, Purpose, Characteristics, Functions & Structure

2.0 Introduction
2.1 Objectives
2.2 Definitions of Technical Writing
2.3 Basic Principles of Technical Writing
2.4 Main characteristics of technical communication
   2.41 Accessibility
   2.42 Usability
   2.43 Relevance
2.5 Purpose of Technical writing
2.6 Types of technical communication
2.7 Educational Aspects of Technical Communication
   2.71 Linguistic Intelligence
   2.72 Logical-Mathematical Intelligence
   2.73 Spatial Intelligence
   2.74 Bodily-Kinesthetic Intelligence
2.75 Intrapersonal and Interpersonal Intelligences
2.8 The "Reader" as Learner: A Culmination of Theory
2.9 Research in Technical Communication
2.10 Summary
2.11 Self-check Exercise
Technical writing is a craft that aims to provide technical, business or educational information. Technical writing is probably the most widely read form of written communication around, with the exception of advertising. In a general sense, technical writing includes the ‘how to’ of life. A recipe or the directions for operating a cell phone can be considered technical writing. Technical writing geared to the general public is only one small aspect of the field. Educational textbooks are also considered a form of technical writing. A photography textbook, for example, is technical writing that informs the reader about how to optimize lighting when photographing a subject or how to use a camera for special effects. The vast array of textbooks in the world all communicates information through technical writing with the sole purpose of instruction and education.

Whether information on technology, assembly instructions or owner’s manuals, technical writing aims to portray a message that is clear, concise and, most importantly, helpful to the readers that it is intended for. Although technical writing is very different from creative writing such as fiction and poetry, a technical writer must have a certain kind of creativity. Because technical writing is often dull, a good technical writer must come up with a way to engage the intended audience in order for the readers to understand and assimilate the information.

Technical writing is arguably more difficult than other forms of writing because of the fact that it must be clear and to the point. Good technical writing should not leave any room for imagination.
and it must anticipate and answer any questions or problems that may arise.

The origins of technical writing have been variously attributed to Ancient civilizations such as Indian, Greece, the Renaissance, and the mid-19th century. However, a clear trend towards the discipline can be seen from the First World War on, growing out of the need for technology-based documentation in the military, manufacturing, electronics, and aerospace industries. In 1953, two organizations concerned with improving the practice of technical communication were founded on the East Coast the Society of Technical Writers, and the Association of Technical Writers and Editors. These organizations merged in 1957 to form the Society of Technical Writers and Editors, a predecessor of the current Society for Technical Communication (STC).

2.1 Objectives

- To define the Technical Writing,
- Basic Principles of Technical Communication
- Various types of Technical Writing,
- To know the principle characteristics and functions,
- Basic structure of Technical Communication

2.2 DEFINITIONS OF TECHNICAL WRITING

Technical writing is a method of researching and creating information about technical processes or products. That information can then be distributed to users as printed manuals or online guides so they can perform tasks. Examples of technical writing include car repair manuals, help text for database software and FAQs for troubleshooting cameras.
Technical writing, a form of technical communication, is a style of formal writing used in fields as diverse as computer hardware and software, chemistry, the aerospace industry, robotics, finance, consumer electronics, and biotechnology.

A discipline which studies the methodologies, procedures and ways of preparing, structuring and managing information to be used in the production of technical documentation. Communication is part of the life of every creature on this planet.

How that communication is carried out however, is varied, and different types of communication are suitable based upon the type of information that needs to be conveyed. One specific area of communication involves transmitting, understanding and knowledge of a technical subject to others that need to know the basics and details of the subject in question. In written form, this communication type of communication is called technical writing. Technical writing refers to straightforward explanations and/or instructions dealing with a particular technical subject. The subject being written about may be abstract or tangible. Regardless, the writing must be easy to understand and follow. As with any writing project, the audience understands level must be considered in the development of the document. When writing about technical information, it is important to be concise and exact about your subject matter. The task assigned may be in the form of a help document for a piece of software or a machine or it may concern a process or way of performing a task. User manuals, assembly instructions, analysis reports or summaries of lengthy reports are all types of technical writing.
Technical writing rarely, if ever, is done in a manner that personalizes it. There are never references to the first person. The structure of the text is always done in a detached or third party reference point. The text is geared to teach information; therefore, the tone is that of a teacher instructing a student in the subject. This at times may appear as simply a list of steps to take to achieve the desired goal or may be a short or lengthy explanation of a concept or abstract idea. Most technical writers are not experts in the field about which they write about. They must gather the information from others that are experts. They may also obtain information about their topic from technical documents, reports, references and manuals. Upon synthesizing all the information gained, the writer must gauge their audience and the background that the reader has in the field being written about. Higher levels of education or experience will allow the document to be written referring to concepts, abbreviations, acronyms and terms commonly used in those that work in that field. For audiences that are determined to be novices or not familiar in the field, the writer must do much more explanation and education about the basics. He must assume that the audience has no knowledge in the topic about which he is writing. Depending on the type of document, these considerations may be more or less important. An example is a step-by-step guide for performing a specific task with a piece of software. As long as a person can follow written instructions, the document doesn’t require much technical description to accomplish the job, but for the more knowledgeable the descriptions can include shortcut keys that can aid in the speed of the task. For audiences that are experts in their own rights in fields that are closely related to the topic, the degree of technical terms, acronyms and abbreviations is much broader. Many of the terms and techniques can be stated instead of explaining
them. More than 95% of the readers will understand what is described and discussed. Due to this familiarity of your audience, it makes the job of the writer much simpler.

2.3 BASIC PRINCIPLES OF TECHNICAL WRITING

- Know your reader. The reader must understand the information presented by the writer. If reader fails to understand what he reads, the writer fails its mission
- Purpose of each article or report. Maybe the purpose will be to analyze and solve the problem, to offer service or describe something. The report must accomplish its purpose
- Be familiar with the subject matter. The writer must be well-versed with the subject he is to write about
- Organize Writings. Report must be written properly by having the main topics, sub-topics, sub-sub topics, etc. The writer outline what he is to build
- Writing objectively. The writer must not be biased about the report he is presented
- Correct format. Report must be presentable in the reader. Using correct format such as proper heading or style of the report
- Formal English. The writer as much as possible must use formal English in writing his report
- Adopting ethical standards. A good technical writer must acknowledges the help he receives from others, and cites resources of reference materials

2.4 MAIN CHARACTERISTICS OF TECHNICAL COMMUNICATION
Technical communication is the art and science of making complex technical information accessible, usable, and relevant to a variety of people in a variety of settings. To some extent, effective technical communication is an art, because it requires an instinct for clear writing and good visual design. More importantly though, technical communication is also a science, a systematic process that involves certain key principles and guidelines. The following principles characterize effective technical communication:

2.41 Accessibility

Information is accessible if people actually can get to it and understand it. If documentation for a help system is included on CD-ROM, the people using this information must access a CD-ROM drive in order to use the information. If a set of instructions is being distributed across the globe, these instructions must be written in various languages in order to be accessible to international users.

A group of technical editors at IBM have developed a list of “quality characteristics, which help them determine if their technical documentation meets high standards and is of superior quality. These characteristics suggest specific ways in which communication can be made accessible:

- Accuracy—has no mistakes or errors.
- Clarity—avoids ambiguity.
- Completeness—includes all necessary information.
- Concreteness—uses concrete examples and language.
• Organization—follows sequences that make sense for the situation.

• Visual effectiveness—uses layout, screen design, color, and other graphical elements effectively.

2.42 Usability

Usable information is more efficient for your audience, because it allows readers to perform the task or retrieve the information they need. Usability is often measured by studying the design of the table of contents, index, headings, and page layout, as well as determining if the language is written at the appropriate technical level. When technical communicators assess a document’s usability, they may want to know how long it took a person using the document to find specific information and whether this information could be located using the index or table of contents. For instance, a manager may consult the company’s Employee Handbook for information about vacation time. If the manager cannot find this information and cannot do so quickly, the document would not be considered usable and would need to be revised.

2.43 Relevance

Relevant information maintains a focus on the specific audience—the readers, listeners, viewers—who need information, not piles of useless data. Information is relevant if the audience can apply it to the task at hand. For instance, if a person is interested in how to use Internet service provider (ISP) software to connect to the Internet, the documentation should explain how to install the software and dial up the ISP and not digress into a history of how the Internet developed. Or, for an audience of general computer users who want
to install a sound card, overly technical language is inappropriate. Relevant information also maintains a focus on the purpose of the communication. Although the history of sound cards might be interesting to some engineers, the purpose of the communication (how to install the sound card) dictates that this history is not relevant. Often, technical communication is thought of in relation to the documents and technologies described above; that is, as communication designed to teach

2.5 PURPOSE OF TECHNICAL WRITING

The purposes of writing are

- To inform: to provide information without expecting any action on the part of the reader?

- To instruct: to give information in the form of directions, instructions, procedures, so that readers will be able to do something?

- To propose: to respond to a request for proposals (RFP) or to suggest a plan of action for a specific problem?

- To recommend: to suggest an action or series of actions based on alternative possibilities that have been evaluated?

- To persuade: to convince readers to take action, to change their attitudes or behaviors based on valid opinions and evidence?
2.6 TYPES OF TECHNICAL COMMUNICATION

Following are some common forms of technical communication. Although these categories can overlap considerably, they should give you a feel for the kinds of documents technical communicators produce.

- Manuals. Almost every technology product or service is accompanied by a manual. Manuals may include information on how to use a product, along with background information, such as technical specifications or lists of materials. You certainly have used such manuals—to connect the components of your sound system, to do routine maintenance on your bicycle or inline skates, or to set up your answering machine.

- Procedures. Procedures are an important form of technical communication. Procedures explain how to perform a task or how a particular process happens. Many companies maintain standard operating procedures ("SOPs") for tasks such as how to test soil samples or how to access corporate databases.

- Instructions. Instructions resemble manuals and procedures in that they explain how to do something. However, instructions are often very specific, systematic lists of the actual steps involved in using a product or performing a procedure. For instance, if you purchase a memory upgrade for your computer, you will probably receive a list of instructions on how to install this upgrade. This list may be a separate document or part of a manual or larger set of instructions.
• Quick reference cards. In some situations, a long list of procedures or instructions is inappropriate, because the user is already familiar with the “big picture.” For instance, you may regularly call home to access your voice mail, and you may have the primary commands memorized. But there are certain tasks you may perform infrequently, such as changing your outgoing message from another phone. For tasks that users perform on a limited basis, a short summary of the keypad commands may be all that is needed. These commands can often fit on a quick reference card designed to fit in a wallet or fit in with the actual device (over the telephone keypad, for instance).

• Reports. There are many types of reports, including recommendation reports and analytical reports. Reports generally focus on a specific problem, issue, or topic. They may recommend a course of action or analyze a particular technology or situation. Pay attention to local issues in your newspaper for examples of reports. For example, a task force in your community may be studying plans for highway expansion or a new shopping center. After completing an initial study, task forces often present reports to the city council or other decision makers, and written copies of these reports are available for public review.

• Proposals. Proposals make specific recommendations and propose solutions to technical problems. A proposal’s purpose is usually to persuade readers to improve conditions, accept a service or product, or otherwise support a plan of action. Proposals are sometimes written in response to calls for proposals (CFPs) or requests for proposals (RFPs). For
example, a nonprofit childcare facility may seek safer playground equipment, or a pharmaceutical company may wish to develop a new Web-based education program for its employees. These organizations would issue RFPs, and each interested vendor would prepare a proposal that examines the problem, presents a solution, and defines the process and fees associated with implementing the solution.

• Memos. A vital form of technical communication, memos serve various purposes: to inform, to persuade, to document, or to encourage discussion. Memos are usually brief and follow a format that includes a header (“to,” “from,” “date,” “re”) and 1–2 pages of body text. An employee might write a memo to his manager requesting a pay raise; an engineer might write a memo to her design team explaining a technical problem and offering a solution; a team of students might write a memo to their instructor explaining their progress on a class project.

• Email. Email is, essentially, the electronic version of a memo. In fact, most email is patterned after the memo, with a header containing fields for “to,” “from,” “date,” and “re” already built in. Yet email messages are more pervasive than paper memos. In most work settings, people use email to relay scheduling, policy, procedure, and miscellaneous information. They communicate via email with clients, customers, and suppliers—as well as with associates worldwide. People are more inclined to forward email messages, and tend to be more casual and write more hastily than they would with paper memos.
Although these forms are common, many others exist, depending on the company or profession. Nursing, for example, requires specific forms for documenting a patient’s medical condition; engineering has its own types of technical communication. In addition, the specific audience and purpose in each situation will determine the appropriate type of communication.

- **Electronic Media** Various types of communication can also be formatted and packaged in various media:
  - CD-ROM;
  - Internet Web pages (the entire worldwide Internet);
  - Intranet Web pages (an internal network);
  - Electronic text, including email or attachments;
  - Online help;
  - Printed matter, including books, paper memos, bound reports, and brochures; and
  - Training sessions or oral presentations.

### 2.7 EDUCATIONAL ASPECTS OF TECHNICAL COMMUNICATION

It should be noted that the claim that technical communication is a form of education is not a call for a new form of technical communication; rather. Technical communication is not simply writing manuals or procedurals, as is assumed in much discourse on the subject. And even in the realm of technical writing, theorists largely ignore the visual forms of technical communication that
modern practitioners use. Tools "writers" use because they are cognizant, however subconsciously, of a larger ideal the technical communicator operates under: that of educator.

Educational psychology (and more particularly cognitive psychology) is defined as a "study [of] the mental processes that occur in perception, memory, and thought. Cognitive psychologists "emphasize mind instead of behavior -- knowing instead of responding . . .[and they] seek to determine how our thoughts, knowledge, and interpretations influence our ability to acquire information, solve problems, and make plans". Of course, the exact formula with which educational psychology should interact with the other generally accepted fields (rhetoric, the meaning of science) within technical communication theory is indefinable, as the tools and projects for a technical communicator are extremely dynamic, varying not only by the individual practitioner, but down to the smallest details within projects. Despite this (or perhaps because of this) complexity, it is paramount that we understand how it is to effectively teach a multiplicity of learners.

Indeed, there are many arguments that get temptingly close to defining technical communications as a form of education. Many arguments regarding the role of the mock reader or the role of the discourse community, for example, have an implicit discussion on the power of the technical communicator as educator, but perhaps a more explicit approach is warranted.

Gardner introduces a theory that posits seven forms of human intelligence: linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, intrapersonal, and interpersonal. These intelligences, found in varying degrees in all people, form cognitive
entry points for translating experience into understanding. Individuals tend to prefer a particular intelligence, and when they experience learning through their favored intelligence, cognition becomes more immediate and profound. Gardner writes of the intelligences: "Owing to heredity, early training, or, in all probability a constant interaction between these factors, some individuals will develop certain intelligences far more than others; but every normal individual should develop intelligence to some extent, given but a modest opportunity to do so ". Also, some people, perhaps because of a particular disability (deafness or blindness, for example) may de-emphasize a particular type of "intelligence," just as some people may be genius in certain types of intelligences (Mozart for musical intelligence, or Frank Lloyd Wright for spatial intelligence). However, as mentioned earlier most people tend to favor at least one of the intelligences. With that said, it is necessary to provide an overview of these different intelligences in order to see how an understanding of each may be suggested by some work in the field and in theory.

**2.71 Linguistic Intelligence**

Linguistic intelligence is a form of intelligence discussed at length by many technical communication theorists. This type of intelligence is defined by a student's highly developed auditory, reading and/or writing skills. This type of learner prefers reading or listening cognitive entry points, and enjoys rhetorical discussion. With its disciplinary background English departments, technical communication has generally aligned itself with this type of learning. The English department deals in words and their power over the reader in the form of literature. The English department deals with linguistics and grammar to define language. The resulting
definition of the role of technical communicator from this field of study is therefore understandably limited to the creator of written artifacts or the reader of those artifacts. These artifacts include manuals to written instructions on graphical user interfaces. For this type of learner, discussions surrounding the fictionalized reader are absolutely pertinent and compelling.

2.72 Logical-Mathematical Intelligence

The Logical-mathematical learners are those who have "sensitivity to mathematical patterns and regularities. These learners enjoy order, and like sequential directions. These learners are similar to the types of learners Shannon and Weaver and Janice C. Redish implicitly discuss in their works. The job of the technical communicator in these works is to communicate fact in a logical order, as free from noise as possible. Mathematician Henri PoincarŽ described the way mathematicians (assumed as logical-mathematical learners) learn in the following way:

A mathematical demonstration is not simply a single juxtaposition of syllogisms, it is syllogisms placed in a certain order, and the order in which these elements are placed is much more important than the elements themselves.

2.73 Spatial Intelligence

Spatial learners think in images and pictures. Like mathematical- logical learners, charts and diagrams are a particularly good method for educating this type of learner. But charts and diagrams are not
the only entry point for spatial learners, for Gardner suggests that they can easily visualize objects described in text. Indeed, Gardner writes, "Central to spatial intelligence is the capacities to perceive the visual world accurately, to perform transformations and modifications upon one's initial perceptions . . ." (Gardner 173). Spatial learners easily translate icons into operations in a computer program, or correlate schematics to an actual machine in space.

Touching on the subject of spatial intelligence, Jay David Bolter and Richard Grusin in "Immediacy, Hypermediacy, and Remediation," suggest a role for the technical communicator rooted in multiple senses (and by extension, multiple intelligences). According to Bolter and Grusin, the end result of computer communication is that "there should be no difference between seeing [something like] a painting in person and on the computer screen . . ." (Bolter 45). This remediation (as Bolter and Grusin call it), could be seen as a grand vision for technical communicators in which they create works that are as transparent as possible to real world scenarios. Images can be a type of this transparency, for they can provide a more transparent representation of a painting than can an article on the painting, and technical communication theorists should address this issue.

2.74 Bodily-Kinesthetic Intelligence

Bodily-kinesthetic learners are those who process information through body sensations. "For long term memory [to] occur [in this type of learner,] the brain has to be activated through movement". Though again, technical communication theorists rarely overtly address this type of learner, technical communicators readily use tools that are definitive methods for teaching to bodily-kinesthetic learners. Why do airline manufacturers build a cockpit mock-up to
train pilots instead of simply providing a pilot with a manual of airplane operation? They are built to address bodily-kinesthetic education. It is generally understood that there are some environments that a manual cannot accurately or easily reproduce, no matter how good the reader, as well as the fact that there are certain sensations manuals cannot reproduce that are valuable in cognition. How would a manual accurately describe the sensation a pilot might feel on the yoke of her aircraft when flying through an unexpected turbulence? And how would a pilot in training know her physical response was adequate for mitigating the turbulence? Texts do not provide the physical feedback loop that bodily-kinesthetic learners require for understanding. And while cockpit mock-ups might seem an exotic example of this type of communication, a more common example is found in the touch-screen kiosk found at malls and trade shows the world over. And looking into the future of technical communication, haptic devices will surely begin to be more and more common, and the ability for the communicator to function in this environment will require her to understand the needs of this particular type of learner.

2.75 *Intrapersonal and Interpersonal Intelligences*

Intrapersonal learners have a "deep knowledge of [his or her] own feeling life". Simply put, these types of learners prefer to learn by themselves, to relate things to their own personal experiences and understand how to apply their experiences in private. Opposite to the intrapersonal learners is, predictably, the interpersonal learner. For the intrapersonal learner, the prime motivator is "the ability to notice and make distinctions among other individuals . . .". These types of learners adopt understanding based on conversations with peers. Interpersonal intelligence is, at its most basic interpretation,
close to what is suggested by James P. Zappen's discourse community, though of course Zappen stresses *textual* discourse communities.

These "personal intelligences," as Gardner groups them, are a bit atypical when compared with the other forms of intelligence outlined above, for they are not as obviously tied to certain senses. But certainly it seems that for the technical communicator, the discussion on whether individual learners have extroverted or introverted cognitive processes is an interesting and valid discussion in relation to the other intelligences (i.e. does one learn more readily using intrapersonal learning techniques in combination with bodily-kinesthetic techniques?) and technical communication theory should deal with this relationship.

### 2.8 THE "READER" AS LEARNER: A CULMINATION OF THEORY

It is easy to see ways in which we, as technical communicators, use these different types of intelligences to communicate. We understand, however implicitly, that effective communication requires different tools for different people and different situations. It is also easy to see that given the current role of the technical communicator, it is limiting to call the audience of a technical communicator a "reader," for they rightly experience communication in a number of different forms. Instead, I would suggest theorists begin to address audience as a group open to all sorts of communication forms (representing all types of intelligences), to equip the growing technical communication community with theories that address all aspects of their profession. Furthermore, I suggest that we teach technical communicators the
importance of learning about their audience, not strictly in a demographic sense, but in a cognitive sense, so that technical communicators can create for different types of learners. In this way, spatial learners will no longer be relegated to learning via strictly text, just as linguistic learners will not be relegated to learning via musical cues. The more intelligence the technical communicator understands and creates for, the more complete the educational experience (Gardner *Disciplined Mind* 186-9).

This discussion on the role of education in technical communication is far from complete. Moreover, I am not suggesting that educational psychology is the panacea for technical communication in its search for perfect communication (if such a thing exists), just as I am not arguing that Gardner's theory of multiple intelligences is *the* key take-away from a study of educational theory in relation to technical communication. Like technical communication theory, educational psychology theories can become wildly divergent and contradictory. Instead, this discourse is only a suggestion that understanding how technical communication can be most effective may be accomplished by looking at technical communication as a form of education. How successfully one learns to do a task outlined in a manual is, at its heart, a question of how effective the manual is as instruction, and instructional effectiveness has been the focus of educational psychologists for many years.

I would suggest that discussing the field of technical communication as primarily a form of writing is myopic, as its practice in the field is actually (unbelievably) more complex. We need to begin to adapt theory to account for all of the ways technical communication is incarnated. This may mean that technical communication theory will be ever more specialized to account for the differing ways we
communicate with our audience, but this evolution is natural if uncomfortable. Computer science theory has become specialized in this way, as have Mathematics and Engineering. Gone are the days when one can simply pursue an advanced degree in "Science." Our field, as we begin to understand it more, will as well become highly specialized, for specialization fosters accuracy and care to specific issues that impact the field.

Lastly, technical communicators of the future will not and should not limit their approach to the user/reader/learner by defining some standard of communication set-forth by random user sampling. This approach helps to define audience, but as Gardner's theories above suggest, even an audience of demographically similar people consists of individual learners requiring different forms of teaching.

### 2.9 RESEARCH IN TECHNICAL COMMUNICATION

Technical communication, an occupation that traces its beginnings no farther back than World War II, has developed its principles and philosophy more or less haphazardly, borrowing from this discipline or that, doing what seemed practical and expedient at the moment, but rarely taking the time for systematic inquiry. It has long opinion that the future of technical communication as a discipline or profession depends almost entirely upon the continuing and increasing conduct of research, both quantitative and qualitative, both basic and applied both academic and commercial.

Why Research Needed

From the very beginnings of the organized activity we call technical communication today (it used to be technical writing and editing), its participants have yearned for recognition as professionals, and
they recognized that one of the hallmarks of a profession is the existence of a body of literature. The constitutions of the earliest formal organizations included allusions to "the profession," and one of the objectives cited in the first issue of the first journal in the field stated that "The objective of this organization shall be ... the development of literature for the profession."

That early literature could never be called research, of course, consisting as it did of narrations of case histories or statements of opinion and personal experience, but it does foreshadow our continuing effort to be recognized as "legitimate" and professional. Even today, we seek equality with the engineers and programmers and scientists we work with, and many of us realize that one of the keys to such recognition is a solid body of research-based knowledge.

We need research to help us achieve recognition as professionals. Because technical communication had no history and no literature, people in the early days had to solve their problems the direct brute-force way. They saw a problem and they somehow figured out a solution. The result was that they reinvented the wheel every day. Even now, characteristically, very few people who are facing a new problem in technical communication will consult the literature before tackling it. Contrast that with the typical approach of a physicist or engineer or physician; none of them would think of attacking a new or unusual problem without consulting the literature to see whether someone else had already solved it or had discovered a fundamental principle that could be applied to it or at least had shown what wouldn't work.
To Help Us Develop a Body of Literature. Suppose some of us did decide to consult the literature before beginning a project: What would we find? Relatively few libraries hold files of our journal or of others in the field; even fewer keep copies of the proceedings of our annual conferences, though both the journal and the annual proceedings have been published regularly for over 30 years. But supposing that we were lucky and located a file of our publications: What would we find in them? Mostly we would find the same kind of thing that appears in the earliest volumes: personal experiences and opinions. However, in recent years there has been an increasing number of articles that cite previous writing. Without a critical mass of researchers and with few journals dedicated to publishing the latest research, practitioners have not yet formed the habit of consulting the literature.

We need research to help us build a body of literature. To Keep Us from Working by Intuition and Guess Few practitioners ever question the basis for a standard or a practice that they follow. Certainly the older generation simply does what it has always done, whether learned by cut-and-try experience or from an old English text. Even the younger generation, many trained in technical communication curricula, could not cite empirical evidence to support their contention that a topic outline is more efficient than a sentence outline, or that grammatical errors in technical text seriously slow readers' comprehension, to take a couple of superficial examples. Typically we work on the basis of habit and folklore, and when a client asks us why we want to change his expression or his table or his organization, our only answer is that we THINK it's more effective our way. Instead, we need to be able
to say that experimental research has proven conclusively that our recommended approach is superior.

We need research to keep us from working by intuition and guess. One of my objectives as editor of this journal has been to promote more research in technical communication and to increase our readers' knowledge and use of it. For example, I solicited Guest Editor Tom Pinelli's help in putting together that first special issue on research in 1985 in the hope that it would "help practitioners and researchers alike to know the field and ... help our young profession to mature" The same hope has motivated us to assemble this issue.

Another approach toward achieving that objective of promoting research and increasing familiarity with the literature of the field is illustrated in our "Guidelines for Authors," which appears in almost every issue of the journal:

Please look over the literature in the field and cite any relevant publications, so that your article builds on and extends previous work, if there is any. For example, see previous issues of the journal, the Proceedings of the Society's annual conferences, the IEEE's Transactions on Professional Communication, the Journal of Technical Writing and Communication, and appropriate textbooks.

To implement those guidelines, we (the Associate Editors for specific subjects and occasionally I) submit all potentially acceptable manuscripts to a rigorous critical review by several subject-matter experts, and one of the criteria those reviewers apply is the author's familiarity with and citation of the literature.
Even the author of an in-house case study, for example, should know whether others have conducted similar studies, should be familiar with the design of such studies, and should know when and how to apply appropriate statistical measures to the results. And here is the last in this list of measures we take to encourage the publication and application of research results: this second special issue on research that you are holding put together by Guest Editors Tom Pinelli and Rebecca Barclay. Hope that it will --

* Inform and instruct you
* Permit you to read research articles with more understanding
* Encourage you to search for published solutions to your problems before attacking them, and
* Perhaps even motivate you to plan and conduct some research of your own.

2.10 SUMMARY

This is prepared to trend students to understand all important aspects of Technical Writing. It provides a basic introduction of Technical Writing, Introduction of Technical Writing, Definition of Technical Writing, and Basic Principles of Technical Writing. This unit explains that Accessibility, Usability and Relevance are most important characteristics of Technical Writing. This also highlights the purposes of Technical Writing and Types of Technical Writing; these types include all conventional types as well as non conventional types of Technical Writing, because in the present
scenario the concept of Technical Writing is totally changed in view of Information Technology.

2.11 Self-check Exercise

1. What is Technical Writing? Explain in brief about basic principles of Technical Writing.

2. “Technical communication is the art and science of making complex technical information accessible, usable, and relevant to a variety of people in a variety of settings” Explain this statement with suitable examples.

3. Is educational aspect of technical communication important? Give answer with critical comments.

4. Why research in technical communication is required?
1.0 Introduction

1.1 Objectives

1.2 Collection of Data

1.2.1 Data Collection Process

1.2.2 Sources of Data

1.3 Organization of Data

1.4 Presentation of Data

1.5 Style of Presentation

1.5.1 Textual Presentation

1.5.2 Graphic Presentation

1.5.3 Use of Information Technology

1.6 Use of Information Technology

1.7 Summary

1.8 Self-check Exercise

1.1 INTRODUCTION
Technical writing is a written communication. Every written communication is the act of transmitting an idea from one person to another. Thus written communication always involves at least two persons—the transmitter or sender of an idea or message and the receiver of the message. The sender of the message is called the writer and the receiver of the message is called reader or audience.

The writer, while writing, aims to transmit the ideas through a medium say a language in the form and style he considers most suitable to transmit his ideas, as accurately as possible, to the reader. In this process the writer after gathering, organizing or systematizing the ideas, structures them in words of a language and the reader recreates that structure in his mind to glean the message carried by the structured ideas of the writer. The key factors in writing are the knowledge and beliefs of the reader about the topic of the document to be written and also the expectation of the reader about the presentation of ideas. The writer has to consider these factors while writing. The reader, in his turn, relates the structure, formats and message of the document i.e. the written piece, to concepts he has in his mind, in order to get the message the written piece aims to transmit.

The writer has the ideas in his mind and the reader can read these ideas lying in the writer’s mind. In order to communicate or transmit the ideas lying in his mind, the writer has to express them and for expressing the ideas, the writer needs to use a medium or code which the reader is capable to read or interpret. Usually the code or medium used is a language (comprising of words, symbols or graphics). Thus the ideas or message are to be expressed in a medium or language for being transmitted.

Thus the aim of any piece of writing is to communicate or transmit the ideas in the mind of the writer through a medium or language, to the reader of that written piece, with utmost efficiency which means that the reader is enabled to get the clear grasp of the ideas presented without undue expenditure of intellectual and mental energy, and time, on his part.

There are following three principal inputs in a technical writing:

1. The ideas to be presented or expounded;
2. The medium or language (comprising of words, symbols and graphics) used for the expression and exposition of ideas;
3. The mode of exposition and presentation of ideas.

There are the three stages in technical writing. These are:

1. Pre-writing or Planning;
2. Writing i.e. Drafting and Revising; and
3. Post-writing or Finishing.

This is the planning stage. It involves discovering and collecting all the relevant information about the communication situation and deciding the steps to be followed in creating the document.
The writer has to determine and decide about:

i) Audience i.e. reader;

ii) Goals and objectives to be achieved;

iii) The constraints likely to be faced; and

iv) Basic facts or ideas to be communicated

The writing stage includes drafting and revising work. It consists of the following aspects:

i) Organising the ideas or facts in the way which is most helpful the reader;

ii) Expression or presentation of ideas in a medium i.e. language;

iii) Structuring or dividing the texts into chapters, sections, subsections with suitable heading representing the content of the texts;

iv) Use of suitable aids for exposition like tables, graphs, illustrations, footnotes;

v) Use of suitable symbols and abbreviations, numerals etc., wherever necessary and helpful;

vi) Use of aids for readers for easy comprehension- such as, contents, synopsis, list of abbreviations, symbols, tables, technical terms with definition, references, appendix, index etc.

In finishing stage, the writer crafts the written piece into a document or a product that guides the reader effectively through the topic. This consists of two types of activities viz

i) Editing work which means developing a consistent and accurate text. In addition to checking the punctuations, spelling, grammar, format of the page accuracy of the facts is, also taken care of; and

ii) Producing the document involves physical completion of the document.

In case of longer documents quite important and time schedule maintenance which if not taken care of results in bad documents. One can take help of 'style aid' of Word Processor software whereby spelling check and grammar check is very easily carried out.

1.1 OBJECTIVES

After reading this unit, you will be able to know:

The Process of data, collection;

The Sources of data and how to collect data;
The Methods for organising the data;

The Style and stages of presentation of data; and

To plan and design to illustrate the text.

1.2 Collection of Data:

To write on any topic, there is need to collect the relevant information or data as comprehensively as possible. One should chalk out the outlines, delineating various aspects of the topic. The collection of data starts at home. If one is part of an organisation, the in-house information of that organisation may be the starting point or the individual’s interaction with others like colleagues, officials, acquaintances, professionals yields relevant data.

Researching a topic in order to generate a document is an essential part of technical writing. The purpose of research is to find out facts, information, patterns, characteristics which are significant for the purpose of writing on the topic. The topic may be broad and general or narrow and specific. The search aims to collect all relevant or significant information about the topic.

Employing various strategies, methods and sources, one collects relevant data. These may be grouped into two broad categories - search through the people and through published or recorded sources.

1.2.1 Collecting Data Through People:

People are good source of information. We collect relevant and significant data on a topic through following methods:

i) Interviewing;

ii) Surveying through questionnaires or schedule; and

iii) Observation;

iv) Testing / Experiments

In case of interviewing and surveying, asking question is fundamental to research. The answer to the questions are the facts which, the researcher may need for his studies. It is, therefore, of utmost importance that the questions are framed in such a way the answer of the respondents represents facts or data which are significant for the topic of study.

The questions, therefore, need be clear, relevant, brief and specific. The questions may be open or closed-i.e. structured. The questions
should be about the basic elements or facts. The questions should have significance for the topic of study.

The interview or questionnaires should be addressed to right persons or respondents. It means that the respondents should be those persons who are likely to give basic facts, and significant data. The persons involved in or familiar with situations pertaining to the topic of search may be more useful.

Flexibility is imperative for productive questioning. People have information the researcher needs for his study, but it is up to the skill of interviewer or surveyor to elicit that information. The relevant facts or information often come out in random order. The answer may contain information which may or may not be useful. It is up to researcher to glean the useful ones and discard un-useful ones.

Observing is watching intently in order to discover the elements or facts in a specific situation. The observer places himself in the situation and records relevant elements he observes. In observation also, the observer has to have in his mind the same type of questions as he use in interview would like what are the basic facts and what is their significance.

Testing involves comparing items in terms of some criteria or a set of criteria. Before testing, one should decide the questions to which he seeks to get answer through testing. Testing or experimenting is at the heart of research in many scientific and technical disciplines. Experiments aim at either confirming /ascertaining a fact or negated it.

1.2.1 Process of collecting Data:

In the process of collecting data, one should first state the facts, problems, or various aspects of the topic. An outline of the various aspects of the topic should be drawn. This needs that the audience i.e would be readers of the piece to be written be determined. The key words that are likely to describe the topic need be noted and defined. One should decide about the ways and means to be used to search the information or data about the topic like conducting interviews and surveys or reading the published sources, or both. Various steps involved should be listed and their sequence and the tentative time to be spent need be decided. List of persons to be interviewed or respondents for the survey; outlines of tests relevant to the topic and list of printed sources, need also be prepared.

One should select the form in which the information’s or data which is discovered will be recorded. One may use sheet of paper, notebook or reference card of 6”x 6” or any other suitable size to record the data. Separate record need be prepared for each source giving bibliographic details of the source.

As you read, make notes of the relevant information on the reference card. Mention the page of source also. In case a source contains some visual aids like illustration, graphic presentation etc., which clarifies or explains
the topic, the same may be copied with proper citation. Texts suitable for quotation should be copied.

In case of interview or survey, the schedule or questionnaire should be prepared carefully keeping in view the easy way of collating the answers.

1.2.2 Collecting Data through Published/Recorded Sources:

The published or recorded sources of information provide very huge data. They are considered the major sources of information. We may group them into two categories i.e. i) Printed and ii) Electronic sources.

1.2.2.1 Printed Sources:

The printed sources of data are most widely used sources. These are the major sources and contain tremendously large amount of data. These can be grouped as under:

i) Ephemeral;

ii) Non-scientific

iii) Official Records

iv) Formal

1.2.2.1.1 Ephemeral

Sources of data include pamphlets, booklets, leaflets, brochures, press releases, prospectuses, etc. Some times these sources prove major source of data.

1.2.2.1.2 Non-Scientific

Sources of data cover trade literature like trade journal, home journals, bulletins and newsletters, trade catalogues, documents accompanying specific goods, machinery etc, public speeches, magazines etc. These sources are of non-academic nature.

1.2.2.1.3 Official Records

Official records of governments, semi-governments, organisation, autonomous and corporate bodies, are very rich source of data. The official records are very valuable source, so also the official records are corporate bodies are very valuable and useful for writing reports regarding matters pertaining to that corporate body. Government records provide primary statistical data on different topics which are generally not available elsewhere.
1.2.2.1.4  **Formal Sources:**

Formal printed sources of information or data are those which are generally available in libraries. Such sources of data generally include the following items:

- Books;
- Monographs, Theses, Dissertations;
- Encyclopedias, Dictionaries, Handbooks;
- Periodicals/Serials (Learned type)
- Indexing and Abstracting Journals;
- Reviewing Journals;
- Bibliographies;
- Alert and Current Awareness Journals;
- Directories/Yearbooks;
- Patents; Standards/Specifications;
- Drawings, Designs, Plans;
- Conference, Databooks;
- Atlases, Gazetteers etc.
- Research/Technical Reports

1.2.2.2  **Electronic Sources:**

The electronic sources of information may be grouped in two categories. The first is CD-ROM i.e. CD, DVD etc and the second one is Online sources. Some of the information sources are available on CD-ROM only. Such sources are available in libraries or information centres. Indexing and abstracting journals, alert services, current awareness services are available on CDs.

Major electronic sources of information are available Online. Contrary to CDs, Online sources can be used any time and any where, but have to be downloaded when searched. Now a day a plethora of information sources are available online. Some import type of online sources are:

**Databases:** The databases is collection of huge data of a specified category, bibliographic, OCLC etc are bibliographic databases.

**Websites:** Websites are very rich source of information. Most organisation-public and private both have their website and load and update the information on their websites regularly.

**Repository:** Institutional and personal repositories contain current information about researches and other relevant information. Repository enables one to access the information before they are available in formal channels. Most of repositories provide open access.
Open Journals: Such journals are available online to every one at any time and anywhere mostly free of charge. They are very rich source for current researches and developments.

Wikipedia, online reference service like ‘Ask A Librarian’ blogs, social sites are also some online information sources.

1.3 Organisation of Data:

Organisation of data is no less important than the collection of data because it forms the basic foundation and provides collated and slanted facts and figures required for the technical presentation. The data searched during data collection mostly recorded as, when and where found. Thus the data gathered during data collection process remain unarranged and unorganised and the unorganized data will not succeed in transmitting the intended ideas, information or message. Therefore the data need be arranged in a systematic way suitable for proper presentation of the data.

The writer is expected to find out relationships between the ideas being carried by collected data. Collected data have to be collated. The related ideas have to be grouped together. When one scans the collected data, he merges or groups together, discards, and expands the idea. The ideas may be grouped according to characteristics, aspects, parts or constituent, basic elements of the topic or we may say, the ideas are grouped in ‘basic topic’ and ‘subtopics’. The ideas may be sorted out to yield first the coordinate ideas and then for each of the coordinate ideas, the related subordinate ideas may be put under it.

The organisation or collation of data should be in conformity with the pattern of organisation of ideas in a report or writing. There are several patterns of report organisation which may be is grouped into two basic groups. They are Direct pattern and Indirect pattern. The direct pattern also called logical pattern and the indirect pattern is called psychological pattern. Besides these, the chronological arrangement is also considered a separate pattern of report organisation.

Logical arrangement follows inductive order. Here one proceeds from known to unknown i.e. the known facts are considered and analysed to derive rational conclusions. The discussion of known facts or ideas leads to new ideas. Accordingly in this pattern of organisation of data, the relevant and important facts, ideas, data, views are presented first in a suitable order along with description, comments, discussion of these facts, on the basis of which summaries and conclusions are drawn and recommendation are made.

In case of direct pattern or psychological pattern, principle of deduction is followed. Here the topic is dealt with in deductive pattern. The findings of the study or the summaries, conclusions and recommendations are presented in the beginning and then follows the statement of facts, analysis which are drawn or deduced from them or which support them. The supporting data, facts, analysis etc. are premade.
In the Chronological pattern, the data is collated in the order in which they have taken place, happened or developed. For the topics or subject which have a sequence of time in their development and that sequence is important aspect of it, the chronological pattern is followed. If the problem or topic being dealt with has the historical nature and its presentation in its developmental sequence suits, the chronological pattern of data organisation should be followed.

A Neelameghan has dwelt on this matter alluding to the principles and pattern of knowledge organisation. He suggested that the ‘Principles of helpful sequence’ used in ordering or arranging the facets and isolate ideas may be applied to organise the data. The constituent elements or parts of the topic should be identified and sequenced applying the principle for facet sequence or the principles of helpful sequence for isolate ideas. Applying the relevant characteristics, the data may be grouped and the groups of data be arranged. He states that in case of technical writings, guidelines or principles can be applied to various aspects like structuring the text, presentation of ideas, bibliographical citations and index but the two important aspects viz technical terminology and creation of ideas are out of bounds of any guideline or guiding principles.

“A subject—that is, a body of ideas—in general, is systematic account of the property (or properties) of an entity. The entity may be concrete or abstract” states Neelameghan. Therefore, the data representing the properties of the topic or subject should be identified and organised. Properties of an entity or idea may be components, functions, deficiency, built in or natural features. Ideas forming a component of a subject may be i) ideas denoting entities, ii) ideas denoting properties; iii) ideas denoting action, process, analysis etc., and ideas denoting environmental condition like space, area, time, duration etc.

Ideas denoting action, process etc are designing, analysis, synthesis, Prevention & protection, correction, defects and other cognate ideas.

Similarly ideas denoting area, space, region etc should be identified and arranged according to principles applicable to space sequence. Ideas denoting, durations, period, time etc may be identified and grouped applying principles for time sequence.

If found suitable, the above sequence for ideas denoting properties and cognate ideas, action and cognate ideas; space area and cognate ideas and chronology/time and cognate ideas may be arranged in reverse order resulting in history and development coming first followed by current or developmental status area wise, region wise etc and so on.

Thus one can also use the principles for organisation of knowledge to organise the data for technical writing purposes.

1.4 Presentation of Data:
The presentation of data amounts to putting the organised data or contents into a language which presents the ideas with clarity and lucidity along with appropriate examples, illustrations, tables etc. The contents need be organised and structured into themes and subthemes or topics and subtopics dividing them into sections and subsections with appropriate main headings and subheadings. An outline of the ideas to be presented should be drawn at the outset. An example of an outline based on logical or helpful sequence is given below:

I Introduction: Statement of problem or brief outline of the topic, objectives context-setting introduction etc.

II Body: Statement of facts, data etc collected or statement of technical plan giving what is to be done and how; Expected outcomes of the plan; or Inferences drawn from the facts and data collected; and Implementation of the plan; or conclusion and recommendations in the light of inferences drawn.

The outlines may be modified while dealing with a specific point. A draft gets drawn by discussing each element or idea given in the outline and putting each idea in appropriate place in the logical and helpful sequence of the ideas. The draft thus prepared should be:

i) logically organised or structured;
ii) containing accurate facts and data;
iii) concise but informative;
iv) free of jargons and redundancies;
v) readable and comprehensible.

The basic principles for organising a document are the same as those for structuring the paragraphs and sentences. They are:

1. Move from old/known/accessible to new/unknown/less accessible; and

2. Put important/key topic/ideas/information in key places.

The organisation of a document should:

Use context setting introduction;
Place important materials first;
Use preview list;
Use repetition and sequencing; and
Use structural parallelism.

The style of presentation, requires placing of main idea first, using normal word order and active voice in case of a sentence, placing the topic sentence first followed by sentences explaining, clarifying and supporting the central idea in case of paragraph, and in case of whole document and its
organisation, use of context setting introduction, putting important materials first, use of sequencing and structural parallelism.

To put it in other words, the text should have introduction with each paragraph dealing with single topic, giving all facts first followed by conclusion. It should be impersonal and in simple and direct language using active voice and present tense, avoiding jargons, redundancies and long complicated sentences. Salient facts and features may be highlighted.

1.5. **Style of Presentation**:

To communicate well through a written piece, the writer should have smooth and clear style which enables readers to understand the ideas easily and clearly. The style of writing is developed or acquired through practice. To generate the clearest document writers must plan, write and revise to meet reader’s needs.

1.5.1 **Textual Presentation**:

Guidelines for writing sentences, paragraphs, revision have been developed. The guidelines help in creating a clear and effective texts. Style of writing is developed through practice. Practices help in developing standards. Some of the important standards or guidelines developed and followed are dealt with below.

1.5.1.1 **Sentences**:

In writing a sentence one should follow the following norms for writing clear and effective sentences:

i) Place the main ideas first;

ii) Use normal word order;

iii) Use active voice;

iv) Write small sentences of 10 to 25 words;

v) Avoid nominalisation.

Placing the main idea first in the sentence, helps readers to have better grasp and orients the reader to the topic. It makes the rest of the sentences easier to grasp.

The normal word order in English is ‘subject-verb-object’. This order by keeping the subject first makes the reading easier and makes the sentence clear and concise.
The active voice emphasizes the performer of the action. The active voice sentence maintains the subject-verb-objects pattern of word order which puts the performers first and makes the sentence easy. Besides active voice, the present tense should normally be used.

Sentences consisting of 12 to 25 words are easier to read whereas longer sentences are complicated. Though longer sentences with ‘parallel construction’ are easy to grasp.

Nominalization—verbs converted into nouns by adding suffix—like ion—ment,-ness—etc,—should be avoided as they weaken the sentence by converting active verb into static noun. They make the ideas in the sentence harder to grasp.

Thus a sentence need be short, in active voice, in normal word order and have main idea first.

1.5.1.2 Paragraph:

Paragraph consists of several sentences. The first sentence of a paragraph should be a ‘topic sentence’. The topic sentence expresses the central idea of the paragraph and the remaining sentences develop, explain, clarify and support the central ideas. In constructing a paragraph, the known, the old or the topic-setting idea need be placed first then the new development should occur. Each sentence following the topic sentence should expand the idea of the topic sentence. This structure is called the deductive structure. It makes the paragraph direct and straightforward. Paragraph should be structured coherently.

1.5.1.3 The Document:

Careful and coherent organisation of the document enables the readers to grasp the message/ ideas of the document easily and effectively. The two basic points regarding organisation of documents are:

i) Move from known/old/accessible to unknown/ new/ less accessible; and

ii) Place important topic information at key places.

The use of these guidelines in organisation of a document steers the readers effortlessly through the topic and results in easy grasp of ideas. For appropriate organisation of a document:

i) use context setting introduction;

ii) place important materials first;

iii) use preview list;

iv) use repetition and sequencing; and

v) use structural parallelism

The context setting introduction aims at orienting the reader to the content of the document. This is accomplished in three ways viz. defining the key terms and concepts; stating the objectives or purpose of writing, and stating the purpose of the document.
Beginning of a section or paragraph always catches attention. Important materials, significant statements, definitions, concepts and terms should be placed in the beginning or at first place in a section or paragraph. This orients readers quickly to the content.

Preview lists contain the key words to be used in the document while the repetition means restating the key subject words or phrases from the preview list and sequencing means placing the key words to the same order in the text as in the list.

Structural parallelism means that each section of the document follows the organisational pattern i.e first a definition, then a list of terms, then follows the definitions of the terms.

In general one should always place important materials first in both sections and paragraph. It should be impersonal and in simple and direct language. One should use active voice and present tense and high light salient facts and features and avoid jargons and uncommon words.

1.5.2 Graphic Presentation :

Graphic presentation are the essential part of the technical writings. The basic purpose of graphics is to “reveal data”. Visual presentations draw the reader’s attention to the sense and substance of the data. The technical writers generally use the visual aids (presentations) for the purposes of presentation of data in concise form; and, orientation of reader to topic before he reads the text and to provide alternative entry point into a discussion. The graphic presentations should supplement the information provided in the text and avoid duplication.

The guidelines which provide a framework for incorporating a visual aids/graphic presentations in the text of a document are:

i) develop graphics while planning a documents;

ii) as for as possible, each graphic presentation should deal only one point;

iii) plays visual aid at the logical and relevant position in the text- generally it is placed in the middle or end of the text discussing point;

iv) avoid clutter in visual aids by eliminating lines, words, symbols etc., which do not represent data; and

v) use clear lines, words, numbers and organisation to construct effective visual aid.

The writer should carefully draw the attention of the reader to data presented or discussed in the graphics. One should explain the elementary information or a single and trends indicated by data of one category or several categories separately. There should be references in the textual presentation to the graphic presentation through textual or parenthetical references through numbers for the table or page of text. A brief and clear title or heading expressing the content should provided at the top for each graphic.
Graphic presentations are of under mentioned types:

i) Tables

ii) Line graphs

iii) Bar graphs

iv) Pie charts

v) Charts

1.6 Use of Information Technology

The rapid advances in information and communication technology provide a number of tools to enhance our ability to collect, organise and present information with clarity, coherence and accuracy. They help us both in tedious and creative aspects of presentation of information. They help to gain speed efficiency and effectiveness in this task some information technology tools commonly used in collecting, organising and presenting information are described below:-

Computers can help in planning the content of a technical writing. Brainstorming and outlining software’s like “Brainstorming toolbox” bring powerful brain storming, creative thinking, lateral thinking and problem solving ability by help to explore alternatives. It is not a substitute for human brain but support and enhances its capability.

Today of the printed information is available electronic format, besides huge data of websites, depository’s databases, open access journals, social network sites. Search of electronic format data is very specially and precise. The search of online public access catalogue of libraries world over and other databases and websites etc., by search engines by Google, Lycos.

The brainstorming and outlining software’s can also be used for organising the data and ideas. The related ideas can be grouped keeping readers in mind. Outlining tools are also included in most of the word processors. To organise ideas, outlining like topical, mind mapping, taxonomical etc., are used. Spreadsheets, statistical software’s and graphics are used to manipulate raw data to yield meaningful trends and relationships in numerical data. Microsoft Excel also can be used for this purpose.

Word processing software is predominant writing tool. Word processors are becoming more and more document oriented by allowing other writing tools outside of it to be integrated with it. They are electronic thesaurus, spelling, grammar and style checkers, reference tools, graphic packages etc. A formatting used for document is called style and a collection of styles applied to all documents of similar type is called templates. There are software for styles and templates which are used for formatting a document.

Revising and editing is done most effectively with word processor software. The common features in editing like insert, delete, move, copy, cut,
and paste, search and replace are carried out most efficiently with word processor. Basic Maths sorting features, table feature and remark feature are interesting and useful features of word processor. Graphic software can be used for producing graphics and design elements.

Besides these three valuable tools viz., spell checker, grammar checker and computer thesaurus are very useful and helpful for technical writing.

Desktop publishing softwares like Quark Express and Adobe Pagemaker are used for preparation and formatting of a document.

1.7 Summary

For collection, organization and presentation of data, it is essential to collect data because data plays a very important role to provide information. The data collection process must be in such a way that researcher must be aware about sources of data. After collecting data, the organization of data and presentation of data is a crucial process but style of presentation plays a vital role in this regard. The use of information technology in technical writing helps the reader to receive the message of writer in a proper way.

1.8 Self-check Exercise

1. What do you understand by collection of data?

2. What is the data collection process?

3. What are the sources of data?

4. Explain organisation and presentation of data?

5. Describe the style of presentation?
Unit-2 Case Studies

2.0 Introduction
2.1 Objectives
2.2 Case Study - Definition
2.3 Case Study – Characteristics
2.4 Case Study – Types
2.5 Case Study – Importance
2.6 Case Study – Advantages, Disadvantages and Limitations
2.7 Research Design in Case Studies
2.8 Skills Needed for Researchers
2.9 Case Study and Case Work
2.10 Summary
2.11 Self-check Exercise
2.0 INTRODUCTION

Case study refers to the collection and presentation of detailed information about a particular participant or small group, frequently including the accounts of subjects themselves. A form of qualitative descriptive research, the case study looks intensely at an individual or small participant pool, drawing conclusions only about that participant or group and only in that specific context. Researchers do not focus on the discovery of a universal, generalizable truth, nor do they typically look for cause-effect relationships; instead, emphasis is placed on exploration and description.

A case study is not different from a survey. But instead of collecting information about few factors from a large number of units the researcher makes a depth and intensive study of a limited number of representative cases. Case studies are always narrow in scope but more exhaustive and more informative in nature than a survey. It is a very popular form of qualitative analysis and involves a careful and complete observation of a social unit, be that unite a person, a family, an institution or even the entire community. Case study deals with the processes that take place and their interrelationship. As stated above, case study is essentially an intensive investigation of the particular investigation under consideration. The object of the case study method is to locate the factors that account for the behaviour-patterns of the given units as an integrated unity. This method is extensively used in sociology, education, political science, public administration, management and psychology. Library and information science is not an exception to it.

According to H. Odum, “The case study method is a technique by which individual factor whether it be an institution or just an episode in the life of an individual or a group is analyzed in its relationship to any other in the group.” Burgess has used the words “the social microscope” for the case study method. Pauline V. Young describes case study as “a comprehensive study of a social unit be that unit a person, a social institution, a district or a community. In brief, we can say that case study method is a form of qualitative analysis where in careful and complete observation of an individual or a situation or an institution is done; efforts are made to study each and every aspect of the concerning unit in a minute details and then from case data generlisations and inferences are drawn. This method is also considered as a diagnostic study oriented towards finding out what is happening and why is it happening, and what can be done
about it. Further it enables to determine social process revealing the complexity of factors and indicate their sequence along with their inter-relationships.

2.1 Objectives
After going through this unit you will be able to:
- Perceive the case study method
- Delineate the sources, procedures and steps involved in conducting the case study method;
- Know the relation of case study method with other methods of research.

2.2 Case Study-Definition

The study of a person, a small group, a single situation, or a specific "case," is called a case study. It involves extensive research, including documented evidence of a particular issue or situation -- symptoms, reactions, affects of certain stimuli, and the conclusion reached following the study. A case study may show a correlation between two factors, whether or not a causal relationship can also be proven. It may sound complicated, but it's really quite simple.

Charles H Cooley says that ‘Case study deepens perception and gives a clear insight into life.’ Pauline Young opines that “it is a method of exploring and analyzing the life of a social unit-be it a person, a family, an institution, cultural group or even an entire community.” Goode and Hatt say “Case Study is a way of organizing social data so as to preserve the unitary character of social object being studied.” According to F.L. Whitney, “Case study is a complete analysis and report of the status of an individual subject with respect as a rule to specific phases of his total personality.”

Library and information science like other disciplines of social sciences is having number of examples of case studies. The purpose of case studies on individuals and institutions is almost invariably fact finding. Normally case studies are helpful in providing the solutions to management problems and enable the researcher in planning new information services or remodeling the earlier ones.
2.3 Case Study - Characteristics

Major characteristics are as follows:

- Under this method the researcher can take one single social unit or more of such units for his study purpose; he may even take a situation to study the same comprehensively.
- In case study complex factors are studied.
- The selected unit is studied intensively i.e., it is studied in minute details. Generally, the study extends over a long period of time to ascertain the natural history of the unit so as to obtain enough information for drawing correct inferences.
- In the context of this method we make complete study of the social unit covering all facets. Though in this method we try to understand the complex of factors that are operative within a social unit as an integrated totality.
- Under this method the approach happens to be qualitative and not quantitative. Mere quantitative information is not collected. Every possible effort is made to collect information concerning all aspects of life. For instance, under this method we not only study how many crimes a man has done but shall peep into the factors that forced him to commit crimes when we are making a case study of a man as a criminal. The objective of the study may be to suggest ways to reform the criminal.
- In this method, an effort is made to know the mutual inter-relationship of casual factors.
- Under such case study method the behaviour pattern of the concerning unit is studied directly and not by an indirect and abstract approach.
- Case study method results in fruitful hypotheses along with the data which may be helpful in testing them, and thus it enables the generalized knowledge to get richer and richer. In its absence, generalized social science may get loosened.
- It preserves wholeness of the units i.e. it is an approach which views any social unit as a whole;
- Traits are the subject matter of the study.
2.4 Case Study- Types

Under the more generalized category of case study exist several subdivisions, each of which is custom selected for use depending upon the goals and/or objectives of the investigator. These types of case study include the following:

2.4.1 Illustrative Case Studies

These are primarily descriptive studies. They typically utilize one or two instances of an event to show what a situation is like. Illustrative case studies serve primarily to make the unfamiliar familiar and to give readers a common language about the topic in question.

2.4.2 Exploratory (or pilot) Case Studies

These are condensed case studies performed before implementing a large scale investigation. Their basic function is to help identify questions and select types of measurement prior to the main investigation. The primary pitfall of this type of study is that initial findings may seem convincing enough to be released prematurely as conclusions.

2.4.3 Cumulative Case Studies

These serve to aggregate information from several sites collected at different times. The idea behind these studies is the collection of past studies will allow for greater generalization without additional cost or time being expended on new, possibly repetitive studies.

2.4.4 Critical Instance Case Studies

These examine one or more sites for either the purpose of examining a situation of unique interest with little to no interest in generalizability, or to call into question or challenge a highly generalized or universal assertion. This method is useful for answering cause and effect questions.
2.5 Case Study-Importance

The importance of the Case Study are as follows:

- It helps to collect detailed information about the unit of study and gives clue to new ideas and further research;
- As a tool of analysis, it helps to ascertain a number and variety of traits, qualities and habits confined to a particular instance;
- If helps to identify the peculiarities of a case for observation;
- Case Study method shows the way to deepen our perception and sharpen insights to understand biographies; and
- It is often useful to advance a new interpretation.

2.6 CASE STUDY- ADVANTAGES, DISADVANTAGES AND LIMITATIONS

2.6.1 ADVANTAGES

Major advantages are given bellow:

- Develops analytic and problem solving skills
- Allows for exploration of solutions for complex issues
- Allows student to apply new knowledge and skills
- Case study method enhances the experience of the researcher and this in turn increases his analyzing ability and skills.
- It helps in formulating relevant hypotheses along with the data which may be helpful in testing them. Case studies thus enable the generalized knowledge to get richer and richer.
- Information collected under the case study method helps a lot to the researcher in the task of constructing the appropriate questionnaire or schedule for the said task requires through knowledge of the concerning universe.
This method enables the researchers to trace out the natural history of the social unit and its relationship with the social factors and the forces involved in its surrounding environment.

Case Study helps to secure a detailed information about the growth of the unit, group structure, individual life pattern etc.

2.6.2 DISADVANTAGES

Following are the few disadvantages of the Case Study method as stated by research experts:

- It is inefficient in situations, which are already structured where the important variables are identified.
- It often assumes that all the past experiences of the individual or past happenings in the situation have contributed to the final result.
- It depends upon the recall of others as to what had happened, thereby giving room for fallibility of memory.
- Usually undesirable traits being over-emphasised where by desirable characteristics given a low priority resulting in typical situation.
- There is possibility of getting disturbed due to incompleteness of data in certain circumstances.

2.6.3 LIMITATIONS

Besides the above mentioned advantages, it has some limitations. Some of the limitations are as follows:

- Case study method is based on several assumptions which may not be very realistic at times, and as such the usefulness of case data is always subject to doubt.

- Case study method can be used only in a limited sphere, it is not possible to use it in case of a big society. Sampling is also not possible under a case study method.

- Time consuming, costly and wasteful in certain cases.
• Tendency for a researcher to draw generalisation after studying a few cases, which may not be relevant to all situations.
• The case data are often vitiated because the subject, according to Read Brain, may write what he thinks the investigator wants; and the greater the rapport, the more subjective the whole process is.

2.7 RESEARCH DESIGN IN CASE STUDIES

2.7.1 Designing Case Studies

Yin identified five components of research design that are important for case studies:

• A study's questions
• Its propositions, if any
• Its unit(s) of analysis
• The logic linking the data to the propositions
• The criteria for interpreting the findings (Yin, 1994, p. 20).

The study's questions are most likely to be "how" and "why" questions, and their definition is the first task of the researcher. The study's propositions sometimes derive from the "how" and "why" questions, and are helpful in focusing the study's goals. Not all studies need to have propositions. An exploratory study, rather than having propositions, would have a stated purpose or criteria on which the success will be judged. The unit of analysis defines what the case is. This could be groups, organizations or countries, but it is the primary unit of analysis. Linking the data to propositions and the criteria for interpreting the findings are the least developed aspects in case studies.

Campbell described "pattern-matching" as a useful technique for linking data to the propositions. Campbell asserted that pattern-matching is a situation where several pieces of information from the same case may be related to some theoretical proposition. His study showed, through pattern-matching, that the observed drop in the level of traffic fatalities in Connecticut was not related to
the lowering of the speed limit. His study also illustrated some of the difficulties in establishing the criteria for interpreting the findings.

Construct validity is especially problematic in case study research. It has been a source of criticism because of potential investigator subjectivity. Yin proposed three remedies to counteract this: using multiple sources of evidence, establishing a chain of evidence, and having a draft case study report reviewed by key informants. Internal validity is a concern only in causal (explanatory) cases. This is usually a problem of "inferences" in case studies, and can be dealt with using pattern-matching, which has been described above. External validity deals with knowing whether the results are generalizable beyond the immediate case. Some of the criticism against case studies in this area relate to single-case studies. However, that criticism is directed at the statistical and not the analytical generalization that is the basis of case studies. Reliability is achieved in many ways in a case study. One of the most important methods is the development of the case study protocol.

Case studies can be either single or multiple-case designs. Single cases are used to confirm or challenge a theory, or to represent a unique or extreme case (Yin). Single-case studies are also ideal for revelatory cases where an observer may have access to a phenomenon that was previously inaccessible. Single-case designs require careful investigation to avoid misrepresentation and to maximize the investigator's access to the evidence. These studies can be holistic or embedded, the latter occurring when the same case study involves more than one unit of analysis. Multiple-case studies follow a replication logic. This is not to be confused with sampling logic where a selection is made out of a population, for inclusion in the study. This type of sample selection is improper in a case study. Each individual case study consists of a "whole" study, in which facts are gathered from various sources and conclusions drawn on those facts.

Yin asserted that a case study investigator must be able to operate as a senior investigator during the course of data collection. There should be a period of training which begins with the examination of the definition of the problem and the development of the case study design. If there is only a single investigator, this might not be necessary. The training would cover aspects that
the investigator needs to know, such as: the reason for the study, the type of evidence being sought, and what variations might be expected. This could take the form of discussion rather than formal lectures.

A case study protocol contains more than the survey instrument, it should also contain procedures and general rules that should be followed in using the instrument. It is to be created prior to the data collection phase. It is essential in a multiple-case study, and desirable in a single-case study. Yin presented the protocol as a major component in asserting the reliability of the case study research. A typical protocol should have the following sections:

- An overview of the case study project (objectives, issues, topics being investigated)
- Field procedures (credentials and access to sites, sources of information)
- Case study questions (specific questions that the investigator must keep in mind during data collection)
- A guide for case study report (outline, format for the narrative)

The overview should communicate to the reader the general topic of inquiry and the purpose of the case study. The field procedures mostly involve data collection issues and must be properly designed. The investigator does not control the data collection environment (Yin, 1994) as in other research strategies; hence the procedures become all the more important. During interviews, which by nature are open ended, the subject's schedule must dictate the activity (Stake). Gaining access to the subject organization, having sufficient resources while in the field, clearly scheduling data collection activities, and providing for unanticipated events, must all be planned for.

Case study questions are posed to the investigator, and must serve to remind that person of the data to be collected and its possible sources. The guide for the case study report is often neglected, but case studies do not have the uniform outline, as do other research reports. It is essential to plan this report as the case develops, to avoid problems at the end.

Stake and Yin identified at least six sources of evidence in case studies. The following is not an ordered list, but reflects the research of both Yin and Stake:
- Documents
- Archival records
- Interviews
- Direct observation
- Participant-observation
- Physical artifacts

Documents could be letters, memoranda, agendas, administrative documents, newspaper articles, or any document that is germane to the investigation. In the interest of triangulation of evidence, the documents serve to corroborate the evidence from other sources. Documents are also useful for making inferences about events. Documents can lead to false leads, in the hands of inexperienced researchers, which has been a criticism of case study research. Documents are communications between parties in the study, the researcher being a vicarious observer; keeping this in mind will help the investigator avoid being misled by such documents.

Archival documents can be service records, organizational records, lists of names, survey data, and other such records. The investigator has to be careful in evaluating the accuracy of the records before using them. Even if the records are quantitative, they might still not be accurate.

Interviews are one of the most important sources of case study information. There are several forms of interviews that are possible: Open-ended, Focused, and Structured or survey. In an open-ended interview, key respondents are asked to comment about certain events. They may propose solutions or provide insight into events. They may also corroborate evidence obtained from other sources. The researcher must avoid becoming dependent on a single informant, and seek the same data from other sources to verify its authenticity.

The focused interview is used in a situation where the respondent is interviewed for a short period of time, usually answering set questions. This technique is often used to confirm data collected from another source.
The structured interview is similar to a survey, and is used to gather data in cases such as neighborhood studies. The questions are detailed and developed in advance, much as they are in a survey.

Direct observation occurs when a field visit is conducted during the case study. It could be as simple as casual data collection activities, or formal protocols to measure and record behaviors. This technique is useful for providing additional information about the topic being studied. The reliability is enhanced when more than one observer is involved in the task. Glesne and Peshkin recommended that researchers should be as unobtrusive as the wallpaper.

Participant-observation makes the researcher into an active participant in the events being studied. This often occurs in studies of neighborhoods or groups. The technique provides some unusual opportunities for collecting data, but could face some major problems as well. The researcher could well alter the course of events as part of the group, which may not be helpful to the study.

Physical artifacts can be tools, instruments, or some other physical evidence that may be collected during the study as part of a field visit. The perspective of the researcher can be broadened as a result of the discovery.

It is important to keep in mind that not all sources are relevant for all case studies (Yin). The investigator should be capable of dealing with all of them, should it be necessary, but each case will present different opportunities for data collection.

There are some conditions that arise when a case researcher must start data collection before the study questions have been defined and finalized (Yin). This is likely to be successful only with an experienced investigator. Another important point to review is the benefit of using rival hypotheses and theories as a means of adding quality control to the case study. This improves the perception of the fairness and serious thinking of the researcher.

2.7.2 OBJECT SELECTION FOR A CASE STUDY: SOME ESSENTIAL PRECAUTIONS
There are some essential precautions to be taken while choosing the object for case study:

- Identification of pin pointed Problem and the specific situation
- Selection of typical and representative unit from the population
- Availability of prospective data and its reliability
- Expected quality of gathered data
- Estimation of financial liabilities incurred
- Level of skill, training support and specialization of the engaged researchers in the identified research
- Possibility of the repetition of the case study

2.7.3 SOURCES OF DATA

In a case study we can gather data from a number of sources, we cannot limit these sources. Here a selective list is provided for identified sources of information for the case study method:

- Personal records
- Personal letters or communications
- Personal documents i.e. personal diary etc
- Life histories of individual or a branch of mankind
- Biographies
- Interviewing individuals and
- Observations.

2.7.4 STEPS INVOLVED IN CASE STUDY METHOD

The quantity of work required by a case study may vary widely. One must bear in mind that the case study must be sufficiently rich to give the reader an impression of what actually occurred.

However, the case study is part of the least standardized methods and may encompass a range of different approaches in different situations. Carrying out a case study involves the following steps:

2.7.4.1 Step 1: Selection of cases to study

There are at least three criteria for selecting cases: convenience/access, the purpose to which they are to put and the extent to which they can be considered to provide wider insights beyond the particular case in question. The
selection of cases is a critical step for generalising and answering evaluation questions. It is difficult to justify a selection based only on convenience (easy access to data) and probabilistic surveys are sometimes difficult to carry out.

An interesting procedure consists in selecting a stratified sample of cases on the basis of an operational typology of projects. The typology has to be designed by looking at all projects through a computerised database. Although such a database is usually created by the evaluator, this task should better be carried out by the programme managers within their monitoring system.

2.7.4.2 Step 2: Data collection and process

Theoretically, data collection covers all available information about a case including that derived from project documents, project meeting reports, and collected at the various operational levels: interviews with project leaders and staff; observation of the site of the project; surveys among the addressees/beneficiaries of the services provided by the project. These data must be collected, recorded (compilation of a "register") and pieced together so that they can be used in the final report.

2.7.4.3 Step 3: Case report

Drawing up the report on the case involves the organisation of all the raw data on the case into a body of exploitable information. This is then edited, redundant information is eliminated, and the different parts are combined. The report is organised in such a way as to be easy to consult, either chronologically or thematically. The report must include all the information required for subsequent analysis, that is to say, for constructing an account of the case study.

2.7.4.4 Step 4: Testing the suggested hypothesis(es)

Collecting specific evidence about each of the hypotheses from the background information gathered. Since the behaviour is varying, investigator is not able to come up with a single solution for the breakdown of the situation.

2.7.4.5 Step 5: Account

The case monograph should give the reader immediate access to relevant information and to the particular situation of the case - the situation of a project - and provide an understanding of the project as a whole. Each case
study, in an evaluation report, must be isolated (the size may vary between one and five pages). Nevertheless, in the last steps of the analysis the cases may be used as contrasts or comparisons, depending on the evaluation objectives.

2.7.4.6 Step 6: Instituting remedial action

Subsequent to the existing situation, some corrective or improvement programme should follow to check what effect the change has brought about.

Besides Busha and Harter in their book Research Methods in Librarianship: Techniques and Interpretation (1980) have suggested the following steps to conduct the case study successfully:

- The research object is explicitly identified and described at a level of explanation commensurate with whatever pertinent knowledge has already been produced about it.
- Information about the research object and the investigative task are then assembled and analysed, and relevant terms and variables are defined and described.
- The research question is stated or hypotheses are formulated appropriately base upon available information and the body of theory related to the topic of the study (More often than not, case studies are based upon research questions rather than hypotheses; in any event, the research problem should be examined within the context of existing theoretical knowledge).
- An entity (case) is chosen as the specific object to be studied with reference to the research problem.
- The object of the study is then carefully observed, and if necessary causal factors associated with the observed phenomenon are identified.
- If sufficient research data is collected, the hypotheses may be tested with some degree of certainty; however investigators can be more certain when they select and examine similar cases (i.e. conduct follow-up case studies in the same problem area).

2.8 SKILLS NEEDED FOR A RESEARCHERS
• The researcher should develop a creative mind to interpret the answers and to ask good questions
• Should be a good listener
• Should be unbiased by preconceived notions including those derived from theory, thus the researcher should be sensitive and responsive to contradictory evidence
• Should be flexible to adapt within themselves so that they may encounter situations

2.9 CASE STUDY AND CASE WORK

The essential procedure of the case-study method is to take account of all pertinent aspects of one thing or situation, employing as the unit for study an individual, an institution, a community, or any group considered as a unit. The case consists of the data relating to some phase of the life history of the unit or relating to the entire life process, whether the unit is an individual, a family, a social group, an institution, or a community. The complex situation and combination of factors involved in the given behavior are examined to determine the existing status and to identify the causal factors operating.

Some writers make a distinction between the terms "case study," "case work," and "case method. As defined above, case study means intensive investigation of the particular unit represented. Case work refers especially to the remedial or corrective procedures that appropriately follow diagnosis of the causes of maladjustment. Case study and case work, even though they may not be done by the same person or agency, are complementary processes. The expression, case method, frequently has been employed to describe a plan of organizing and presenting instructional materials in law, medicine, social work, and even in education, psychology, and sociology. As a rule, the case materials used are the product of case-study investigation. Case study as an investigation procedure usually employs other research techniques. To trace successfully the life history of an individual or the developmental processes of an institution or a community depends on judicious use of the sources and principles of historical research. Case study frequently utilizes such data-gathering instruments as tests, questionnaires, check lists, score cards and rating scales.
2.10 SUMMARY

For becoming a good library and information professional, it is essential to provide quality services. For achieving such objective one must know about the actual requirements, must know about the merits and demerits of his/her own library system and must be aware about the qualities of neighboring/other library systems. All of such requirements make it essential to proper command on this method of research, case study research method. We have discussed various aspects of case study method and expect that one can become an expert for using this to make the library a quality centre for information.

2.11 SELF CHECK EXERCISE

i. Explain case study and its significance.

ii. What is the aim of the case study?

iii. Discuss the complementary role of the case study and statistical technique.
1.0 Introduction

1.1 Objectives

1.2 Editor

1.3 Peer Review: Evaluation of Manuscript

1.4 Creative and Substantive Editing

1.5 Copy Editing: Styling and Format

1.6 Summary

1.7 Self-check Exercise
1.0 INTRODUCTION
Printed communication is a deep standard for conveying thoughts specially used by researches, subject experts, scientist, students and personnel involved in educational activates. A successful communicator conveys maximum message to the targeted receivers in minimum words accurately and by using latest communication technologies. Editors role in the process of publishing of text is important. Emphasis is being laid on the publication of books in new disciplines and in regional languages. Thus, inspite of all the pessimistic forecasts about the death of the book and print media, the book industry all over the world has made tremendous strides. This creates a growing need for technical editing.

In written communication the writer on his own can seldom produce a text that communicates precisely with the reader. At the least he would seek inputs from the illustrator, the statistician, the graphics designer, the editor and producer. It is explicitly stated that the tasks in the final preparation of the text for publication are the responsibility of the Editor.

Though the tasks of the writer and editor seem distinct and separate, there is actually much overlap, as the writer does a lot of editing while revising his manuscripts. Unless a writer is aware of and appreciates the role of the Editor in the preparation of the manuscripts, his knowledge of his task as writer would remain incomplete.

In general, the processing of a manuscript of factual writing would follow the stages given below.

Author's draft handover to the editor

Stage I: Quality and authenticity assessment by peer review
Stage II: Comment’s of content and language editor
Stage I: Interaction between author and editor

Stage IV: Modification of text keeping the view of above three stages

Stage V: Stylistic and format changes by editor

Stage VI: Final review by the author and manuscript ready to press

The editorial process begins only after the author gives his manuscript to the editor. The editor has two basic responsibilities: to see that the ideas contained in a text are understandable and the production. After reading of a manuscript the editor can decide accept or reject it. Once he accepts he needs to go through in detail. In the case of scientific and technical publications the editor has to maintain the standard and quality, and confirm that the material does not contain half truths, unsupported or unproved facts; and that it is on par with other published texts on the subject.

1.1 OBJECTIVES

Written communication is a profound medium for many individuals with subject expertise and professional competence, author, librarian and writing experience usually write to express their views and opinions. They usually write articles in professional journals, newspapers or other publications on areas related to their subject, scientific, cultural, economic aspects, social or political issues and can identify with the role of an Editor. This unit will explain you with the role and functions of an Editor, particularly one working in a publishing house. The major objectives of this unit are to:

- recognize the complete procedure of assessment of manuscripts; edit manuscript creatively and copy-edit manuscripts;
- know the role of an Editor in publication;
- identify the his responsibilities and uniqueness;
- make out his functions and skills required; and
highlights the obstacles and challenges of his profession in the present digital era.

## 1.2 Editor

A manuscript has to go through various stages of processing for comprehension before being sent to the printer. This process is referred to as editing. To a certain extent, the writer of the text does his own editing. In fact, during the revision of manuscripts the tasks of writer and editor merge. For instance, an author normally plans and organises the style and layout of his manuscripts according to norms specified by the publishing house or the research journal. To do this, the author uses the tools generally associated with editing: reference books, dictionaries, style manuals, handbooks for authors, and so on. Increasingly, authors are using computer software for editing and laser printers to prepare camera ready copies for printing, cutting into the traditional confines of publishing houses. However, once the manuscript is with the publisher, the editor becomes responsible for shaping the text for publication, correctness of grammar, punctuation, headings, paragraphing and layout (copy editing).

The editor is a member of the production team for the production of motion picture films and audio and video cassettes. He gives final shape to the already recorded shots and audio tapes by "assembling, shortening, transposing or synchronising" the pictures and/or sounds. This is a creative task requiring judgement, precision and sensitivity to the medium and the content. Similarly, in computer programming the editor, this time a software package designed for the job, "detects, isolates and corrects" a mistake in a computer programme.

In a publishing company, each set up may have a separate editor and the top editorial executive would be the editor-in-chief or chief editor. Who is
responsible for all editorial policies and actions as well as supervising all editorial functions - from acquisition of manuscript through to publication.

The editors’ act as moulders of a nation's literary tastes and setters of academic standards. They select manuscripts for publication, sign authors to produce texts for universities and schools, promote writers with unexplored talents, scour academic disciplines in which there is not enough published material and search for and invite manuscripts for publication. And they try to balance this genuinely intellectual undertaking with the selling of books in a highly competitive market as well as try to meet the demands of popular taste in books.

They are well informed and up to date in the current trends in scholarship, in the publishing industry, and in the market for books. He specializes in subject areas if his publishing house deals with specific discipline areas e.g., Tibetan studies; science and technology; medicine and so on. He should be a diplomat and a manager of human resources: it is his business to collaborate with authors, books reviewers, advertisers, book distributors and librarians. He is largely responsible for the administrative work related to his job. In short, he is the behind the scenes force that constructs the `image' of his publishing house and projects its integrity in the market and with those who seek its services.

And, finally, a word about the editorial responsibilities in an Open University system which publishes its own texts for students. The editor here is less concerned with the marketing and advertising of books. But in the production of texts he shoulders full responsibility. Each academic programme and each course within the programme has an editor on its team who acts as the chairperson. He guides the production of each text from the moment the course
is conceived and syllabus is framed to its printing and despatch. He/she is also responsible for revision of courses. He hunts for subject experts and course writers, organises meetings, briefs writers, allocates tasks, ensures the accuracy of the content, format and language of texts, arranges for payments and so on.

This is just a summary view of the magnitude of the editor's responsibilities and how indispensible he is at a time when learning, literacy and reading are at a premium. In the next section of this unit we will give you an idea of the editing tasks.

1.2.1 THE FUNCTIONS OF AN EDITOR

An editor implements editorial policy - including marketing, publicity, final choice of manuscripts - formulated by the management or editorial board to whom he would be responsible. But his editorial functions would basically be decided by:

- acquisition/commissioning of manuscripts from authors;
- assessment of manuscripts for scope, content and marketability;
- the kind of text he is editing - general book, technical treatise, encyclopedia, children's book, text book, reference book or fiction; and
- for whom the manuscript is intended - for a learned audience, students, lay persons, etc.

With these purposes in view the editor's functions can be defined in the following terms:

- processing the manuscripts: substantive editing, style editing and copy editing;
- seeking experts' opinions on the manuscript and
- seeing the manuscripts through various stages of production and printing.

An editor search's of manuscripts as on author search's of publishers. He is an intellectual to ensure the quality of his selection. The editor has to bear in mind the market potential of a manuscript: how wide an audience will the
book command; does it answer a felt need; can it be reasonably priced; and can it be published quickly. This last aspect is especially important in science and technical disciplines as information in these areas soon becomes outdated and a text may require frequent revisions. The manuscript has to be verified as an original contribution and checked in all aspects to see that it is fairly comprehensive and self contained - does it have adequate and appropriate illustrations, charts, tables, etc. For this, the editor would have to be aware of other publications in the field, possible copyright infringements and sales competition in the field. He would have to check for inclusion of matter that might be censored by the government or public bias. The Salman Rushdie case is an adequate example.

In commissioning a text the initial problem is to locate appropriate writers in the subject area - particularly if text books are to be written as these do not bring in much money from sales or as royalty. The editor would have to establish rapport with the writer and make time to talk to him about the framework of the text; provide guidelines to cover every aspect of writing: style, format, vocabulary, title, length, layout, references etc; writing schedules and deadlines; provide any assistance, secretarial or other, the writer might need i.e., for a science textbook an illustrator and access to libraries would be required. All this would have to be done keeping the cost of the text in mind.

In both instances, once the manuscript is accepted the editor signs a legal contract with the author and decides whether the copyright rests with the author or publisher.

He has to ensure that copyright protocols are respected, permissions quickly obtained and royalties duly paid. If the author is established, he often has a literary agent who handles the legal tasks for him. If a publishing house specialises in bringing out scientific and technical books the editor may not be in a position to assess a manuscript or locate writers in these areas. Often a publishing house will set up a committee of subject experts who would be able to do the job more effectively. This committee might consist of eminent persons in the field, media persons and educationists. Alternatively, the editor, after evaluating the manuscript himself, might send it to a referee or peer for evaluation.
Keeping the referee's comments and his own assessment in view, he would take a decision whether to: accept the manuscript as such; send it for revision; or return it. In case of revision, the Editor advises the author on the nature of the revision. Revision could range from elaborating or cutting down on certain content areas reorganising information, changing headlines, introducing more illustrations or asking for more bibliographical information. The editor then revises the revised manuscript; and once he accepts it for publication, initiates its processing. This means that the manuscript has to be submitted to; structural or text editing, style editing and copy editing (copy marking for the press). Finally, the editor has to see the manuscript through various stages of production and printing. In this crucial task he may be assisted by a team of skilled assistant editors or he may have to work on his own, depending on the size of the organisation for which he is working. These other personnel are:

**Managing Editor:** Studies the book selling data, surveys the level of competition and advertisement.

**Executive Editor:** Prepare the company’s book list, market trends and estimate the book sellers and universities profit.

**Acquisition Editor:** Discovers new authors, actors and thoughts establishes relation with writers and agents for reprising sale.

**Production Editor:** Responsible for production and construction.

**Copy Editor:** Compiles manuscript, signs and consistency.

Editor in chief the most responsible person amongst all these.

1.2.2 **THE EDITOR'S SKILLS**

The editorial skills are based on the function and responsibilities performed by an editor. Gone the days when editor was equivalent to a gatekeeper who
accepted and rejected the manuscripts on the basis of their originality. Today an editor is a person who communicates plans and supervises. Computers and Internet has revamped the publishing industry today. Though various softwares are used for editorial works, still the time demands the skills as were required forty years back. Such as an editor should be:

- Up-to-date with current affairs
- Well versed with writing style and language
- Prompt editor and manager
- Fully aware of copy write and legal rules of book publication
- Through with printing and relates technologies.

1.3 PEER REVIEW: EVALUATION OF MANUSCRIPT

He should evaluate his own text and seek the opinion of his colleagues and senior members. Once the manuscript is with the editor the first thing he does is to read it carefully to decide on its relevance to the publishing house, check it to see if it has suitable content; is well written; is an original work; is well documented; falls within the scope of his publishing house; and, most importantly, does it have market value or can funding for the publication be arranged. The editor is expected to be fair and objective in his assessment and should not allow the reputation and status of the author or the institution to bias his judgement.

Once the editor accepts the manuscript it is his task to ensure the quality of the information published. There are standard procedures for evaluation of manuscripts of informative writing. An established practice, and the only one generally followed by publishing houses, is that of review by peers and referees. A peer, at the least, is an equal of the writer and an authority on the subject. Reviewers give useful criticism which helps the author to avoid error and misunderstanding and so to improve and clarify his presentation. They give specific directions for discarding unimportant portions, for condensing or elaborating besides indicating rhetorical and grammatical errors.

The editor maintains a panel of such specialists with their knowledge and permission. To ensure fair review a minimum of three referees is essential. Larger publishing houses of science and technical books can refer a manuscript to upto 15 reviewers. In special of the scientific community both within a country and abroad.
Peer reviewing uses structured procedures for commenting and evaluating a manuscript. A copy of the manuscript is sent to the reviewer with a rating form which states the criteria and scale on which the reviewer has to base his judgement. The reviewer communicates with the editor within the time period assigned for the evaluation: about eight weeks.

The editor gets the reviews from all the peers. If these are fairly similar, he combines them into a single report and sends it to the author as his own decision. Each reviewer can only advise whether a manuscript is to be accepted or rejected. The final decision is the editor's and he follows the opinion of the majority. If there is a deadlock, the editor takes his own decision and informs the author accordingly.

If the reviewers require modification in the manuscript, the editor passes on these comments to the writer. The writer should read these comments with great care as attention to the errors which improve his manuscript and make it worthy of publication. If the manuscript is rejected by the reviewers, the editor returns the manuscript. A manuscript can be rejected if there are serious errors in incomplete study of or reference to literature in the field (this latter can result in breach of copyright); and fundamental misconceptions in terminology and methodology.

Essentially, the editor mediates between the writer and the referees. The author is assiduous unbiased appraisal by the anonymous method of reviewing. According to convention the author's name is deleted from the manuscript before being sent to the reviewer and the latter's identity is not revealed to the author. But there are inherent biases in the system to balance which strategies have been evolved. To ensure accountability in reviewing it is now suggested that the author should be given the chance to reply to criticism by the reviewers. The criteria and guidelines for reviewing should be clearly stated and be made available to the writer. Other methods of scientific analysis of a text have been developed but the manuscript is usually subjected to these within the institution or organisation where the author is working and before it is sent to the publisher. And finally, as stated earlier, if the findings are important and original enough, the writer can appeal to the whole scientific community for reappraisal of his manuscript.
1.4 CREATIVE AND SUBSTANTIVE EDITING

The peer evaluate suggest modifications in the text to make it accurate, complete and substantial. Then the editor is concerned with the impacted of the published document on the reader, to evaluate the language and presentation of the manuscript and to recommend and even make changes in it himself. He sees that the text is readable and understandable. If the text is dense or foggy the editor may sit with the author and go over the manuscript word by word, sentence by sentence and para by para. If the ideas do not flow logically he may suggest re-organisation of the content, additions, re-arrangement of sentences/paragraphs or deletions of irrelevant portions. He may insist on changes in wording or structure of a sentence. And all this he will do to make the meaning more exact. All the time he is doing this he must never forget that he is the editor and not the author. The essential meaning must not be changed without the permission of the author. Any changes made by the editor must be in the knowledge of the author for the final decision on any particular change rests with him.

This function of the editor is known as creative and substantive editing. In practical terms, the editor undertakes text analysis. That is, he appraises the several interlinked structures of the text (words, phrases, sentences and paragraphs) to focus on the meaning and effective delivery of ideas. If any of the structures and their links are faulty the message or information of the text becomes skewed.

There are four major areas of difficulty in a text to which an editor should attend:

1. Logical flaws in the organisation of the content
2. Poor paragraph development
3. Complexities in sentence structure
4. Incorrect usage and vocabulary

1) The rhetoric of scientific and technical writing that is, the organisation and presentation of a text according to some logical order or pattern, differs greatly
from the rhetoric of fictional writing, mainly because the content, purpose and audience are different.

There are different patterns for presenting different kinds of information. For instance, the time order is necessary for historical writing (chronological order); time order is also necessary for description of a process or for instructions for process (sequential order); space order is required when a writer tries to give a picture of spatial relationships as in the description of parts of a machine in relation to each other and to the whole. Information about measurements is also described in terms of spatial relationships i.e., cubic, square and linear measures. The writer should know what features of vocabulary, grammar and rhetorical style will be most suitable for the kind of logical order he will be using in his presentation. For instance, in the physical description of an object he has to give the dimensions shape, weight, material, volume, colour and texture. He has to link the descriptions of the various parts of the object to one another and to the whole. And in writing this description he has to use the present tense.

2) Paragraph development - A theme has a central idea and related concepts which, when linked logically and grammatically, develop the thesis or argument of a text. The writer develops his thesis through a series of related paragraphs. Each paragraph, in a number of sentences, develops a single idea, concept or aspect of the theme, which links with the idea or concept of the links and references within and between paragraphs are established by the use of pronouns, conjunctive adverbs and car juncture adverbial phrases: however, therefore nevertheless previous and the following paragraph. A series of sentences in a paragraph, related to each other develop its central idea by description, definition, elaboration, explanation, exemplification or illustration. The sentences of a paragraph are arranged in the logical order necessary for the presentation of a particular theme. The first sentence of a paragraph is usually the topic sentence the one that states the main idea.

The introductory paragraph is the first communication on the topic between writer and reader. It should define the theme and any important terms used throughout the essay, provide relevant background information, identify the
situation, and, in general, link smoothly into the main body of the article or essay. For instance, in a research article on the results of an experiment or survey, it would be necessary not only to state the thesis and the sources of data but also the methodology employed.

Similarly the writer as well as editor should pay close attention to the concluding paragraph. All the main points of the topic should be summarised and there should be some thinking on future action/research/investigation.

1.5 COPY EDITING: STYLING AND FORMAT

Once the manuscript has been edited for content, presentation and structure, it goes for copy editing. It includes marking instructions on the manuscript for compositor/printer/keyboard operator. The copy editing ensures consistency throughout work. The copy editor proof reads and checks a manuscript for consistency in layout, leading, capitalization, hyphenative paragraphing, abbreviations, units of measure, grammar, punctuation, spelling, references and footnotes. Many publishing houses have their own house style i.e., their own preferred method for preparation of manuscript for the printer. This is issued to authors and editors in the form of style manual - published or unpublished. The best known style manual is the Chicago Manual of Style, 13th edition, revised 1982. There are special style manuals for publications in different disciplines. For instance, the style manual for the presentation of English Language manuscripts intended for publication by UNESCO, 1981 publishes specialised guidelines to assist the writers in the uniform presentation of scientific publications. You will learn more about such reference books that are essential for an editor.

The writer can assist the copy editor by giving a clean copy for the printer by paying attention to some of the routine tasks of copy editing as given under:

- Headings
- Numbering of paragraphs
- Tables and graphics
- Use of numerals
- References, Quotations, Foreign Words
• Bulleting

The writer should further check the organisation, correctness, completeness, understandability, grammar, punctuation, spelling, mechanical details, style and format (titles, headings, numbering systems, abstract and index). A clean copy would mean that only house styling would be required. Type setting will be easy, quick and less expensive and publication time will be reduced. Any changes in the manuscript at proof reading stage means delay and extra costs. Once the manuscript is ready for printing, the editor should give a schedule for proof reading galleys and page proof and ask for index copy. We will give brief explanations and examples of aspects of formatting.

**Headings**

It is usual for informative texts to use headings and sub-headings to identify the relationship between different aspects of the theme. Headings indicate the manner in which the content has been organized and the order of presentation of information. They also act as linking devices ensuring continuity and flow of information. It is usual to establish the relationship between major and subordinate items of information by typography, indentation and type size. The things to watch out for are:

- proper subordination of headings
- wording of headings: they should be consistent in wording
- capitalization in headings
- adequacy in headings: headings are signposts and should act as such in a text.

There are essentially four types of headings. The font/type size is determined by the General Editor of the publication.

(i). Centre-heading for the title of chapters or sections in a series.

(ii). Centre-head for titles of paragraphs in boldface 10-point size.

(iii). Left-flushed bold title for sectional headings in 8-point. These are placed just one space above the section.

(iv). Run-on heading for sub-sections in 8-point size but not bold faced. These headings are either underlined or followed by a colon.

**Numbering of paragraphs**
Numbering is not generally done in books of general interest like encyclopedias, dictionaries etc. which are alphabetical in order but it can be incorporated into the text along with the headings if there are going to be frequent cross-references between different sections or chapters of a book. Subdivision of text should not go beyond four levels.

Tables and Graphics
All types of illustrations, drawings, photographs, tables, charts etc. must follow a uniform format.

- All drawings, maps, etc. must be drawn to scale.
- Illustrations must bear titles and numbers.
- Verbal material must be reduced to the minimum.
- Only standard abbreviations must be used.
- Illustrations must be proportionate to the print material on a page.
- Source must be given in full detail.
- Explanatory footnotes in the tables or charts must be avoided.

Reference
Depending upon the nature of the material authors may give references in the text. There are three ways of doing it: footnotes, notes and references. A general reader will not be so much interested in the origins of a matter or authentication of a point from some other authority. On the other hand, he is annoyed by the numerous numbers referring to footnotes or notes. In general it is better to avoid notes or footnotes in a text which is meant for the general public, not researchers.

In general reference may be provided at the end of each chapter or section. The latter is generally preferred.

Quotations
Often writers resort to quotations to support or authenticate a point. It is left to the discretion of the writer or the editor to decide whether a particular quote adds to the argument or not. Editors should ensure that copyright permission has been received in the case of substantial quotations or of copied or re-drawn illustrations. But writers should avoid common place
quotes or quotes from famous people. A quote adds vitality to the point under discussion, and it is not a decorative piece to be flaunted. Hence, any quotation must have the following characteristics:

- It must be reproduced exactly as in the original but if it is a translation it must be so stated.
- If some words or sentences are left out it must be indicated by three dots...
- A quote of less than two lines is run in along the text; otherwise it must be indented in single space.
- Author's comments, if any, on the quote must be placed in brackets.
- The source of the quotation must be given in full.

**Punctuation**

Fewer punctuation marks are required in Indian languages than in English. Use of semicolon or dashes or colon smacks of imitation. Indian languages need only a fullstop, a comma, a quotation mark, a question mark, parentheses and an exclamatory mark. These must be used judiciously and appropriately. Punctuation marks are employed to avoid ambiguity and to add meaningful expression not indicated by words.

**Foreign Words**

In writing scientific, technical or research articles authors are often required to use foreign words or abbreviations for uniformity of standards. However, there is a distinction between words of scientific or technical nature and others. For example the notations for elements or formulas must be given as they are but words like `libido', `subconscious' can be descriptively explained in parentheses or the Indian equivalents can be given for popular forms like `Security Council', `United Nations Organisation’ ‘Indian Medical Association' etc. as used in newspapers and popular magazines. The writer should bear in mind that comprehension and not academic prestige is the most important criterion in this regard. Indian names of organisations are rarely abbreviated but popular usages must be accepted: di. mu. ka. (in Tamil), vi. ra. sam. (in Telugu) etc.
Further, in giving proper names of either Indian or foreign origin, writers must give the complete name first time they occur (first name and last name in case of European/Indo-Aryan or initials and the given name in case of South Indian names) with titles, if any.

**Use of Numbers**

Scientific and technical writing uses numbers to convey certain definite kinds of information as data, statistics, symbols, formulas, units of measure, quantities, etc. These kinds of facts are generally expressed in numerals which can be freely used to express numbers of any size unless they would cause confusion or a written out number seems more correct in the context. It is better to translate international numbers into Indian system i.e., lakhs and crores instead of millions or billions. Where essential one can give the international equivalent in parentheses. Where one has to use numerals the preferred usage is as follows:

(i). Use Indian (Arabic) numerals except where contrastive use of Roman numerals is conventional. For example volume numbers of journals, series, historical references to kings or centuries and so on are written with Roman numerals (Census `C' series Part-II, Indian Journal of Medicine Vol. X, No.1, King James II, III Century B.C. and so on).

(ii). As a matter of principle never begin a sentence with a numeral and where necessary write it in words except in the case of a calendar year. If the number beginning the sentence is accompanied by a unit of measure, both should be spelled out. Similarly, single digit numbers are spelled out in the middle of a sentence e.g.,

(iii). If there are two adjacent numbers in a sentence, spell one out e.g.

<table>
<thead>
<tr>
<th>Wrong</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>55 - w Bulbs</td>
<td>Five 5-W bulbs</td>
</tr>
<tr>
<td>143 3d Avenue</td>
<td>143 Third Avenue</td>
</tr>
</tbody>
</table>

(iv). Two numbers in the same sentence should be written in the same form.
The second and the eighteenth tests were successful.

(v). Weights and measures are always given in the standard decimal systems. When Indian measures are used for historical elucidation, their equivalents in standard form must be provided in parentheses. For example `tulam' (tola in some languages) is given as 10.2 gms. or sevari (sovereign) as 8 gms. in Telugu.

(vi). Avoid fractions where precision is not required.

**Bulleting:** Bullet present the similar data in systematic manner which facilitate the readers to easily comprehend.

## 1.6 SUMMARY

In this Unit, discussions have been made on the processing of manuscripts with particular reference to technical writing i.e., various stages involved for processing or preparation of manuscripts in order to make it ready for printing.

In order to make the text more understandable and readable, organisations of words into sentences, paragraphs and complete texts are the important elements of editing. After reading the Unit, a student will clear his doubt about the structural deviations in sentences and paragraphs and provided some ways of rectifying them. Moreover the format of a publication and its various applications and uses are discussed in this Unit.

**Self Check Exercise**

1. What are the qualities of an editor.
2. Describe the functions of an editor?
3. Explain the Peer review.
4. What do you understand by creative and substance editorial.
5. Write an essay on copy editing.
Unit-2 Editorial Tools

2.0 Introduction

2.1 Objectives

2.2 Dictionary

2.3 Style Manuals

2.4 Standards

2.5 Dictionary of Quotations and Thesaurus

2.6 Summary

2.7 Self-check Exercise
2.0 Introduction

An editor plays an indispensable role in the publication of a book. The output of his professional task is evaluated by readers. He completely shoulders the responsibility of any sort of error on a page which can be a spelling mistake, factual error, grammatical or printing error. It is his bounder and ethical duty to avoid these. Any sort of compromise with his job can make his product substandard. As his output is in printed form, no amount of excuses can benefit him. In addition to his academic background, knowledge and experience - which are essential - the editor also keeps in hand several valuable tools - dictionary, manual, standards specifications, books of quotation, thesaurus etc. These are the various tools which the editor can use to present the text correctly in standardised forms and verify their authenticity. We shall discuss some of these and related matters in this Unit.

The editor receives the text materials for his scrutiny. Like in Library Science, each book has a reader and each reader a book, in the field of editing also each book has a context and each context a book. The text varies from context to context and from audience to audience. A book meant for children needs to be treated differently from that meant for an advanced student; material meant for an academic or research journal has to be viewed and processed differently from the one meant for a popular magazine. The precision demanded in formal writings meant for fellow academics will be out of place or irrelevant in informal presentations meant for children or laymen. A few examples are given below:

<table>
<thead>
<tr>
<th>Formal</th>
<th>Informal</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 B.C.</td>
<td>hundred years before Christ</td>
</tr>
<tr>
<td>sodium chloride</td>
<td>salt</td>
</tr>
<tr>
<td>H₂O</td>
<td>Water</td>
</tr>
<tr>
<td>Flora and Fauna</td>
<td>Plants and Birds</td>
</tr>
</tbody>
</table>

The words given under different columns are used keeping in view the context and the target readers. Decisions regarding a particular word or word-form depend on the knowledge of the Editor, has sensitivity to the reader's
perspective and the general consistency of the text. For each need he depends on a different tool for precision or context sensitivity.

2.1 OBJECTIVES

After reading this Unit, you will be able to:

- identify editor's tasks;
- locate tools required for his job;
- understand specific uses of different tools; and
- resolve conflicts between two or more forms of facts

2.2 Dictionary

Generally a dictionary is used to refer meaning, synonyms or antonyms of a word. But other than this it also contains lot of other information. There are various dictionaries available in the market. Basically, these are either monolingual or bilingual (occasionally trilingual too), such as the Concise Oxford Dictionary (COD) English to English, Brown's English - Telugu Dictionary, or Sanskrit, Hindi - English Dictionary. Then there are subject specific dictionaries - Dictionary of Linguistics, Dictionary of Chemistry, Dictionary of Slang, Dictionary of Proverbs, Dictionary of Indian Flora and Fauna, Dictionary of Art, etc. In addition, there are semantic dictionaries like Dictionary of Synonyms and Antonyms, Roget's Thesaurus - each catering to a specific need. It is mandatory for an Editor to these when he is dealing with a particular subject. A Dictionary is essential to resolve verbal doubts. Any good English dictionary gives several kinds of information.

The following is a brief illustrative list.

(i). Origin of Words

Dictionary contains the details information regarding the origin of a word. Such as - Ba’ndicoot n. (rat), (Ind.) large destructive rat (*Bandicota indica*; (Austral.))
insectivorous and herbivorous marsupial of genus *Perameles*. *(f. Telugu *pandikokku* pig-rat)*

(ii). **Definition**

Dictionary provides the definition of a word. An editor can refer a dictionary if he has doubt regarding exact meaning of a particular context.

(iii). **Pronunciation**

A standard dictionary gives the phonetic transcription of a word which helps to know the pronunciation of particular word.

Ani.hum (ainju’:m)

Pre.ventive (prive’ntiv)

(iv). **Abbreviations**

The abbreviation or the short form of a word saves the space. But this abbreviation should be referred from a standard dictionary so that the meaning is clear or easily understandable.

(v). **Correct Spelling**

(vi). **Italization**

(vii). **Capitalisation**

(viii). **Manner of writing Multisyllabled words.**

Bond – saw

Bond – width

Bar – hcart

(ix). **Different kind of plural formation**

(x). **Authenticity of a word**

make – makable

walk – walkable (avoidable Indianism)

(xi). **Words not naturalised in English**

Piece de art- ‘artistic piece’

2.3 **Style Manuals**

A style guide or style manual is a set of standards for design and writing of documents, either for general use or for a specific publication or organization.
Style guides are prevalent for general and specialized use, for the general reading and writing and for students and scholars. Style guides are not meant to teach you how to write, they were created to define the rules and guidelines of proper writing in order to present the written material in a clear and consistent format. The style guides teach us how to use elements such as punctuation, abbreviations, table construction, heading selection, reference citations, and other elements. Style manual helps in the presentation of material (information in a readily-understandable format. This adds grace and distinctiveness to the text. If you study any text or a journal in any of the modern Indian languages and compare it with a similar one in English you will notice lack of uniformity in the presentation of materials in Indian publications. With the knowledge industry growing Indian languages also are trying to follow a uniform pattern or style and slowly manuals are being brought up. Following are the International style manuals.

(i). APA STYLE MANUAL
The style guidebook now known as the Publication Manual of the American Psychological Association (APA) has its roots in the world of academic publishing in the late 1920s. Originally it was a broad effort by editors of research publications (mainly academic journals in the disciplines of psychology and anthropology) to establish a consensus within the scholarly research community on standards for manuscript preparation for articles. These standards were initially identified through collaboration between journal publishers and authors.

Simple Reference

Complex Reference
Very Complex Reference:

**Book**


**Chapter in Book**


**Periodical: Journal Article**


**Periodical: Newspaper / Magazine Article**


**Electronic Resource**


**Movie**


**Conference Proceeding / Report**

**Thesis / Dissertation**


**(ii). CHICAGO MANUAL**

The first edition of the CMS was published by the University of Chicago in 1906, as *A Manual of Style*; in 1982, it was officially retitled *The Chicago Manual of Style* upon publication of the 13th edition, the informal name already in widespread use by the book's users. Recently, the publishers have released a new edition every decade or so; the most recent is the 15th edition, published in 2003.

*Use*: Natural Sciences and Social Sciences.

**Book**


**Two to Three Authors:**


**Book: More than three Authors**


**Chapter in a book—**


**Journal: Single Author**


**Journal: Two Author**


**Electronic Journal or Article**


(iii). **Other manual are:**

- ISO 215: Presentation of Contributions to Periodicals and other serials

**Journalism**

- The BBC News Style Guide by BBC
- The Times Style and Usage Guide by the Times.

**Web Publication**

- Yahoo! Style Guide: The ultimate Source Book for writing, Editing and creating content for the web, by the Chris Barr and the Yahoo!! Editorial Staff.

### 2.4 Standard

It is important to present scientific and technical information in correct standard such as proper name, measurements etc. Specially when data across cultures and nations is to be presented. There are two important organizations which set these standards. One is the International Organization for Standardization and the Bureau of Indian Standards. The Editor has to refer to the publications of these two organizations whenever there arises a doubt regarding the authenticity of data, name, date or accuracy of an event etc. The need is most felt in the context of:

- Measurements of different systems
42 C 105 F.
Hectare 2.5 acres
3 Pound 1.3 Kg
1 Mile 136 km

- Proper names
  Bambai Mumbai
  Culcatta Kolkata

- Correct order and presentation of personal names belonging to different cultures

- Signs of currency of the same name for example Rupees.
  Mauritius Rupee M. Rs.
  Hong Kong Dollar HKS

- Ancient and modern names
  Pateliputra Patna
  Kashi Banaras
  Mesopotamia Iraq

- Botanical and zoological names

- Chemical Notations
  \( H_2O \) Water
  \( NaCl \) Sodium Chloride

- Transliteration or symbolisation of other language terms in English
  G. K gama I
  Russ. 6 be b
  Skt. Mahabharata

The above is a representative sample, not an exhaustive list of problem areas. For instance see how the different eras have been dealt within one of the publications on standards:

**Non-Christian Eras**

Non-Christian eras are often used in historical writings and the Saka era is also one of the eras officially recognized by the Government of India to be used along with the dates of the Gregorian calendar. The anno Hegira (‘A.H.’) is quite frequently used in medieval history, and the anno Budhae (‘A.B.’) is used
to establish Buddhist dates in relation to the Sri Lanka chronicles. A year according to the Hegira can be represented only by an inclusive date in the Christian calendar. e.g., A.H. 897/1491-92, and a month if used alone cannot be equated with any month of the Gregorian calendar, because the Hegira is purely lunar. A month in Saka, or Vikram calendar, used by farmers for sowing and reaping is often spread over parts of two months in the Gregorian calendar. However, when non-Christian dates are used, the corresponding Gregorian dates must be invariably given. The two forms of reckoning may be separated by a solidus, or the corresponding Gregorian date be enclosed in round brackets. For example;

Sri Lanka chronicles, the consecration of Asoka took place in anno Buddhae 218 (269 B.C.)
The coin carries the date A.H. 718 (1318-19)
Amir Khusru gives the date as A.H. 19 Rabi-ul-akhir 659 (26 February 1296)...

All dates based on non-Christian eras must be qualified by the name of the era used. The specifications are very clearly spelled out. It is the responsibility of the Editor to check and incorporate the correct form of the data. To know about Indian dates follow the given tool.

Book of Indian Era: with table for calculating Indian dates (1883) by Alexander Cunnigham: Kessinger publishing.

2.5 Dictionary of Quotations and Thesaurus

An author uses quotations for himself. The authenticity of such quotes is confirmed through the editorial tools. The editor uses dictionary of quotations and thesaurus to trace the location, date and context of these quotations. For example “you give me blood, I will give you freedom” slogan is used by any author, than editor must know that Subhas Chandra Bose gave this slogan to the soldiers of Azad Hind Fauz. Similarly if we quote “garibi hatao”, we must know that the slogan was given by Indra Gandhi in 1969 at the time of Congress partition. The Editor has to check dictionary of quotation and thesaurus to verify the slogan. Below are given examples of dictionary of quotations:.
KENNEDY, JOHN
FITZGERLAND, US President, 29
May 1917-22 Nov. 1963

Let us never negotiate out of fear.
But let us never fear to negotiate.

KIPLING
Oh, East is East, and West is West, and
Never the twain shall meet,
Till Earth and Sky stand presently at
God's great Judgment Seat

- Oxford Dictionary of American Quotation: This dictionary contains 20,200 quotations by great American personalities since ancient times to 21st century. This is a ready reference tool for editors.

Apart from the popular quotations of famous people the author uses a lot of other quoted material in the text in support of his arguments. In such cases the Editor has to: verify the quote, give proper reference, abridge it, format it in the proper form giving the number in a series of quotes or footnotes and ensure its suitability to the context. Authors, particularly the thesis writers and novices display a penchant for quoting extensively. This robs the writer of originality and clarity of ideas. The Editor has to advise the writer on the need or otherwise of a quotation.

Thesaurus:
Thesaurus is a control and dynamic vocabulary of semantically related terms which covers a specific domain of knowledge.” Its aim is to help the researchers and readers.

Functions:-
- to provide a map of concepts in a subject/field to enable the indexer/searcher
- to provide a standard vocabulary to the indexers for a subject/field;
to show the relationships existing among concepts that could help searchers to narrow down or broaden their searches for effective retrieval;

to provide a panoramic view of a subject/field showing relations among its constituents to help the indexer to assign descriptors to documents and the searcher to access them;

identify different concepts which he could not have known otherwise, in many cases.

**Structure**

Synonyms and Quasi-Synonyms

USE/UF (Use For)

Broader Term (BT)

Narrower Term (NT)

Related Term (RT)

Top Terms (TT)

Example: (i)

**MICROFORMS**

<table>
<thead>
<tr>
<th>Use (UF)</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro copies</td>
<td></td>
</tr>
<tr>
<td>Data media</td>
<td></td>
</tr>
<tr>
<td>Micro transparencies</td>
<td></td>
</tr>
<tr>
<td>Micro-opaques</td>
<td></td>
</tr>
<tr>
<td>Microphotography</td>
<td></td>
</tr>
</tbody>
</table>

Example: (ii)

Hair

Use for general materials on hair as well as for materials on hairdressing and hair cutting.

<table>
<thead>
<tr>
<th>Use (UF)</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbering</td>
<td></td>
</tr>
<tr>
<td>Coiffure</td>
<td></td>
</tr>
<tr>
<td>Haircutting</td>
<td></td>
</tr>
<tr>
<td>Hairdressing</td>
<td></td>
</tr>
<tr>
<td>Hairstyles</td>
<td></td>
</tr>
</tbody>
</table>
The oldest living example of a thesaurus is the Roget’s International Thesaurus of English Word and Phases, given by Peter Mark Roget in 1852. It was develop to provide alternate terms for a given concept and is divided in to two part viz., classified and alphabetical. The classified part has certain categories further subdivision in to subdivision under which are placed the different words. The words are assigned to different grammatical forms like noun, verb, etc. The other part is the alphabetical part consisting of the words arranges alphabetically with the reference to their category numbers linking them to the classified part. Another The Oxford American Thesaurus of current English. Some other important editorial tools are list below those are help to the editors.

- Who is who
  - International Who is who: London; Europa publication.

- Year Books
  - Statesman Yearbook: London; Macmillian.
  - India, reference Annual: Delhi; Ministry of Inf.

- Handbook and Manual
- Geographical Dictionary and Directories.

### 2.6 Summary

This Unit discussed various tasks of the Editor, the tools of his trade, nature of information provided in each of the reference volumes, and the way the Editor uses them to make the text readable, understandable and standard.

### 2.7 Self Check Exercise
1. Write the name of any two styles manual

2. What do you mean by Thesaurus?

3. Explain any two Dictionary of Quotations.

4. Write short note on the following:-

   1. Dictionary     2. Standards