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## **Unit : 2 □ Characteristics of learners with hearing loss and impact of different degree of hearing impairment on communication.**

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### **Structure**

**2.1.1 Introduction:**

**2.1.2 Objective:**

**2.1.3 Symptoms of children with Hearing Impairment?**

**2.1.4 Characteristics of learners with Hearing Loss.**

**2.1.5 Characteristics of learners.**

**Check your progress - 1**

**2.1.6 Impact of different degree of Hearing Impairment on communication.**

**2.1.6.1 Importance of Hearing:**

**2.1.6.2 The process of hearing:**

**2.1.6.3 Types of Hearing Loss:**

**Check your progress**

**2.1.7 Sub-Unit Summary**

**2.1.8 Answer to Check Your Progress.**

**2.1.9 Unit-End Exercises**

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### **2.1.1 Introduction**

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Hearing is the ability to perceive sound. A person suffering from hearing impairment has difficulty in perceiving or identifying sound clearly due to auditory problems. The impairment may be unilateral or bilateral ears. Due to this problem child can face problem in verbal communication skill and It can affect several development areas personal-social, cognitive and academic.

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### **2.1.2 Objective:**

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- To understand symptom of hearing loss during infancy and child hood.
- To understand characteristics of learners having hearing loss.

- To understand different degrees and communication of hearing loss.
- To understand, and address the challenge in educating student with hearing loss.
- To understand different terminology in hearing loss.

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### **2.1.3 What are the symptoms of children with hearing impairment?**

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#### **During infancy:**

- 1-3 months old no response to sudden sound such as banging of door or ringing of doorbell.
- 4-6 months old unable to locate the sound source.
- 7-9 months old do not look at the person being mentioned, e.g. “Where is Uncle Joy?”
- 10-12 months old no response to their names being called or frequently used words or phrases.

#### **During childhood:**

- Delayed response to sound
- Cannot hear clearly what others are saying
- Show difficulty in locating the sound source
- Pay more than usual attention to speaker’s facial expression and lip movement while listening.
- Give irrelevant answers or misinterpret instructions
- Request for repetition during conversation
- Show poorer ability to understand speech in a noisy environment
- Tend to turn up the sound volume of television
- Incorrect pronunciation
- Delayed language development
- Poor attention in class
- Frequent use of gestures to express themselves, e.g. pointing to what they want
- Easily irritated as a result of communication difficulty.

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### **2.1.4 Characteristics of learners with hearing loss**

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- Deaf/Deafness refers to a person who has a profound hearing loss and uses sign language.
- Hard of hearing refers to a person with a hearing loss who relies on residual hearing to communicate through speaking and lip-reading.
- Hearing impaired is a general term used to describe any deviation from normal hearing, whether permanent or fluctuating, and ranging from mild hearing loss to profound deafness.
- Residual hearing refers to the hearing that remains after a person has experienced a hearing loss. It is suggested that greater the hearing loss, the lesser the residual hearing.

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### **2.1.5 Characteristics of learners:**

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- Language and speech- The ability to learn language and speech is the most severely affected area of development of hearing impairment.
- Intellectual ability- Thinking process of normal and deaf children are found to be similar. Also cognitive abilities of deaf children are essentially unimpaired except in those cases which involve language experience. But deaf children are retarded in intellectual task which requires verbal skill and highly performance in non-verbal intelligence.
- Academic Performance- Hearing impaired children are frequently handicapped in various degree of hearing loss and its effect on educational performance and particularly and particularly handicapped in reading which relies heavily upon language skill.
- Adjustment of social interaction Our social interaction, depends upon communication. So deaf children have communication problems that's why they have problem of social interaction such children live in a world of isolation and from a group of their own an association of the deaf for their common interest and interaction.
- Behavioral problem- Deaf learners feel invariably inferior and helpless in adapting to circumstances that require verbal communication. So regard non-verbal communication absence of verbal/they have poor self concept which damages the development of personality.

- Socially handicapped - Learners with hearing loss can not adjust with society because they suffer from communication difficulty and fail to understand what others hearing people say.
- Problem in personal and social development- Language becomes a barrier for deaf learner for purpose of communication with others so this affects the socialization process and plays a vital role in the personal and social development of hearing loss learner.
- Personality problem- Hearing difficulty may create more personality problem because a deaf learner is more frustrated as he/she tries to reach the level of the normal and a totally deaf child seems reconciled to his take.

**Check your progress-1**

1) During infancy what are the symptoms of children with hearing impairment?

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2) What is hard of hearing?

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3) What is deafness?

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4) What is Residual hearing?

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5) What is Hearing impairment?

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6) Mention any three characteristics of learners with hearing loss?

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### **2.1.6 Impact of different degree of hearing impairment on communication.**

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Hearing impairment results from a number of causes and is usually characterized by the type and degree of hearing loss. Type of hearing loss is related to the site of the disorder within the auditory system, and degree of loss is related to the extent that the disorder is infringing on normal function. Defining both the type and degree of hearing loss is a cornerstone of audiology.

#### **2.1.6.1. Importance of Hearing:**

The sense of hearing is essential as:

- It is the foundation for development of verbal language
- It helps the person to live effectively in the environment
- It helps in better communication even over long distances.

#### **2.1.6.2 The process of hearing:**

- The physical processing of hearing occurs in three groups of structures, commonly known as the outer, middle, and inner ears.
- The outer ear has three main components: the auricle, the ear canal or meatus, and the outer layer of the eardrum or tympanic membrane. The outer ear serves to collect and resonate sound, assist in sound localization, and function as a protective mechanism for the middle ear.
- The middle ear is an air-filled space located within the temporal bone of the skull.

It contains the ossicular chain, which consists of three contiguous bones suspended in space, linking the tympanic membrane to the oval window of the cochlea. The middle ear structures act as an impedance matching device, providing a bridge between the airborne pressure waves striking the tympanic membrane and the fluid-borne traveling waves of the cochlea.

- The inner ear contains the cochlea, which is the sensory end organ of hearing. The cochlea consists of fluid-filled membranous channels within a spiral canal that encircles a bony central core. The sound waves, transformed into mechanical energy by the middle ear, set the fluid of the cochlea into motion in a manner consistent with their intensity and frequency. Waves of fluid motion impinge on the membranous labyrinth and set off a chain of events that result in neural impulses being generated at the VIIIth cranial nerve which is perceived by the auditory cortex in the temporal lobe in the brain.
- Impediment to sound across any of the three structures can result in loss in hearing acuity called as hearing loss.

### **2.1.6.3-Types of hearing loss:**

According to anatomical origin, hearing loss are of three major types :

- **Conductive hearing loss** - pertaining to the outer and middle ear
- **Sensorineural hearing loss** - pertaining to the inner ear only.
- **Mixed hearing loss** -pertaining to the outer/middle and inner ear.

According to the perceived loudness, hearing loss can be categorized as :

- **Hearing sensitivity loss**
- **Suprathreshold hearing disorders**
- **Functional hearing loss**

**Hearing sensitivity loss** is the most common form of hearing disorder. It is characterized by a reduction in the sensitivity of the auditory mechanism so that sounds need to be of higher intensity than normal before they are perceived by the listener.

**Suprathreshold disorders** are less common, may or may not include hearing sensitivity loss, and often result in reduced ability to perceive speech properly.

**Functional hearing loss** is the exaggeration or fabrication of a hearing loss. In addition

to type of loss, a hearing disorder can be described in terms of time of onset, time course, and whether one or both ears is involved.

A hearing disorder can be described by the time of onset:

- **Congenital:** present at birth
- **Acquired:** obtained after birth
- **Adventitious:** not congenital; acquired after birth; coming by chance/accidental
- Hearing disorder can also be described by its time course:
- **Acute:** of sudden onset and short duration
- **Chronic:** of long duration **Sudden:** having a rapid onset
- **Gradual:** occurring in small degrees
- **Temporary:** of limited duration
- **Permanent:** irreversible
- **Progressive:** advancing in degree
- **Fluctuating:** aperiodic change in degree

In addition, hearing disorder can be described by the number of ears involved:

- **Unilateral:** pertaining to one ear only
- **Bilateral:** pertaining to both ears

### Sensitivity Loss

Degree of hearing sensitivity loss is commonly defined on the basis of the audiogram. Normal sensitivity ranges from -10 to +25dBHL. All other classifications are based on generally accepted terminology. These terms might be used to describe the pure-tone thresholds at specific frequencies, or they might be used to describe the puretone average or threshold for speech recognition. Pure-tone average is the mean of thresholds at 500, 1000, and 2000 Hz.

### General guideline for describing degree of hearing loss

Degree of loss Range (in dB HL)	
Normal	-10 to 25
Mild	26 to 40
Moderate	41 to 55
Moderately severe	56 to 70
Severe	71 to 90
Profound	>90

dB level	Type of Impairment	Ability <i>to perceive sound</i>	Speech discrimination	Communication
0 to 25 dB HL	Normal Hearing	Normal	Normal	Speech is normal and normal pattern of development with good auditory perceptive skills.
26-40 dB HL	Mild Hearing Loss	Difficult to identify soft sound such as	100% better ear whispering and others.	Speech and language developments are within normal limits. May exhibit occasional auditory perception problems some educational retardation likely.
41-55 dBHL	Moderate Hearing Loss	Unable to hear clearly what others are saying during conversation. Hearing aids are necessary.	50% to 80% better ear	Language development and speech are mildly affected. Difficulty with rarely used words, minor differences in meaning of words and idioms, defective articulation but still intelligible speech loss quality and inflection almost normal. Reading and writing delayed. Vocabulary training, reading and writing to be special attended train addition to schooling.
56-70 dB HL	Moderatey-Severe Hearing	Unable to clearly hear loud noises such as telephone ring Severe	40% to 50% better ear	Grammar, vocabulary, articulation and voice are affected understand in loud speech .Early speech is unintelligible. Even with hearing aids show difficulty in understanding. Reading and writing need special assistance.
71-90 dBHL	Severe Hearing Loss	Can only hear very loud noises and sounds such as shouting or vacuum cleaner noise.	No discrimination	Speech and language donot developments spontaneously. Sound produced very loudly at a distance of 1ft. and near of the ear. The voice will be high-pitched and articulation distorted.
>90 dB HL	Profound Hearing Loss	Difficult to perceive any sound	No discrimination	They donot rely on hearing for their communication. Language and speech develop only by training and they are educationally deaf. Communicate mostly through gestures, voice, inflection, articulation greatly affected. Required regular speech and language training regarding subject's expert.

### Check Your Check Progress-2

- 1) What is the difference between normal hearing communication and profound hearing loss communication?



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2) What is the meaning of Unilateral and Bilateral hearing loss?

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3) According to anatomical origin how many type of hearing loss are there?

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4) Mention the type of physical processing of hearing?

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5) Where is the Ossicular chain situated?

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6) What is the name of VIIIth cranial nerve in brain?

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7) Write the full form of the P.T.A.

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## 2.1.7 Sub-Unit Summary

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- Hearing ability suffer it leads from hearing difficulty.
- Problem will be unilateral and bilateral.
- Symptom of hearing loss infancy or it will be childhood.
- It will be several characteristics hearing loss and also learner activities
- It will be impact in different degree of hearing loss and it affected communication of speech and language.

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## 2.1.8 Answer to Check Your Check Progress

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### Check Your Check Progress-1

- 1) 1-3 months old No response to sudden sound such as banging of door or ringing of doorbell.  
4-6 months old Unable to locate the sound source.  
7-9 months old do not look at the person being mentioned, e.g. "Where is Uncle Joy?" 10-12 months old No response to their names being called or frequently used words or phrases, e.g. "No".
- 2) Hard of hearing refers to a person with a hearing loss who relies on residual hearing to communicate through speaking and lip-reading.
- 3) Deaf/Deafness refers to a person who has a profound hearing loss and uses sign language.
- 4) Residual hearing refers to the hearing that remains after a person has experienced a hearing loss. It is suggested that greater the hearing loss, the lesser the residual hearing.
- 5) Hearing impaired is a general term used to describe any deviation from normal hearing, whether permanent or fluctuating, and ranging from mild hearing loss to profound deafness.
- 6) **Academic Performance-** Hearing impaired children are frequently handicapped in various degree of hearing loss and its effect on educational performance and particularly and particularly handicapped in reading which relies heavily upon language skill.

**Adjustment of social-** Our social interaction depends upon communication so deaf children have communication problems that's why it should have a problem of social

inter action such children live in a world of isolation and from a group of their own ,an association of the deaf for their common interest and interaction.

**Behavioral problem-** Deaf learners feel invariable inferior and helpless in adapting to circumstances that require verbal communication. So regard non-verbal communication absence of verbal they have poor self poor concept which damages the development of personality.

### **Check Your Check Progress-2**

- 1) In normal hearing communication speech is normal and normal pattern of development with good auditory perceptive skills. In profound hearing loss donot rely on hearing for their communication. Language and speech develop only by training and they are educationally deaf. Communicate mostly through gestures, voice, inflection, articulation greatly affected. Required regular speech and language training regarding subject's expert.
- 2) Unilateral means pertaining to one ear only and Bilateral means pertaining to both ears.
- 3) There are of three major types of hearing loss. These are
  - Conductive hearing loss - pertaining to the outer and middle ear
  - Sensorineural hearing loss - pertaining to the inner ear only.
  - Mixed hearing loss - pertaining to the outer/middle and inner ear.
- 4) There are three physical processing of hearing.Outer Ear,Middle Ear and Inner Ear.
- 5) Middle Ear.
- 6) Auditory nerve is VIIIth crenial nerve in brain.
- 7) Pure Tone Audiometry.

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### **2.1.9 Unit End Exercises**

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1. Discuss the details about characteristics with of learner/ksf hearing loss
2. Discuss the details about different type of hearing impairmet and their communication.

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## **2.2 □ Language and communication issues attributable to hearing loss and need for early Intervention**

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### **Structure**

**2.2.1 Introduction:**

**2.2.2 Objective:**

**2.2.3 Language issues attributable to hearing loss.**

**Check your progress-1**

**2.2.3.1 Deafness creates language issues attributable to hearing loss.**

**2.2.3.2 Different degree of hearing loss and Language issues attributable**

**Check your progress-2**

**2.2.4 Different degree of hearing loss and on communication issues attributable**

**Check your progress-3**

**3 2.2.5 Early intervention**

**2.2.5.1 Early Intervention for the Identified Population**

**Check your progress-4**

**2.2.6 Sub-Unit Summary**

**2.2.7 Answer to Check Your Check Progress**

**2.4.8 Unit End Exercise**

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### **2.2.1 Introduction**

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Man is a social animal, without society human just being is like animal. So human interaction with society with the help of verbal interaction and that involves speech, language and communication. Speech, language and communication depend upon our

hearing ability which is to perceive the sound about nature. But if suffering from hearing ability it has difficulty to perceive the sound about nature and it affects verbal interaction and also affects speech, language and communication. Due to this problem child can face problems in several development areas these are personal-social, cognitive and academic. You will realize that language and communication are the two of such concepts and also including speech which are core issue in the special education. Hence a clear and descriptive idea of language and communication issues attributable to hearing loss and need for early intervention is necessary to know it in a better way as a teacher trainee and also as a human being.

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### **2.2.2 Objective**

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- To understand meaning of communication
- To know about different communication system, language and communication
- To know about different degrees of hearing loss and type.
- To understand to given in formation while language issue of hearing loss
- To understand able to given in formation while communication issue of hearing loss
- To understand the need for early intervention of hearing loss

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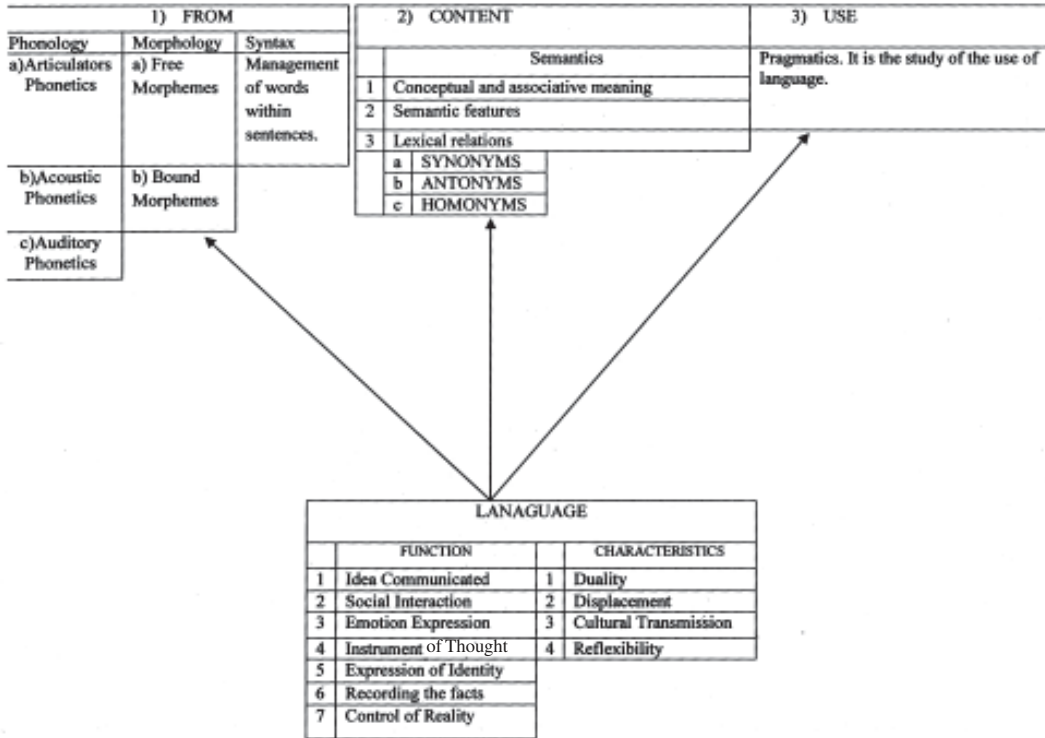
### **2.2.3 Language issues attributable to hearing loss.**

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Language is a part of human life. It gives words to our thought, voice to our idea and expression to our feelings. It is a rich and varied human ability one we can use without a thought that children seems to acquire automatically and that linguists have discovered to be complex yet describe. According to Chomsky, Language is a set of (finite or infinite) sentences, each finite in length and constructed out of a finite set of elements.

LANGUAGE COMPONENTS

Language component has three stages. These are:



LANGUAGE COMPONENTS

Check your progress-1

What is Language? Mention the component of language?

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2.2.3.1 To see how deafness creates language issues attributable to hearing loss.

Speech is an oral manifestation of language. Speech refers to the actual production of sounds making words. These sounds are produced by the coordination of facial muscles and the flow of air through the human voice box (larynx). Language refers to our complex system of symbol used to communicate. Man is the talkative animal that lives in language as a fish lives in water. Speaking is natural activity for a human being. Moreover, the spoken word is the foundation of, all languages. While comparing the various aspects

of language, one can conclude that ear language (spoken/oral aspect) and another is eye language (writing language). Ear language (spoken aspect) or oral language is the means of communication among people and it is used in daily life because it is the medium for conversation. Deaf student cannot perceive the sound about nature with the help of ear that's why they are already delayed to ear language which is oral language in spoken aspect. The hearing-loss-children do not learn to listen immediate. After they are provided with the amplification and exposure to speech and language training and with best possible amplification language learning for the hearing-loss-child is possible. This is the major concern of hearing impairment. The system to process speech and language is in place but required raw material for it to enable any processing is inadequate. How to revive the broken link between hearing and speaking? This question may be answered predominantly in two ways:

- 1) One way to restore the link between hearing and speaking (and language) is to provide the child with ACE (Appropriate Continuous and Early) amplification with training.
- 2) Another answer is to bypass the link between speaking and hearing by providing the child with ENR (Early Natural Rich) exposure to sign language.

The issue of these two answers and their mid points is complex, multi-faceted and challenging.

### 2.2.3.2 Different degree of hearing loss and Language issues

Hearing Level (dB)	Degree of Hearing Loss	Type	Missed Sounds	Language issues attributable
0-25	Normal	Normal	Normal	Normal
26-40	Mild	Conductive Sensorineural	25% - 40% speech signal, distant sounds, unvoiced consonants, plurals and tenses.	Misses 50% of class discussions, has problems in suppressing background noise.
41 -55	Moderate	Conductive/ Sensorineural	50% - 80% speech signal	Articulation deficit, limited vocabulary, learning dysfunction.
56-70	Moderately Severe	Sensorineural Mixed	100% of speech information	Delayed language syntax, atonal voice, reduced speech intelligibility
71 -90	Severe	Sensorineural Mixed	Ail speech sounds, can hear loud environmental noises	Speech not developed or deteriorates, learning deficits
>90	Profound	Sensorineural Mixed	All speech sounds, only feels vibrations	Speech not developed or deteriorates, learning deficits

### Check your progress-2

1) What is the meaning of Ear language?

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2) What is the meaning of Eye language?

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3) What is the difference between children with mild hearing loss and those with profound hearing loss on language issues?

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### 2.2.4 Different degree of hearing loss and communication issues

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We use the word communication very commonly and casually. What does it mean? Communication is an intentional two way complex process of sending message from one end to the other via a channel.

Have a look at the following examples :

1. Bulti writes a letter to Rishl.
2. Runa is unfolding the story of Shrikrishna through her Bharatnatyam.
3. Ananya saw red light at the signal and stopped her car.
4. Ashoke waves 'bye' to Prabir.
5. Saikat says, "Kishore please go to the bank".
6. Triptesh opens the door when the bell rings.
7. Mita teaches her students the 'Properties of Air' using the Indian Sign Language.
8. Sujata listens to the radio.



Which of these are examples of communicative events?

Yes, all the 8 are examples of communication. So Communication is a two way process of transfer of a message from one end to the other through a channel.

What happens in these 8 events, do fit into our definition of communication?

Now let us try to identify whether all events can be called language?

You are very sure of 1, 5, and 8 for being examples of language.

What about 7?

Indian Sign Language, (as suggested by its name) is a language and hence communication example number 7 must be categorized along with 1, 5, 8.

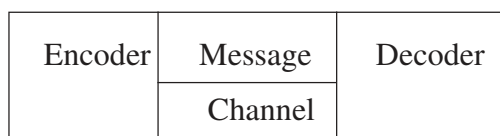
What about other examples 1, 2, 3, 4, 6 are communicative events but not examples of language.

Linguistic communication can take place through following three modes of communication:

- 1) Aural / Oral (listening / speaking)
- 2) Visual / Graphical (Reading / Writing)
- 3) Visual / Manual (Sign Language)

Again have a look at the list and point out the examples where speech is involved. Yes, 5 and are examples of speech.

While comparing the various aspects of language, one can conclude that ear language (spoken/oral aspect) and another is eye language (writing language) Oral language is the means of communication. So communication is a complex two ways and intentional process of passing the message from one end to the other using a channel



Communication development and behavioral skills are influenced by a child's ability to hear. When hearing loss goes undetected or is detected late (after 6 months of age), language and speech development can be delayed. This delay can affect a child's social interactions, emotional development and academic performance.

<b>dB level</b>	<b>Type of Impairment</b>	<b>Communication issues attributable</b>
-0 to 25 dB HL	Normal Hearing	Speech and language normal and normal pattern of development with good auditory perceptive skills.
26-40 dB HL	Mild Hearing Loss	Speech and language developments are within normal limits. May exhibit occasional auditory perception problems some educational retardation likely.
41-55 dBHL	Moderate Hearing Loss	Language development and speech are mildly affected. Difficulty with rarely used words, minor differences in meaning of words and idioms, defective articulation but still intelligible speech loss quality and inflection almost normal. Reading and writing delayed. Vocabulary training, reading and writing to be special attended train addition to schooling.
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71-90 dBHL	Severe Hearing Loss	Speech and language do not develop spontaneously. Sound produced very loudly at a distance of 1ft. and near the ear. The voice will be high-pitched and articulation distorted.
>90 dB HL	Profound Hearing Loss	They do not rely on hearing for their communication. Language and speech develop only by training and they are educationally deaf. Communicate mostly through gestures, voice, inflection, articulation greatly affected. Required regular speech and language training regarding subject's expert.

**Check your progress-3**

1) What is communication, speech and language?

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2) Mention the mode of linguistic communication?

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3) What is the difference between children with normal hearing and those with profound hearing loss on communication Issue?

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### **2.2.5 Early intervention**

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Many services and *programmes* will be available to you soon after your child’s hearing loss is found. When a child’s hearing loss is identified soon after birth, families and professionals can make sure the child gets *intervention services* at an early age. Here, the term *intervention services* include any programme; service, help or information given to families whose children have a hearing loss. Such intervention services will help children with hearing loss to develop communication and language skills. There are many types of intervention services to consider. We will talk about *early intervention* and about *communication* and *language*. Some of the services provided to children with hearing loss and their families focus on these topics. So early intervention services and choices it means communication and languages available for you and your child.

“Early intervention” means getting started as early as possible to address the individual needs of a child with disabilities. This is done to enhance the infant or toddler’s development, to minimize the potential for developmental delay, and to enhance the family’s capacity to meet the child’s needs. Early intervention is a *system of services* established by the states through grants from the federal government to help eligible children from birth until their third birthday.

If your child was born with a hearing loss or has developed one before turning three, you may want to get in touch with personnel in the early intervention system in your area. The hospital staff may have already connected you with these services. If not, you may wish to ask your child’s doctor.

Early intervention may be of help to your child and your family in many ways, including learning to communicate with each other. Early intervention programme will be assigned a *service coordinator* to help you understand the intervention system and make sure that your child gets the services to which he or she is entitled.

**Valuable service systems available to you and your family are:**

- **State services** such as early intervention (for eligible children up to the third birthday) and special education and related services (for eligible preschoolers and school-aged children).
- **Organizations specializing in hearing loss and deafness** that provide information and support.
- **Resource and information centers** that can offer information about national and state resources and education rights.
- **Parent groups** in which you can talk with other parents who also have children with hearing impairments or deafness.

**2.2.6.1-Early Intervention for the Identified Population**

The services/facilities available for early intervention in the country are covered under the following:

- Medical intervention
- Aids, appliances and cochlear implant.
- Auditory and speech-language training.

i) **Medical intervention-** There are two conditions that require medical intervention in school children. 1) Remove the wax.

2) Otitis media.

Otolaryngologists being available only at the hospitals, the doctor manages the ear/conductive hearing problem at the primary center. Anganwadi workers and other grass root level health workers are trained to handle acute ear pain, foreign body in the ear canal, etc. There are about 600 district hospitals in the country but not all may have ENT specialists or infrastructure for audiological assessment. The scenario is expected to improve as made budgetary provisions to meet the deficiencies and a 'medical kit' for grass root workers to attend to the ear problems.

**ii) Aids, appliances and cochlear implant-** Fitting appropriate hearing aids are a crucial step in initiating successful intervention especially in children with pre-lingual hearing impairment.

The status of availability of 'state-of-art' hearing aids of all styles, makes and models (digital and analog) in the Indian market have improved to a great extent with the liberalization of the import policies. It is estimated that about 1.85 lakh hearing aids are distributed/sold annually. Of these, about 1.25 lakh body level aids are distributed under the ADIP scheme. The rest are either assembled or imported for sale in the country.

The Scheme of Assistance to Disabled Persons (ADIP) of Ministry of Social Justice and Empowerment, Government of India, provides Rs. 8,000 per aid per ear for the beneficiary. Binaural aids are provided to school-going children which may be replaced with new hearing aids every two years. Income for eligibility for fully and partially subsidized aids currently is Rs.6, 500 p.m. and Rs.6, 501 to Rs.10, 000 p.m. respectively. Solar battery chargers with two AA rechargeable batteries are also included for the beneficiaries. The cost of hearing aids is reimbursed for employees under ESI and CGHS schemes. Some of the State Governments have also made provision for distribution of free/subsidized hearing aids.

Cochlear implant is not an option by choice, but in terms of candidacy and cost (varying from Rs.5 lakhs to Rs.10 lakhs). Among the elite hearing impaired, cochlear implant is picking up well, especially in the prelingually deaf. Marketing strategies and the outcome of cochlear implant in the implanted children seem to have contributed to the popularity. Three popular brands of cochlear implant (Nucleus, Medel and Clarion) are marketed in the country. INS Ashwini Hospital, Mumbai have made provision for free cochlear implant for their beneficiaries.

Certain corporate houses also have donated funds to some private hospitals to help the economically weaker section. The outcome of cochlear implant is good (especially with the pediatric population) wherever a team of professionals is involved.

The network of hearing aid dealers of the major hearing aid manufacturers in the country have provision to supply the spares for the hearing aids (such as cords for body level aids, prebent tubes for BTE aids) as well the repair of the hearing aid. Repair facilities are available at the major training institutes, some NGOs and private practitioners. *Directory of Services* published by AYJNIHH, Mumbai provides more information on this issue.

The ear mould is the final link between the hearing aid and the ear. Custom made ear moulds are prepared only at institutions in cities and by some NGOs and private

practitioners. District Disability Rehabilitation Centers (DDRC) of Ministry of Social Justice and Empowerment has facilities for custom ear mould (website: [www.socialjustice.nic.in](http://www.socialjustice.nic.in)). Facilities to make soft ear molds are available at some centers and with the hearing aid manufacturers/distributors.

(iii) Auditory and speech-language training- Available services are comparatively more in the urban than the rural sector; the caregivers from the latter sector can avail of demonstration therapy, with the objective of facilitating home training. Several early intervention centers run by parent groups continue to offer quality services. Special educators are also involved in auditory/speech language training though it remains the domain of the speech-language pathologists/audiologists.

Recognizing the importance of auditory/speech-language training for the cochlear implant recipients, the team approach has had a positive impact on the caregivers. An increasing number of special educators and caregivers have benefited from the workshops/training programmes in auditory/ verbal therapy organized by the manufacturers/ distributors of cochlear implants. A certificate course for the caregivers (of children with developmental disabilities) has been launched by AIISH, Mysore in collaboration with the RCI. To meet the special needs of the age group 0 to 5 years, orientation programmes of one-month duration aimed at manpower development are conducted at seven centers across the country by AYJNIHH, Mumbai in collaboration with Balavidyalaya, Chennai.

Availability of affordable educational material such as picture story books, puzzles, audio/video tapes, educational toys, attractive stationery items has improved due to the access, through internet, to pictures/material. Indigenously developed software and websites are also available for auditory training and speech-language training.

**Check your progress-4**

1) What is Early Identification?

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2) What are the valuable services of early identification?

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3) What are the facilities available for early identification of hearing loss?

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4) What is full form of D.D.R.C./A.I.I.S.H./R.C.I./A.Y.J.N.I.H.H.?

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### **2.2.7 Sub Unit Summary**

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- Human interaction with the help of verbal interaction and it involves speech, language and communication.
- These systems depend upon our hearing ability which perceives the sound about nature.
- Language is a part of human life and its three stages Form, Content, Use.
- Student with hearing loss cannot perceive the sound about the nature with the help of ear that's why delay ear language.
- With the help of best amplification system language learning may be provided children with hearing loss. But it depends on different degrees of hearing loss. So it is the issue of language attributable.
- This language issue impact of communication issues of children with hearing loss and it also depends on type of hearing impairment.
- Early identification means hearing loss identified soon after birth in valuable service system.
- Early identification of hearing loss services are
  - Medical intervention
  - Aids, appliances and cochlear implant.
  - Auditory and speech-language training

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## 2.2.8 Answer to Check Your Check Progress

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### Check your progress-1

1. Acc to Chomsky, Language is a set of (finite or infinite) sentences, each finite in length and constructed out of a finite set of elements. There are three components of language form, content and use.

### Check your progress-2

- 1) Ear language means spoken oral language
- 2) Eye language means written languages
- 3) In case of mild hearing Loss 50% of class discussions is missed on language issues. They have problems suppressing background noise and is missed 25% - 40% speech signal, distant sounds, unvoiced consonants, plurals and tenses. In profound loss causes only is felt a vibration speech is not developed or learners face learning deficits.

### Check your progress-3

- 1) Communication is an intentional two way complex process of sending message from one end to the other via a channel.

Speech is an oral and verbal manifestation of language.

Language is a set of (finite or infinite) sentences, each finite in length and constructed out of a I finite set of elements. There are three component of language form, content and use.

- 2) Linguistic communication can take place through three modes these are
  - Aural / Oral (listening / speaking)
  - Visual / Graphical (Reading / Writing)
  - Visual / Manual (Sign Language)
- 3) In normal hearing causes communication issues like speech and language are normal and pattern of development is normal good auditory perceptive skills while in case of profound hearing loss they do not rely on hearing for their communication. Language and speech develop only by training and they are educationally deaf. They communicate mostly through gestures. Voice, inflection, articulation are greatly affected. Regular speech and language training are required with the help of subject's expert.



### Check your progress - 4

- 1) Early intervention means getting started as early as possible to address the individual needs of a child with disabilities.
- 2) There are many valuable service of early intervention. These are
  - *Slate services* such as early intervention for eligible children and also up special education and related services for eligible preschoolers and school-aged children.
  - *Organizations specializing in hearing loss and deafness* that provide information and support.
  - *Resource and information centers* that can offer information about national and state resources and education rights.
  - *Parent groups*, in which one can talk with other parents who also have children with hearing impairments or deafness.
- 3) The facilities available for early intervention in the country are covered under the following:
  - (i) Medical intervention
  - (ii) Aids, appliances and cochlear implant,
  - (iii) Auditory and speech-language training.
- 4) D.D.R.C.-District Disability Rehabilitation Centers  
A.I.I.S.H.-A11 India Institute of Speech and Hearing.  
R.C.I.-Rehabilitation Council of India  
A.Y.J.N.I.H.H.-Ali Yavar Jung National Institute for Hearing Handicapped

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### 2.4.8 Unit End Exercise.

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1. Discuss the details about language attributable of hearing loss student.
2. Discuss the details about communication attributable of hearing loss student.
3. What is early intervention? Who are the service provides of early intervention Explain in details.
4. What is language? Discuss the details of language components.

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## **2.3 □ Communication options, preferences and facilitators of individual of hearing loss.**

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### **Structure**

**2.3.1 Introduction**

**2.3.2 Objective**

**2.3.3 Communication System. Check your progress-1**

**2.3.4 Communication Option.**

**2.3.4.1 Communication Options Available for Use by Children with Hearing Loss**

**Check your progress-2**

**2.3.5 Communication Preferences of individual of hearing loss.**

**Check your progress-3**

**2.3.6 Communication facilitators of individual of hearing loss.**

**Check your progress-4**

**2.3.7 Sub-unit Summary-**

**2.3.9 Answer to Check Your Progress**

**2.3.10 Unit End Exercises**

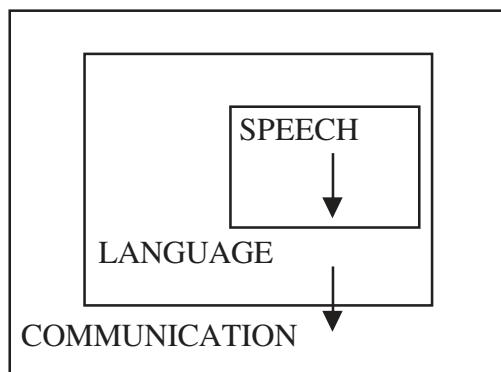
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### **2.3.1 Introduction**

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Communication is the process of exchanging and sharing information through idea and opinions. Most often this exchange is via language. Language consists of symbol ordered in particular sequences for the purpose of conveying information. The symbol of language mainly consisting of used communication can be carried out in different ways. The term communication is often used to include only the spoken word that is speech and hearing. A communication option, mode, modality, or method is the *means* by which the child and family receive and express language. The choice of a communication modality that facilitates language development and allows the child who is hard of hearing or deaf to readily engage in communication interchanges with

family and caregivers is a primary issue throughout childhood. So in this unit we know about the communication options, preferences and facilitators of individual of hearing loss.



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### 2.3.2 Objective: The student–teacher will be able to understand

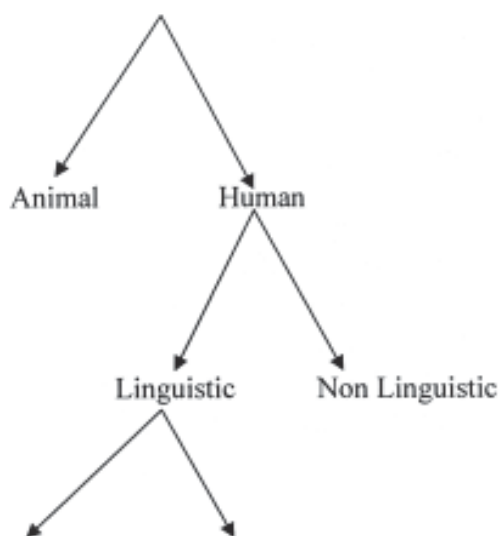
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- the meaning of communication option
- the different communication system modes and method.
- the communication option available for children with hearing impairment.
- the communication preferences available for children with hearing impairment,
- the communication facilitators available for children with hearing impairment,

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### 2.3.3 Communication System

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	<b>Modes (Four modes)</b>		<b>Methods (Three methods)</b>
1	Aural/Oral(Listening/Speaking)	1	Oral ism
2	Visual/Graphical(Reading/Writing)	2	Total Communication
3	Visual/Manual(Sign Language)	3	Education Bilingualism
4	Speech reading		

**Modes :** There are four modes of linguistic communication. These are

**Aural/Oral (Listening/Speaking)** mode is the common mode used for communication by hearing population. It develops automatically and naturally in the non-impaired and it is acquired in early years in life and its basic purpose is for routine communication.

**Visual/Graphical (Reading/Writing)** mode is the mode secondary mode because it is a learnt skill as against the acquired skill of aural/oral mode. It is learnt, formally and its command is acquired in later years of life and its purpose is official/educational.

**Visual/Manual (Sign Language)** used by people with hearing impaired and is not a mere collection of signs but a rule governed language with its own grammar.

**Speech reading** is fourth mode and play supportive roles to the earlier modes. It does not have the potential to carry the message in totally, hence cannot function on its own independently.

**Methods:** There are three methods of linguistic communication. These are

One mode (out of the two) and one type of language (out of two) can be selected and the combination of these two is called the methods of communication. There are three methods of communication possible.

**Oralism-** Oralism is philosophy which desires to develop verbal language through aural/oral mode. Modern oralists believe that that attempts should be made to break through the barrier to communication caused by deafness.

**Total communication-** Total communication in simple words means the use of sign as well as speech in order to develop spoken language of the deaf children. Garretson (1976) defines total communication in the following way a philosophy incorporating appropriate aural, manual and oral modes of communication in order to ensure effective communication with and among hearing impaired persons.

**Education Bilingualism-** Education Bilingualism is generally considered to be a reaction against oralism as well as total communication. Bilingualism with total communication that oralism can never work with profound deaf students but it is equally critical of total communication that combining sign with verbal language will bring speech to child. So fundamentally the bilingual approach is that the first language of all deaf children could be the sign language which belongs to deaf community of the concerned

**Check your progress-1**

1. Mention any two modes of linguistic communication?

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.....

2. Mention any two methods of linguistic communication?

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.....

3. What is total communication?

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4. What are the meanings of Aural and oral?

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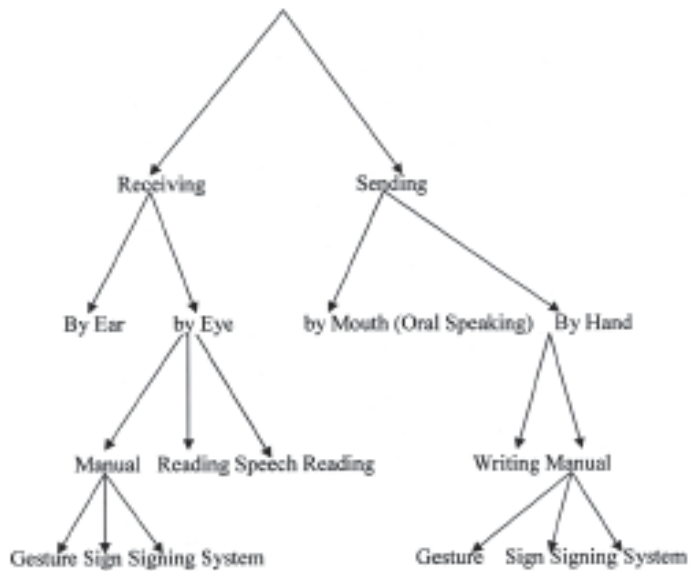
5. What is oralism?

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**2.3.4 Communication Option**

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### 2.3.4.1 Communication Options Available for Use by Children with Hearing Loss

Option/Feature	Familial Role	Amplification
<p><b>Auditory-Verbal</b></p> <p>Maximizes use of residual hearing to develop spoken language.</p> <p>Auditory channel is primary input mode exclusively during language learning experiences and therapeutic intervention.</p> <p>The stricts use of visual cues, speech reading and signs.</p> <p>Provides only auditory training</p>	<p>Serve as spoken language models</p> <p>Provide abundant opportunities for spoken language learning through Auditory- Verbal techniques in the home environment.</p> <p>Seek professionals support from those knowledgeable in AV approach.</p> <p>Ensure appropriate audiologist management.</p> <p>Monitor rigorously the performance of amplification/cochlear implant technology.</p> <p>Desire mainstream educational setting &amp; inclusion in hearing community as primary goal.</p>	<p>Provide early amplification</p> <p>Provide maximum audibility across the speech -frequency range</p> <p>Promote consistent use of hearing aids. FM systems and/or Cochlear Implant</p>
<p><b>Auditory-Oral</b></p> <p>Maximizes use of residual hearing <i>and</i> speech reading to develop spoken language.</p> <p>Use of both auditory and speech reading encouraged during language learning and therapeutic experiences.</p> <p>Provides both auditory and speech reading training</p>	<p>Serve as spoken language models</p> <p>Provide abundant opportunities for spoken language learning using auditory and speech reading input in the home environment.</p> <p>Arrange for appropriate Auditory -Oral programs/professionals.</p> <p>Ensure appropriate audiology management.</p> <p>Monitor rigorously the performance of amplification/ cocblear implant technology.</p> <p>Desire mainstream educational setting &amp; inclusion in hearing community as primary goal.</p>	<p>Provide early amplification</p> <p>Provide maximum audibility across the speech-frequency range</p> <p>Promote consistent use of hearing aids, FM systems and/or Cochlear Implant.</p>

<p><b>Cued Speech</b></p> <p>Makes spoken language visible through use of specific hand shapes, positions and lip reading (i.e., cues).</p>	<p>Learn and become fluent in Cued Speech</p> <p>Provide abundant opportunities for spoken language learning cueing all communication interactions with the child in the home environment.</p> <p>Support use of Cued Speech by early intervention personnel, teachers and all others communicating regularly with child.</p> <p>Arrange for appropriate educational settings or Cued Speech transl iterator</p> <p>Determine desire for child to use amplification or cochlear implant technology.</p>	<p>Amplification not necessary for spoken language acquisition</p> <p>Provide maximum audibility across the speech-frequency range when family desires child to use amplification or cochlear implant</p>
<p><b>Manually Coded English (MCE)</b></p> <p>Uses sign system and finger spelling to represent spoken English.</p> <p>Often used in conjunction with Total Communication and Simultaneous Communication.</p>	<p>Learn and become fluent in manual sign system (MCE).</p> <p>Arrange for appropriate educational settings.</p> <p>Professionals who are fluent users of MCE system used by the child or interpreter.</p>	<p>Amplification not necessary</p> <p>Provide maximum audibility across the speech-frequency range when family desires child to use amplification or cochlear implant</p>
<p><b>Total Communication</b></p> <p>Uses multiple methods simultaneously (manual, oral, auditory) Uses MCE system</p>	<p>Learn and become fluent in manual sign system (MCE).</p> <p>Encourage speech reading and use of audition in combination with sign (MCE).</p> <p>Arrange for appropriate educational setting/TC professionals who are fluent in TC and support use of sign, speech reading and audition.</p> <p>Ensure appropriate audiologist management.</p>	<p>Provide amplification early amplification</p> <p>Provide maximum audibility across the speech-frequency range</p> <p>Promote consistent use of hearing aids, FM systems and/or Cochlear implant.</p>
<p><b>Simultaneous Communication</b></p> <p>Use sign system and finger spelling and speech.</p> <p>Does not require use of audition.</p>	<p>Learn and become fluent in manual sign system.</p> <p>Encourage speech and sign.</p> <p>Arrange for appropriate educational setting; may be the same as TC.</p> <p>Ensure appropriate audiology management when required.</p>	<p>Amplification not generally used for communication as part of approach.</p>

<p><b>Bilingual-Bicultural (Bi-Bi)</b></p> <p>Philosophy of language learning: first ASL, second spoken language (e.g., English)</p> <p>Combines ASL and form of spoken language (MCE, Cued Speech)</p> <p>Opportunities for experiences in Deaf and hearing communities.</p>	<p>Learn and become fluent in ASL</p> <p>Ensure regular interaction with members of Deaf and hearing culture/community</p> <p>Arrange for appropriate educational setting in program supporting Bi-Bi philosophy.</p>	<p>Amplification not required for visual language learning.</p> <p>Amplification/CI may be used for alerting, warning, awareness of environmental sounds and for support of spoken language development</p>
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### Check your progress-2

1. Mention any two communication options available children with hearing impairment?

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2. What is cuae speech?

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3. What is full from of A.V.T.?

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### 2.3.5 Communication Preferences of individual of hearing loss.

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**Hearing**—Listening capability of our hearing system. So speech, language and communication these systems depend upon our hearing ability which perceives the sound about nature. But if suffering from hearing disability it has difficulty to perceive the sound about nature and it affects verbal interaction and also affects speech, language and communication. Due to this problem child can face problem in several development areas. These are personal-social, cognitive and academic.

**Conversation** – The use of speech and/or sign for informal exchange of views, ideas or information.

**Alphabetic Principle** – The use of letters and letter combinations to represent phonemes and/or signs in a system of writing.



**Vocabulary** – The words we must know to communicate effectively.

**Fluency** – The ability to read a text quickly and accurately with ease and expression.

**Comprehension** - The process of constructing meaning from print.

**Writing** – Communicating through the use of written symbols.

**Gesture** – It is the meaning of a movement of parts of the body especially a hand or the head to express an idea or meaning.

**Singing**- It is a large body literature and also composes hand shapes, locations and motions. Addition facial expression and also classifier is a specific hand shapes that can represent a particular person and project.

**Facial expression**- It is facial literature use to non-verbal communication to facial express.

**Check your progress-3**

1. What is conversation?

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.....

2. What is gesture?

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.....

3. What is singing?

.....  
.....

4. What if facial expression?

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.....

### 2.3.6. Communication facilitators of individual of hearing loss.

The Selection of a Communication Option for Children with hearing loss.		
SL.NO	Facilitators	Consideration
1	Language used in the home	Spoken Bilingual (use of 2 spoken languages) Visual (ASL) Combination of visual and spoken (bilingual)
2	Family Involvement	Abundant opportunities for language learning and communication in the home. Level of participation in intervention Home situation/ family membership and other demographic factors Consistency in learning & using MCE. ASL. cued speech Socio-economic circumstances Work schedules
3	Age of Identification & Intervention	Before 6 to 11 months of age After 6 to 11 months of age
4	Literacy	Speech perception Development of phonological awareness
5	Community resources	Availability of certified AV therapists; auditory-oral therapists, sign language interpreters, ASL community, transliterations etc. Availability of EI (Educational Intervention )programs that use above approaches
6	Hearing status	Degree of hearing loss Stability of hearing loss Repeated episodes of OME(Ottis Media Infection)
7	Hearing Aids & Cochlear Implants	Consistent use of Hearing Aids/FM system Cochlear implant candidacy Financial constraints related to acquiring assistive device technology Expectations regarding benefits of device
8	Speech Intelligibility	Access to acoustic speech features through hearing aids/cochlear implant Speech therapy
9	Presence of additional disabilities	Visual Motor Cognitive Attention/Behaviour
10	Availability of later educational options	Mainstream with support services Self contained classroom Special school Residential facility

**Check your progress-4**

1. Mention any three communication facilitators of individual with hearing loss?

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**2.3.7 Sub-unita Summary-**

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- Communication is a complex, two way intentional process of transferring a message from one end to the other.
- There exist several communication systems which could be classified into human versus animal communication and linguistic versus non-linguistic communication.
- There are four modes of linguistic communication (listening/speaking, reading/writing/ sign language/ system, speech reading)
- There are three methods of communication existing in the education of the deaf and oralism, T.C. and Educational Bilingualism
- Communication Option of children with hearing loss
- Communication of preferences for children with hearing loss
- Communication facilitators of children with hearing loss

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**2.3.9 Answer to Check Your Check Progress**

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**Check your progress**

**Check your progress-1**

1. Aural/Oral (Listening/Speaking), Visual/Graphical (Reading/Writing), Visual/Manual (Sign Language) and Speech reading
2. Oralism, Total Communication and Education Bilingualism
3. Total communication in simple words means the use of sign as well as speech in order to develop spoken language of the deaf children. Garretson (1976) defines total communication in the way of philosophy incorporating appropriate aural, manual and oral modes of communication in order to ensure effective communication with and among hearing impaired persons.

4. The meaning of aural listen ear and oral means verbally,
5. Oralism is philosophy which desires to develop verbal language through aural/oral mode that's called as oralism.

### **Check your progress-2**

1. Auditory- Verbal, Auditory-Oral and Total Communication
2. *Cued speech* is spoken language visible through use of specific hand shapes, positions and lip reading i.e., cues.
3. Auditory Verbal Therapy.

### **Check your progress-3**

1. The conversation is use of speech and/or sign for informal exchange of views, ideas or information.
2. It is the meaning of a movement of parts of the body especially a hand or the head to express an idea or meaning.
3. It is a large body literature and also comprises hand shapes, locations and motions. Addition facial expression and also classifier is a specific hand shapes that can represent a particular person and project.
4. It is facial literature use to non-verbal communication to facial express.

### **Check your progress-4**

1. Language used in the home, family involvement, age of identification & intervention and literacy.

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## **2.3.10. Unit End Exercises**

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1. What is communication? Describe the details of communication system.
2. Describe the details of the communication option/feature available for children with hearing impairment and their family role.
3. Describe the details about communication preferences and faciliators of individual with hearing loss.

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## **2.4 □ Issue & measures in literacy development and scholastic achievement of students with hearing loss**

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### **STRUCTURE**

- 2.4.1 Introduction**
- 2.4.2 Objective**
- 2.4.3 Literacy development students with hearing loss.**
  - Check your progress-1**
- 2.4.4 Issue of literacy development of students with hearing loss.**
  - Check your progress-2**
- 2.4.5 Measures for literacy development of students with hearing loss.**
  - 2.4.5.1 Tips to develop literacy Skills in students with Hearing Impairment**
  - 2.4.5.2 Reading activity: Step-1 (Unseen/ in experienced passage)**
  - 2.4.5.3 Reading activities Step- II**
  - 2.4.5.4 Dos and don'ts for better reading activities:**
  - 2.4.5.5 Writing:**
    - Check your progress-3**
- 2.4.6 Scholastic achievement of students with Hearing Loss.**
  - Check your progress-4**
- 2.4.7 Sub-Unit Summary**
- 2.4.8 Answer to Check Your Check Progress**
- 2.4.9 Unit End Exercises.**

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### **2.4.1 Introduction:**

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Literacy skills are essential for succeeding in our today's society. Everyday examples include accessing the Internet or messages via e-mail; reading instructional manuals for the workplace, for computers, for cars, directions at work, for travel, or for taking

medications; and for leisure activities such as reading the newspaper or enjoying a magazine or a book. Literacy is also the key to functioning effectively in school. For most individuals the foundation for reading proficiency begins in infancy, advances with formal reading instruction in school, and continues to increase as the result of quality educational, social and recreational experiences throughout one's lifetime but without well-developed literacy skills students cannot participate fully in classroom learning. Students are at much greater risk for school failure and lifelong problems with employment, social adjustment, and personal autonomy so literacy skills are vital at a national level. But the problems are galore for administrators, educators, and families who work or live with students who are deaf or hard of hearing for the purpose of methods of instruction. Hearing loss has nothing to do directly with literacy development and functioning; in most of the cases of deafness, literacy does get negatively impacted. This is due to basic inadequacies of language and communication. In this part we are going to see what are the issues & measures in literacy development and scholastic achievement of students with hearing loss.

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#### **2.4.2 Objective: The student and teacher will be able to-**

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- understand issue of literacy development of students with hearing loss.
- understand issue of literacy development in reading writing steps in hearing impaired student.
- understand measures for literacy development of students with hearing loss.
- understand scholastic achievement of students with hearing loss.

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#### **2.4.3 Literary development of students with hearing loss.**

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The development of literacy hearing impairment children is not a multifaceted issue. It is possible to find a good number of parallels to literacy development in their hearing peers. Current millennium still reports that children with hearing loss are often severely delayed when compared to hearing children, especially in earlier development. Adolescents with hearing loss are still seen to have multifaceted problems involving literacy (reading and writing) and language that can influence their attitude to their ability to access and use academic information. This also has implications for how they regard academic information and whether they are willing to apply it. If adolescents with hearing loss are able to access and use academic information sufficiently, they

will be able to fulfil a more significant role in society, as well as *OI* to study and work well. The acquisition of academic information will enable adolescents with hearing loss to function in such a way that they will be able to maintain their independence and improve their knowledge base throughout their education years. According to Briggie (2005) some class activities that are beneficial to hearing impaired or deaf children includes:

- 1) Time to explore writing, drawing, books and environmental print
- 2) Story time translated in to sign
- 3) Journal writing using invented spelling.

Like hearing peers, hearing impaired or deaf children should have the opportunity to participate in literacy events. They should also use written language in many ways that are typical to their hearing peers. According to Briggie (2005) and Williams (1994) the teacher should provide them with the opportunity of demonstrating the following uses of languages in signed or spoken form:

- 1) To interact socially with peers and adults while writing.
- 2) To provide information about written text.
- 3) To label written creations.
- 4) To monitor the construction of text.
- 5) To request assistance with writing tasks from adults and peers,
- 6) To challenge others' knowledge of literacy, and
- 7) To evaluate literary works.

**Check your progress-1**

1. What is the multifaceted problem children with hearing impairment?

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.....  
.....

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#### **2.4.4. Issue of literacy development of students with hearing loss.**

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Children with hearing loss now compete favourably with hearing peers in some issues. The following areas are

- 1) Children with hearing loss who evidence language delays also demonstrate significant delays in development of theory of mind. So theory of mind development is dependent on child's opportunity for social interaction auditory comprehension, verbal communication and play.
- 2) Oral language acquisition remains a challenge for children with hearing loss and also affects reading. (Easterbrooks & Baker, 2002). Reading outcomes are well below average for 96% of children with hearing loss, most reaching only fourth to sixth grade proficiency (Karchmer, M.A. & Mitchell, R.E. 2003). The 19th International Congress on Education of the Deaf (ICED) brought together 1,067 teachers, administrators, and researchers from 46 countries to address topics in education. The publication resulting from the conference noted that while academic outcomes improve with more hearing peers, social language use and the ability to make friends with hearing peers remain as problems for children with hearing loss in mainstream educational settings (Leigh, G & Power, D 2004).
- 3) Sensory-motor concerns are related to literacy development of students with hearing loss. Children with sensory neural hearing loss appear to experience higher rate difficulty with vestibular processing when compared with their typically developing peers, resulting in delays and/or compensatory strategies in their development, motor skills, such as balance, coordination, and body and spatial awareness (Suarez et al 2007).
- 4) Kluwin, T.M. Stinson, M.S. and Colarossi, G.M.(2002) identified four main areas of concern for children with hearing loss when compared with hearing peers. They are :
  - a. Social skills,
  - b. Interaction/participation,
  - c. Sociometric status/acceptance,
  - d. Affective functioning.



- 5) Another and most important issue differences between normal and children with hearing loss. Children with hearing loss have been consistently documente areas of balance, complex motor sequencing, sensory, and vestibular processing.
- 6) Children with hearing loss are more likely to experience co-morbid diagnoses, such as apraxia and attention disorders and also auditory deprivation may lead development of specific motor and language skills that share common cortical processes.
- 7) Literacy (reading and writing) issue is traditionally regarded as the most important skill area needed to obtain academic information and also involved it the communication of thoughts and process of learning through conversation, reading, writing and the conceptualization of the reading process.
- 8) The educational outcomes for hearing impairment^ in secondary schools in normal mainstreaming after leave the school prepared to live and function independently should be able to independent living skills, employment readiness, and a set of 'learning how to learn' skills.

**Check your progress-2**

1. What do/mean by vestibular processing?

.....

.....

2. Mention any two issue literacy development of students with hearing loss?

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**2.4.5. Measures for literacy development of students with hearing loss.**

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Language based reception / expression of ideas and thoughts achieved by the medium of a shared script, which reflect shared language, context and the world knowledge. This means, reading / writing is not mere understanding and creation of script. Reading / writing is not conversion of spoken thoughts into a graphical thought. It is understanding and creation of independent thoughts. Sharing the script in itself is extremely essential but is not the only essential prerequisite in the process of writing

(and reading). Writing is much more than penning down a set of alphabets on paper. For example, read the following sentence:

Ich bin Lehrerin Van Beruf

This sentence uses Roman (English) script, which you already know. Could you understand the meaning? No, because sharing a script with the writer is not enough for you as a reader. You do not share German language with the writer and hence meaning is inaccessible for you. If a sentence is:

I am a teacher by profession

You will be able to read (understand) the sentence because you not only know the script but also share the language. Thus reading and writing is not possible without the adequate, age appropriate knowledge of the language for which the script is used. Hearing loss impacts language development and language functioning. As a result, very often the student with hearing loss has inadequate language. This inadequacy of language in turn impacts the literacy skills of the student with hearing loss.

#### **2.4.5.1. Tips to develop Measures for literacy Skills in Students with Hearing Impairment**

Literacy means independent reading (comprehension and not mere loud pronunciation of the text) and independent writing (expression of thought and not mere copying or penning down memorized lines). Student with hearing impairment have to be taken from guided / assisted literacy skills to independent literacy skills. Languages in the first point are true with literacy and literacy is experience and context bound. If it is developed through pleasurable activities / games / exercises students / with hearing impairment learn it more readily. The best method to develop reading / writing in student with hearing loss is to expose them to written material which is graded as per their levels. This material should be able to take them one step ahead in complexity. Reading / writing material may include readymade and custom-made materials like:

- Text books (of all the school end examination boards);
- Story books / comic books;
- News paper, magazines;
- Personalized notes to teachers / parents / classmates;
- Captioned movies;
- Greeting cards;

- Advertisements
- Manuals of phones, ovens, washing machines etc;
- SMS text messages;
- Rules of games;
- Road maps;
- Recipes;
- Railway / airplane / bus tickets:
- Matter on packed food / grocery;
- Menu card
- Joke books;
- Encyclopedia;
- Bill boards / banners / hoardings;
- Instruction boards at gardens, theatres etc.;
- Telephone / electricity bills;
- Purchase receipts;
- Registers and records;
- Specially created albums with written material;
- Specially created scrap books / experience books;
- Specially created vocal books;
- Daily diary etc.

Although reading and writing are closely linked but these cues are separate process.

#### **2.4.5.2. Reading activity: Step-1 (Unseen/ in experienced passage)**

- Sit with the student.
- Read a particular number of lines as per the level of the students and either read together silently or let the student read after you.
- Discuss the matter and encourage him / her to ask, answer, describe, comment, agree / disagree etc. on the matter and it will be produced on total communication system.

- Explain new concepts with the help of real object and dramatization.
- Show similar and smaller examples of sentence types.
- Ask questions to ensure he / she has not missed the details.
- Link the information with previous knowledge.
- Repeat the steps with next few lines.

#### **2.4.5.3-Reading activity Step- II**

**In step I** we made the student with hearing impairment read the lines first and then explained the content. **In step II** the teacher first develops the context by telling what the lines are about in. Explain a few concepts discuss with the child and then let him / her read the lines. **Both step I and step I and step II are** good tools of learning and both have strengths and hence students should be exposed to both.

#### **2.4.5.4. Dos and Don'ts for better reading activities:**

- Reading material should not restrict to word level, it should be in sentence form and key word could be highlighted with underline, colouring etc.
- Never work on vocabulary lists without context.
- Never over-do speech correction while the focus of the activity is reading.
- Be tolerant of mistakes. When students hesitate going on to complex level.
- Reading does not always mean understanding every bit of the written matter. Overall understanding too helps many times.
- In pre-school level Children should be encouraged the habit of scanning picture books, flipping comic books, sitting together to read magazines etc. This builds readiness before the child starts learning the actual reading.
- Link reading activities with school subjects. Reading activities can be used in both the ways to reinforce learnt knowledge or to build readiness for the knowledge to be learnt. This is important for student/with hearing loss since it helps him/her in understanding school subjects and also in developing reading.

#### **2.4.5.5-Writing:**

- (1) To provide ample opportunity to the child to write his/her own thought.

- (2) Link development of writing with reading, listening - speaking (or signing), context and experiences. Teachers always want to make tasks simpler for students and simplest way to make tasks simpler is to link it with meaning and context. Teaching writing for that matter, teaching anything without context or pragmatic background cannot have good results in the long run.
- (3) In order to facilitate learning use of feedback is an essential factor. This in turn needs to be responded with feedback comprising
  - Clear
  - In detail
  - Indicative of higher expectation
  - Appropriate
  - Immediate
  - In writing
  - Consistent
  - Objective
  - Pro-active
- (4) Writing should be enjoyable and communication oriented rather than task-oriented.
- (5) Develop the habit of self-editing. Many times, looking at the writings of the children one can hardly know his / her current level of language competency. The teacher is confused about whether an error committed by the student is an error of accident or is an outcome of incorrect knowledge of language. If the children are made to edit their own writing, correcting their inner language structures becomes possible. Initially teachers can mark the sentences, parts where modification is required. This can work as a clue to help him/her edit the overall write up.
- (6) Carry out assessment of writing. Separate writing assessment needs to be carried out by the teachers on regular basis. Assessment of language or assessment of language text book cannot be considered as writing assessment. There is a difference between assessment of language through writing and assessment of writing. Like any other ideal assessment, writing assessment too has to be carried out systematically, consistently and objectively.

- (7) Involve parents in the process of writing development. As said earlier, writing needs to be developed in connection with context and real life situations. Home environment is rich from this point of view. Providing training to parents on follow up activities on development of writing is highly recommended.

**Check your progress-3**

1. Mention the steps of reading activity for students with hearing impairment?  
.....  
.....  
.....
2. What is literacy?  
.....  
.....  
.....
3. Name two ways for developing reading skill of children with hearing impairment?  
.....  
.....  
.....

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**2.4.6-Scholastic achievement of students with Hearing Loss.**

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The scholastic achievement of students with hearing loss is one of the most important determinants of recipient’s quality of life after schooling. The scholastic achievement of students with hearing loss attending the mainstream schools and to compare their scholastic performance to their normal hearing peers. So scholastic performance in mainstream school is a most important factor. The factors are:

- **Language and speech-** The ability to learn language and speech is the highest development of children hearing impaired.
- **Intellectual ability-** Process of thinking of deaf children and that normal peers are found to be (& similar also cognitive abilities and develop verbal intelligence.
- **Academic Performance-** Hearing impaired children are frequently handicapped in various degree of hearing loss and it affects educational performance and particularly reading which relies heavily upon language skill. So after scholastic achievement hearing loss student can develop the academic performance.

- **Adjustment of social** Our social inter action depends upon communication. So deaf children have communication problems. That's why it should have problem of social inter action. Such children live in a world of isolation and form a group of their own, an association of the deaf for their common interest and interaction. So after scholastic achievement student with hearing loss can develop on adjustment in social inter-action.
- **Behavioural problem-** Deaf learners feel invariably inferior and helpless in adapting to circumstances that require verbal communication. So regard non-verbal communication absence of verbal they have poor self poor concept which damages the development of personality but with the help of mainstream education which is scholastic achievement they develop the personality and is reduced the problem behaviour regard various social academic aspect.
- **Socially handicapped** - Learners with hearing loss cannot adjust with society because they suffer from communication difficulty and fail to understand what others hearing people say. But after scholastic achievement with the help of mainstream they develop communication skill and mixing the oral social which is social of communication and reduced of socially handicapped.
- **Problem in personal and social development-** Language becomes a barrier for deaf learner for purpose of communication with others. So this affects the socialization process and plays a vital role in the personal and social development of hearing loss learner. So with the help of scholastic achievement in mainstream in regular class room it develops the normal peer acceptance and reduces the problem in personal.
- **Personality problem-** Hearing difficulty may create personality problem. A becomes deaf learners more frustrated as he/she tries to reach the level of the normal and a totally deaf child seems reconciled to his fate But given well provided adequate facility of language and communication regard literacy development in regular school they develop their personal adjustment and well developed scholastic achievement in hearing impaired students.
- **Provided in natural and social environment-**For a child with hearing loss to scholastic achieve developmental synchrony even development across the developmental domains programs need to provide a richer, more natural social environment and consistent exposure to hearing peers who can model age-appropriate language and social development.

- **Mainstream Placement-** Another choice commonly made for children with hearing loss is mainstream placement. The term *mainstreaming* is used to refer to the placement of regular education classes based on their skill level. Mainstream education does seek to educate the “whole child” and provide exposure to many preschool programmes. However, many schools turn to more directive teaching models by kindergarten wherein children sit at desks, teachers instruct, and children acquire facts, skills, and concepts through drill and practice.

**Check your progress-4**

1. Mention any two issue scholastic achievement of students with Hearing Loss?

.....  
 .....  
 .....

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**2.4.7-Sub-Unit Summary**

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- Hearing loss is a disability which affects literacy and it is a multifaceted issue.
- Literacy issue is the most important skill area to obtain academic information of hearing impaired students.
- Literacy issue depends on communication and communication is the most significant process.
- After literacy development students with hearing loss should achieve in the respected of different formal area in mainstream placement.

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**2.4.8-Answer to Check Your Progress**

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**Check your Progress-1**

1. The multifaceted problem children with hearing impairment involvement literacy issue which are reading, writing and also language that can influence their attitude to their ability to access and use academic information.

**Check your progress-2**

1. Vestibular processing means the areas of balance motor coordination, complex motor sequencing.



2. Children with hearing loss who evidence language delays also demonstrate significant delays in development of theory of mind so theory of mind development is dependent on a child's opportunity for social interaction auditory comprehension, verbal communication and play.

Sensory motor concerns are also related about issue literacy development of students with hearing loss. Children with sensor neural hearing loss appear to experience higher rates of difficulty with vestibular processing when compared with their typically developing peers, resulting in delays and/or compensatory strategies in their development of gross motor skills, such as balance, coordination, and body and spatial awareness.

### **Check your progress-3**

1. Class room situation and teachers should develop the contents of text books.
2. Literacy means independent reading (comprehension and not mere loud pronunciation of the text) and
3.
  - Discuss the matter and encourage him / her to ask, answer, describe, comment, agree / disagree etc. on the matter and it will be produced on total communication system.
  - Explain new concepts with the help of real object and dramatization.
  - Show similar and smaller examples of sentence types.

### **Check your progress-4**

1. Language and speech- The ability to learn language and speech is the mostly development of the hearing impairment.

Academic Performance- Hearing impaired children are frequently handicapped in various degree of hearing loss and its effect on educational performance and particularly and particular handicapped in reading which relies heavily upon language skill so after scholastic achievement hearing loss student can develop the academic performance.

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## **2.4.9-Unit End Exercises.**

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1. Describe the details about issue of literacy development and scholastic achievement of students with hearing loss.

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## **2.5 □ Restoring techniques using human (interpreter) & technological support (hearing device)**

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### **STRUCTURE**

#### **2.5-1. Introduction**

#### **2.5-2. Objective**

#### **2.5.3. Students who are hard of hearing face obstacles in most areas of their lives**

#### **2.5.4. Restoring Techniques Using Human Support Check your progress-**

##### **1 2.5.4.1. Description and facts**

##### **2.5.4.2. Possible Barriers.**

##### **2.5.4.3. Interaction with an individual with Hearing Impairment.**

#### **Check your progress-2**

#### **2.5.5. Restoring Techniques Using Technological Support (Hearing Device)**

##### **2.5.5.1. Amplification options**

##### **2.5.5.2. Types of hearing aids**

##### **2.5.5.3. Behind-the-Ear Aids**

##### **2.5.5.4. In-the-Ear Aids**

##### **2.5.5.5. In-the-Canal Aids**

##### **2.5.5.6. Body Aids**

##### **2.5.5.7. Bone Vibrator Aid**

##### **2.5.5.8. Cochlear Implants:**

##### **2.5.5.9. FM Systems**

#### **Check your progress-3**

#### **2.5.6. Auditory Training**

##### **2.5.6.1. Important**

##### **2.5.6.2. When Start Auditory Training**

**2,5.6.3. Pre requisite issue for auditory training**

**2.5.6.4. Conditioning Sounds**

**2.5.6.5. Stages of Auditory Training**

**2,5.6.6. Auditory Training Material**

**Check your progress-4**

**2.5.7. Sub- Unit Summary**

**2.5.8. Answer to Check Your Check Progress**

**2.5.9. Unit End Exexcises.**

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### **2.5.1. Introduction:—**

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The modern world presents many challenges of very different types. Our senses are constantly being assailed with new sensations, environments, and experiences. We have to develop coping strategies that allow us to move with confidence and deal with these challenges without becoming overwhelmed. For many of us, that is a significant task. For others, particularly those with a disability, it is a monumental challenge. Deafness is often described as ‘the silent disability’ because it is not noticed, not visible and not discussed, yet it is a condition growing in importance and prevalence. People who are hearing impaired and hard of hearing face many challenging hearing environments every day. They face obstacles in most areas of their lives. These are education settings, the workplace and social situations.

- In education settings, miscommunication can result in poor grades. Educators can be unaware that students have not heard the correct instructions, and mislabel children with hearing loss as ‘lazy’ or ‘stupid.’
- In the workplace, people with hearing loss have more difficulty in finding employment and struggle with certain practical aspects, such as attending group meetings or answering the telephone.
- In social situations, hearing people cannot see that a person with hearing loss has difficulty hearing others, and also forget that hearing aids and cochlear implants are only aids. They need to be constantly reminded to consider the hearing difficulty, which can be tiring, frustrating and embarrassing. It can become easier for a person with hearing loss to withdraw from social events and isolate themselves.

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### **2.5.2. Objective:**

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The student -teacher able will be able to understand-

- Restoring techniques using human (interpreter).
- Restoring techniques using Technological Support (Hearing Device).
- Auditory training.

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### **2.5.3. Student who are hard of hearing face obstacles in most areas of their lives**

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Deafness refers to the inability to hear, either totally or partially. Symptoms may be mild, moderate, severe or profound. Deafness may occur at birth or may be acquired due to various diseases, infections and or ageing. There are various strategies to enable these people to compensate for their deafness so that they can communicate with human interpreter such as lip-reading, sign language and use hearing devices such as hearing aids and also cochlear implant. When they use lip-reading, sign language and use hearing devices that means loss of normal hearing (normal hearing is restored) and using the restoring technique (human interpreter) & technological support (hearing device) and also auditory training. So restoring techniques are

- (1) Human interpreter (lip-reading, sign language, communication worker)
- (2) Technical support (hearing device/amplification option)
- (3) Auditory training.

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### **2.5.4. Restoring Techniques Using Human Support:**

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- Attract the student's attention before speaking and make sure you are facing him/her.
- Speak clearly; but avoid speaking artificially slowly, exaggerating your lips, or shouting as this affects the natural rhythm of speech.
- Make use of natural gesture and facial expression as a clue to meaning.
- Make sure that there is adequate light on your face. Do not stand with your back to windows.

- Position the student so that he/she can lip-read you easily and see the projector or board and as much of the class as possible if there is to be a group discussion.
- Make use of visual material, i.e. handouts, key vocabulary, diagrams, written instructions.
- Indicate when you are changing the subject.
- Check comprehension; encourage and direct questions.
- Keep background noise to a minimum.
- Write important new words on the board to fix their form.
- If using DVD/video for teaching purposes, be aware that the student will not be able to follow the soundtrack and will need to borrow the DVD/video or have access to subtitles or a transcript.
- Direct the student towards any relevant course materials on Blackboard.
- Ensure that members of the group raise their hand before speaking, so that the deaf student is alerted to a change of speaker.
- Do not allow more than one person to speak at a time.
- Be aware that a deaf person cannot read or take notes at the same time as lip-reading-allow time for a student to look at the relevant section of a handout, then make sure you have his or her attention before you comment on it.

**Lip speakers** are useful for those who do not use sign language but who find a tutor or lecturer difficult to lip-read. A lip speaker repeats the words of the speaker without voice. They produce clearly the shape of words, the flow, rhythm and phrasing of natural speech and repeat the stress as used by the speaker. The lip speaker also uses facial expression, natural gesture and finger spelling (if requested) to aid the lip reader's understanding. Lip speakers are used by people who use lip-reading extensively and who have a good command of English language.

**Interpreters** are used by students who prefer to communicate through British Sign Language (BSL) or Sign Supported English. The interpreter will translate what is said by the lecturer or tutor into sign and will provide a voice over for the deaf student's own signed contribution if required. It is helpful to employ an interpreter who has some knowledge of the subject matter, especially if the vocabulary is highly specialized.

**Communication Support Workers** provide an interpreting service and may also provide a lip speaking or note-taking service and a voice-over for the deaf student's contributions,

but will not yet have reached interpreter level (They will usually be qualified to Level I/II Certificate in BSL).

**Check your progress-1**

1. Mention any four restoring techniques using humans support?

.....  
.....

2. Write the full form of BSL?

.....  
.....

**2.5.4.1. Description And Facts**

A student with hearing impairment may be hard to recognize in the classroom. Some students use hearing aids and have learned to lip-read or sign. A person with no hearing is deaf. “Hard of hearing” defines a hearing impairment in which the sense of hearing, although diminished, is functional. The following list describes some facts about individuals with hearing impairment:

- Not all people with hearing impairment are good lip readers. Lip reading skill has no correlation to a person’s intelligence.
- Not all people with hearing impairment know how to sign. Not all students with hearing impairment use interpreters. Some prefer to communicate through lip reading and some prefer sign language.
- A hearing aid does not correct hearing loss like glasses correct vision problems. Most persons with hearing impairment have sensory neural hearing losses and the clarity of speech is affected. The hearing aid does not make speech more clear; it merely amplifies the sound.
- Many people with hearing impairments are easily understood. Others cannot monitor the volume and tone of their speech and may be initially hard to understand.
- Students who have hearing impairment, just like students who do not have hearing impairment, vary to some degree in their communication skills.

**2.5.3.2. Possible Barriers:**

- Lack of interpreters or people who understand sign language
- Decreased awareness of auditory cues in communication

### **2.5.3.3. Interaction with An Individual with Hearing Impairment :**

Each and every student is functionally different. So interactions with an individual with hearing impairment following suggestion are that:

- Get the individual's attention before speaking.
- Look at the individual when you speak.
- Do not block the area around your mouth as it may inhibit lip reading.
- Speak naturally and clearly. Slowing down slightly may help. Do not exaggerate lip movement and do not shout.
- Try to avoid standing in front of windows or other light sources. The glare from behind makes it difficult to read lips and other facial expressions.
- Do not hesitate to ask the student to repeat if you do not understand. If repeating does not work, use a pen and paper. Communication is the goal; the method is unimportant.
- If a student is using an interpreter, speak directly to the student, not the interpreter.
- Short sentences are easier to understand than longer sentences with several clauses.
- If the student does not understand, try repeating, and if the student still does not understand, rephrase a thought or use a different word order rather than repeating the same words.
- It is impossible to lip-read a word that the student has never seen before. If time permits, it helps to write the word and then let him or her see how it looks on the lips.
- Facial expressions, gestures and other body language help convey the message.
- If a sign language interpreter is present, request him or her to interpret - even for social and non-academic conversations.

### **Check your progress-2**

1. Mention any two facts of hearing loss?

.....  
.....

2. Mention any five ways of interactions with an individual having hearing impairment?

.....  
.....

---

### **2.5.5. Restoring Techniques Using Technological Support (Hearing Device)**

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If you think you might have hearing loss and could benefit from a hearing aid, visit your physician, who may refer you to an otolaryngologist or audiologist. An otolaryngologist is a physician who specializes in ear, nose, and throat disorders and will investigate the cause of the hearing loss. An audiologist is a hearing health professional who identifies and measures hearing loss and will perform a hearing test to assess the type and degree of loss.

**Aural Rehabilitation:** The professional efforts designed to help a person with hearing loss. This includes services and procedures for lessening or compensating for hearing impairment and specifically involves facilitating adequate receptive and expressive communication. (ASHA, 1984; WHO, 2000).

#### **2.5.5.1-Amplification options**

The most important tool to help the hearing impaired person surmount the hearing handicap is a hearing aid or educational amplification unit. No system of amplification can restore hearing, but it can make useful residual hearing which could not otherwise be reached. Using amplifications the clients will be able to achieve goals unattainable without it.

#### **2.5.5.2-Types of hearing aids:**

All hearing aids consist of four basic parts:

1. Microphone - picks up the sound and sends it to the amplifier
2. Amplifier - makes the sound louder
3. Receiver - sends the amplified sound into the ear canal
4. Battery - supplies the power to the hearing aid



### **2.5.5.3-Behind-the-Ear Aids**

The behind-the-ear (BTE) hearing aid is the device most used by children. The components are all contained in a plastic case which sits behind the ear. The case is connected to an earmould by a piece of clear plastic tubing. The earmould is specially designed to fit inside of the user's ear. A BTE hearing aid may be used with any degree of hearing loss and can be very flexible for use with a telephone or assistive listening device.

### **2.5.5.4-In-the-Ear Aids**

The in-the-ear (ITE) hearing aid is smaller than the BTE hearing aid. All of the components fit inside of the plastic case which is made to fit the user's ear. The ITE hearing aid is not always the most appropriate choice for pediatric amplification because the aid must be replaced as the child grows.

### **2.5.5.5-In-the-Canal Aids**

The in-the-canal (ITC) hearing aid is even smaller than the ITE hearing aid, fitting entirely inside of the ear canal. The ITC is used primarily with mild-to-moderate hearing losses. It is not recommended for pediatric use because of its size, and because it must also be replaced as the child grows.

### **2.5.5.6-Body Aids**

A body aid consists of a rectangular case and an earmould. The rectangular case contains the microphone, amplifier, and batteries and may fit into a pocket or "fannypack". There is a cord which connects the case to the button receiver. The button receiver is snapped into an earmould which is placed in the ear. The body aid is often used by people who have a severe-to-profound hearing loss.

### **2.5.5.7-Bone Vibrator Aid**

The bone vibrator hearing aid is primarily used by patients with conductive losses, or those who cannot wear traditional hearing aids, such as patients with atretic or microtic ears. The vibrator sits on the mastoid bone and is held in place by a headband.

### **2.5.5.8-Cochlear Implants:**

This is not a hearing aid but an implantable device, which stimulates the auditory nerve directly with help of intra-cochlear electrodes. The cochlear implant is a relatively new

device. It consists of internal parts, which go under the skin behind the ear and in the cochlea, and external parts worn behind the ear and on the body. The internal component, which is inserted during a surgical procedure, is made up of an electrode array, a receiver, and a magnet. The electrodes are inserted into the cochlea and the receiver and magnet are set into the bone behind the ear. The external component is made up of a transmitter coil, a microphone, and a speech processor. Both the transmitter coil and microphone are worn behind the ear, while the speech processor may be fit into a pocket or fanny pack. There are several criteria which a child must meet in order to be considered an implant candidate. The child must have a severe-to-profound bilateral loss, and receive little or no benefit from hearing aids. Medical, psychological, and educational status are also taken into consideration prior to implantation.

#### 2.5.5.9-FM Systems

FM systems, or auditory trainers, are primarily used in the school setting; however, they may be useful in a variety of listening situations. The system consists of two parts: a transmitter and a receiver. The speaker wears the transmitter and speaks into a microphone attached to it. The listener wears the receiver which picks up the signal from the microphone and delivers it to the ear through an earpiece on the child's hearing aid. The size and shape of the two components may vary; but the purpose remains constant: to raise the level of the speaker's voice above the background noise (increase the signal-to-noise ratio).

### Check your progress-3

1. Write the basic parts of hearing aids?  
.....  
.....
2. What are the different types of hearing aids?  
.....  
.....
3. What are the full from/of C.I. and P.M.  
.....  
.....

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## **2.5.6-Auditory Training**

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Hearing mechanism plays a very vital and important role in the development of speech and language ability for purpose of communication. We are always surrounded by various types of sound and through experience and exposure and we learn to select and response to the sound which are important. So hearing serves as the primary sensory modality through which we maintain an awareness of our surrounding.

### **2.5.6.1-Importance**

Auditory training is essential and important for the hearing impaired child. Auditory training is required to make use of his/her residual hearing and to listen and understand the sound and acquire the speech and language skills gradually. Auditory training for hearing impaired child must be designed to serve mainly two purposes.

(a) To perceive a wider variety of environmental sounds which will allow the child to be at least to unexpected change in his/her environment and thus ensure his safety well being for his/her life.

(b) To perceive verbal signal, to acquire the linguistic role of language and develop speech skills and it is able to exchange idea and use oral communication.

### **2.5.6.2-When to start Auditory Training**

As early as possible. Auditory training should be started when routine audiometric assessment is completed. Then the hearing impaired child wearing hearing aid in both ears and speech therapist as teacher gives speech stimuli and teacher should be given study)

### **2.5.6.3-Pre requisite issue for auditory training**

The auditory training is very important for the development of speech and language. Few essential requirements given the auditory training start. The requirements are:

- (1) Fitted suitable hearing aid.
- (2) Suitable reinforcement may be given and co-operation of the child and the family member in the auditory training programme.
- (3) Child's response to different kinds of sounds and intensities need to be checked carefully.

- (4) Always remember that the sound which is exposed to child often might be listed in hierarchical manner.
- (5) The activities and the material required for training the child should be prepared in advance and it is available normally in home.
- (6) It is better not to give auditory training when the child is likely to sleep or is involved other in activity.

#### **2.5.6.4-Conditioning Sounds**

Conditioning is an important stage in auditory training. So, sound visual and tactile clues should be provided to show the child from where and how the sound is coming. The condition may be started with sound. These sounds are rubbing the finger, marble sound etc. Auditory training may be carried out at different levels as per the following steps.

- (1) Introduce the sound one by one and make a note at which levels child gives the response.
- (2) Vary the intensity of sounds and distance between the child and sound and note the lowest intensity and longest distance from where the child can detect the sounds.
- (3) Train the child to say how many times he/she has heard the sounds.
- (4) Train the child to say if the sound is of shorter or longer duration like /a/ and /aa/, /e/ and /ee/ etc.
- (5) The child may be trained to localize the sound i.e. to detect from which direction the sound is coming.
- (6) Train the child to listen and repeat the number or words in proper sequence.

#### **2.5.6.5-Stages of Auditory Training**

The auditory training consists of 4 major stages of development such as:

- (1) Sound awareness training
  - (2) Sound discrimination training
  - (3) Discrimination of gross sound
  - (4) Fine discrimination of speech sound
- (1) **Sound awareness training:** Introduce to different sounds one by one. The child

should respond to these sounds and from where the sound comes. Every day add loud sound a little more for the purpose of child's attention and focus on loud sound. Sound awareness training helps to assess hearing ability of the child in terms of the types of sound, intensity level and distance level from which the child can hear or understand.

- (2) **Sound discrimination training:** This training involves the child to various auditory sounds produced by noise makers i.e. bells, drum, horns, whistle etc. As the child learns to respond to the presence of the sound and to discriminate between one or more sounds. This training should be given in the following steps.
  - (a) Train to listen to two sounds repeatedly.
  - (b) Child should consistently respond to both the sounds properly.
  - (c) Using conditioning procedure the child should be given auditory visual and tactile clues.
  - (d) Care should be taken in the presentation of the stimulus.
  - (e) Every step should be provided suitable encouragement and connect responses 80-90%.
  - (f) Gradually introduce many more sounds in the training.
- (3) **Discrimination of gross sound:** At this stage the child has learnt the skills in recognizing the presence of the sound and perceiving gross difference between vowel sound with grossly dissimilar phonetic elements and between phrases which are closely related to his/her everyday experience e.g. p/g, s/l, pen/table etc.
- (4) **Fine discrimination of speech sound:** It is last stage of auditory training. This stage helps the child to recognize suitable difference between similar vowels and consonants sounds as well as integrating the child's expanding vocabulary to permit him/her quick and accurate understanding of connected speech such as p/b, k/g, pin/bin, /tip/dip, ball/mall etc.

#### **2.5.6.6-Auditory Training Material**

Drum, Table, Khanjiri, Whistle, Rattle, Bell, Horn, Telephone, Dog bark, Cat's meow, Cow's moo, Crowing the cock, Singing bird, Moving train, Motor sound, Fire engine, Cycle bell, Door bell, Door knock, Laughing, Crying, Running, Dancing, Eating, Clapping, Cooker whistle, Calling name, Dad's Mummy's voice, Aero plane sound, T.V., Radio, Computer etc and other natural and unnatural variety of sound.

#### Check your progress-4

1. What is Auditory Training?

.....  
.....

2. Mention any four pre-requisites of auditory training?

.....  
.....

3. How many stages are present in Auditory Training Name them.

.....  
.....

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#### 2.5.7-Sub- Unit Summary-

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- Deafness is a silent disability and is either partial and total.
- In the hearing world deaf people face many challenges in hearing environment.
- The challenges are education, communication and employment.
- Hearing impaired people can communicate by lip-reading, sign language and using hearing devices such as hearing aids and also cochlear implant. When they use lip-reading, sign language and hearing devices that means loss of normal hearing and restoring using (human interpreter) technological supports (hearing device)
- Restoring techniques are (1) Human interpreter (lip-reading, sign language, communication worker) (2) Technical support (hearing device/amplification option) (3) Auditory training.

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#### 2.5.8-Answer to Check Your Check Progress

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##### Check your progress-1

- Speak clearly but avoid speaking artificially slowly, exaggerating your lips, or shouting as this affects the natural rhythm of speech.
- Make use of natural gesture and facial expression as a clue to meaning.

- Make sure that there is adequate light on your face. Do not stand with your back to windows.
  - Position the student so that he/she can lip-read you easily and see the projector or board and as much of the class as possible if there is to be a group discussion.
  - Repeat questions asked from the floor.
2. British Sign Language (BSL) or Sign Supported English.

### **Check your progress-2**

1-

- A hearing aid does not correct a hearing loss like glasses correct vision problems. Most persons with hearing impairments have sensory neural hearing losses and the clarity of speech is affected. The hearing aid does not make speech more clear; it merely amplifies the sound.
- Many people with hearing impairments are easily understood. Others cannot monitor the volume and tone of their speech and may be initially hard to understand.
- Students who have hearing impairments, just like students who do not have hearing impairments, vary to some degree in their communication skills.

2-

- Get the individual's attention before speaking.
- Look at the individual when you speak.
- Do not block the area around your mouth as it may inhibit lip reading.
- Speak naturally and clearly. Slowing down slightly may help. Do not exaggerate lip movement and do not shout.
- Try to avoid standing in front of windows or other light sources. The glare from behind makes it difficult to read lips and other facial expressions.

### **Check your progress-3**

1. Microphone, amplifier, receiver, battery.
2. Body worn hearing aids, behind the ear, in the ear aids, in the canal aids, bone vibrations aids.
3. Cochlear Implant and Frequency Modulated system.

### **Check your progress-4**

1. Auditory Training is a process of listening capacity which improves in hearing impaired child for the purpose of listening his/her residual hearing.
- 2-
  - Fitted suitable hearing aid.
  - Suitable reinforcement may be provided and co-operation of the child and the family member in the auditory training programme.
  - Child's response to different kinds of sounds and intensities need to be checked carefully.
  - Always member that the sound which are exposed to child often might be listed in hierarchical manner
- 3- The auditory training consists of 4 major stages of development such as:
  - Sound awareness training
  - Sound discrimination training
  - Discrimination of gross sound
  - Fine discrimination of speech sound

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### **2.5.9-Unit End Exercises**

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1. What is Auditory Training? Describe the details about Auditory Training.
2. Describe the details about restoring technique human interpreter and technical support.

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