PEER FOR PROGRESS

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COURSE FOR PROFESSIONALS (HEARING IMPAIRMENT)

INDEX

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UNIT 1. HEARING IMPAIRMENT

Objectives

- To know the anatomy and physiology of the ear
- To know the classification of hearing loss
- To identify hearing aids

Structure:

INTRODUCTION

In our society, a large part of the information and communication is received through listening (conversation, classes, radio, television, audiovisuals, music, notices, emergencies, telephony, internet channels ...). These everyday activities for a hearing person can become a challenge for a person with hearing problems, being accentuated when the person has profound deafness and birth.

Today, technology has contributed to solving and alleviating many of these problems by helping and improving the lives of deaf people on a personal, educational, social and professional level. However, it should be noted that hearing impairment is one of the invisible disabilities.

Deafness data worldwide (according to WHO)

- There are 466 million people with hearing loss (loss greater than 40 dB), of which 34 million are children.
- It is estimated that in 2050 there will be 500 million people with hearing deficits, that is, 1 out of 10 will have a hearing disability.
- An estimated 1.1 billion young people between the ages of 12 and 35 are at risk of hearing loss from their exposure to noise in recreational settings.

Hearing impairment is not only a deficit in the ability to hear. The consequences of hearing loss in a person vary according to audiological factors (ethology of deafness, age of diagnosis, type of prosthesis or lack thereof), family, cognitive, psychological, educational and cultural factors. These will influence the person's development, conditioning the way he/she communicates and the way he/she accesses information and knowledge.

1.1. HEARING PROCESS

1.1.1 Anatomy of the human ear

Human ear, organ of hearing and equilibrium that detects and analyzes sound by transduction (or the conversion of sound waves into electrochemical impulses) and maintains the sense of balance (equilibrium).

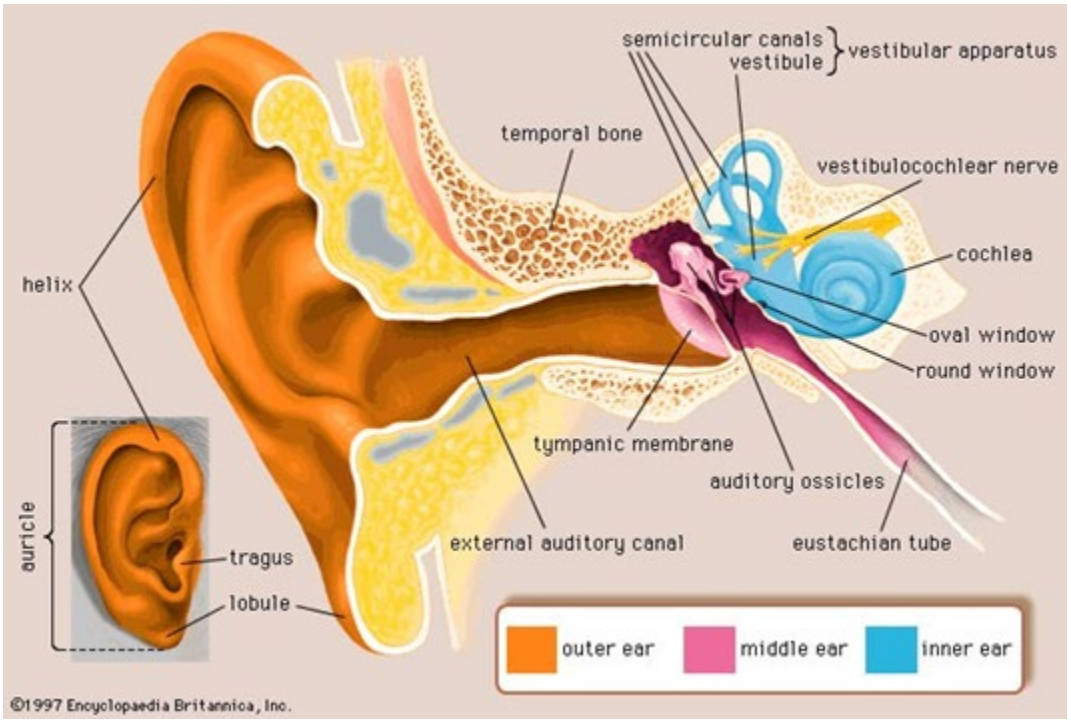

Illustration. Structure of human ear

The human ear, like that of other mammals, contains sense organs that serve two quite different functions: that of hearing and that of postural equilibrium and coordination of head and eye movements.

Anatomically, the ear has three distinguishable parts: the outer, middle, and inner ear.

● **The outer ear** consists of the visible portion called the auricle, or pinna, which projects from the side of the head, and the short external auditory canal, the inner end of which is closed by the tympanic membrane, commonly called the eardrum. The function of the outer ear is to collect sound waves and guide them to the tympanic membrane.

● **The middle ear** is a narrow air-filled cavity in the temporal bone. It is made up of a chain of three small bones: the malleus (hammer), incus (anvil), and stapes (stirrup), collectively called the auditory ossicles. This ossicular chain conducts sound from the tympanic membrane to the inner ear, which has been known since the time of Galen (2nd century CE) as the labyrinth. It is a complicated system of fluid-filled passages and cavities located deep within the rock-hard petrous portion of the temporal bone.

● **The inner ear** consists of two functional units: the vestibular apparatus, consisting of the vestibule and semicircular canals, which contains the sensory organs of postural equilibrium; and the snail-shell-like cochlea, which contains the sensory organ of hearing. These sensory organs are highly specialized endings of the eighth cranial nerve, also called the vestibulocochlear nerve.

1.1.2 The physiology of hearing

Hearing is the process by which the ear transforms sound vibrations in the external environment into nerve impulses that are conveyed to the brain, where they are interpreted as sounds. Sounds are produced when vibrating objects, such as the plucked string of a guitar, produce pressure pulses of vibrating air molecules, better known as sound waves.

The ear can distinguish different subjective aspects of a sound, such as its loudness and pitch, by detecting and analyzing different physical characteristics of the waves. Pitch is the perception of the frequency of sound waves—i.e., the number of wavelengths that pass a fixed point in a unit of time. Frequency is usually measured in cycles per second, or hertz. The human ear is most sensitive to and most easily detects frequencies of 1,000 to 4,000 hertz, but at least for normal young ears the entire audible range of sounds extends from about 20 to 20,000 hertz. Sound waves of still higher frequency are referred to as ultrasonic, although they can be heard by other mammals.

Loudness is the perception of the intensity of sound, the pressure exerted by sound waves on the tympanic membrane. The greater their amplitude or strength, the greater the pressure or intensity, and consequently the loudness, of the sound. The intensity of sound is measured and reported in decibels (dB); it is the unit that expresses the relative magnitude of a sound on a logarithmic scale. Stated in another way, the decibel is a unit for comparing the intensity of any given sound with a standard sound that is just perceptible to the normal human ear at a frequency in the range to which the ear is most sensitive. On the decibel scale, the range of human hearing extends from 0 dB, which represents a level that is all but inaudible, to about 130 dB, the level at which sound becomes painful.

In order for a sound to be transmitted to the central nervous system, the energy of the sound undergoes three transformations. First, the air vibrations are converted to vibrations of the tympanic membrane and ossicles of the middle ear. These in turn become vibrations in the fluid within the cochlea. Finally, the fluid vibrations set up traveling waves along the basilar membrane that stimulate the hair cells of the organ of Corti. These cells convert the sound vibrations to nerve impulses in the fibres of the cochlear nerve, which transmits them to the brainstem, from which they are relayed, after extensive processing, to the primary auditory area of the cerebral cortex, the ultimate centre of the brain for hearing. Only when the nerve impulses reach this area does the listener become aware of the sound.

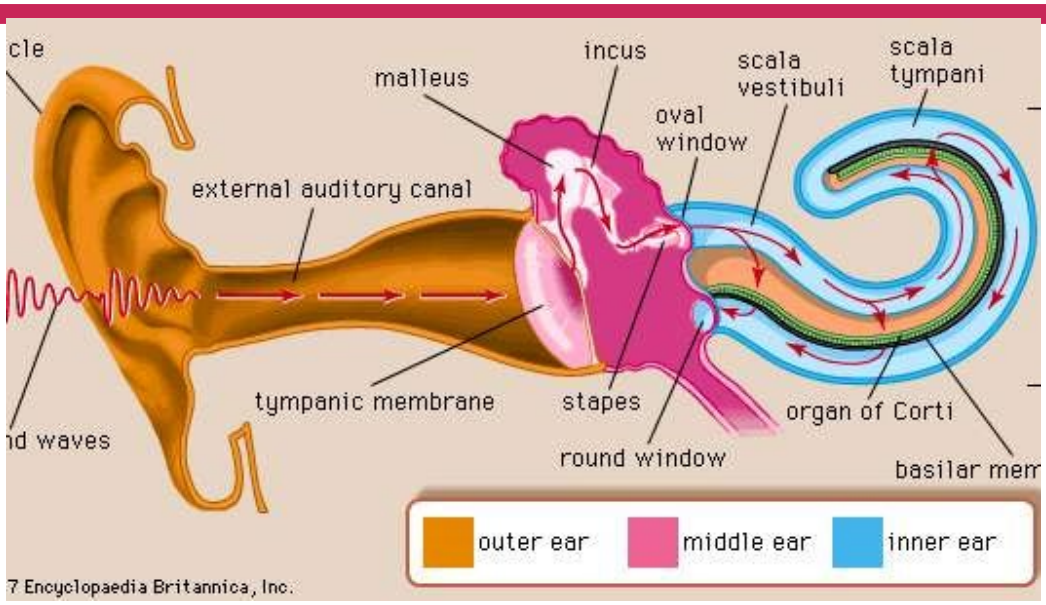

Illustration: the mechanism of hearing

Sound waves enter the outer ear and travel through the external auditory canal until they reach the tympanic membrane, causing the membrane and the attached chain of auditory ossicles to vibrate. The motion of the stapes against the oval window sets up waves in the fluids of the cochlea, causing the basilar membrane to vibrate. This stimulates the sensory cells of the organ of Corti, atop the basilar membrane, to send nerve impulses to the brain.

In essence, our ears work to alter the acoustic stimulus that enters and move through our ear canals, into a form of neural code that our brains can decipher process and comprehend.

Here are six basic steps to how we hear:

1. Sound transfers into the ear canal and causes the eardrum to move
2. The eardrum will vibrate with vibrates with the different sounds
3. These sound vibrations make their way through the ossicles to the cochlea
4. Sound vibrations make the fluid in the cochlea travel like ocean waves
5. Movement of fluid in turn makes the hair cells. The auditory nerve picks up any neural signals created by the hair cells. Hair cells at one end of the cochlea transfer low pitch sound information and hair cells at the opposite end transfer high pitch sound information.
6. The auditory nerve moves signals to the brain where they are then translated into recognizable and meaningful sounds. *It is the brain that "hears".*

Our hearing process truly connects us to the soundscape of our surrounding environment. Our hearing system provide us with an amazing ability to identify and comprehend the most minuscule acoustic cues. In fact, our brains are capable of storing the neural equivalents of

acoustic patterns like music, voices, danger sounds, and environmental sounds. This similarity makes it much easier for us to recognize and process both familiar and unfamiliar sounds.

Hearing loss occurs when sounds, that are typically loud, become softer and less intelligible; this is a result of our brain being misled through a loss of audibility. Information also becomes distorted as it reaches the brain, disrupting the quality of our hearing.

Head trauma, neurological disease, medical disorder or the process of simply aging, can result in alterations in the ability of the brain to process stimuli effectively. This can lead to symptoms that reflect hearing loss; such symptoms may include inattention, inappropriate responses, and confusion. Our brain works with our ears in an incredible way, processing neural events into our hearing and all that it involves.

1.2. CLASSIFICATION OF HEARING IMPAIRMENT

There are various causes of hearing loss that affect people of all ages, which makes it important to know the key signs that are associated with each type. Hearing loss can be due to hereditary reasons, certain medications, aging, infections, continuous exposure to excessive noise at work, and even an alarming loud blast or injury can affect the state of your hearing. Without adequate protection for your ears, even certain hobbies can damage one's hearing with time; these might include hunting, motorcycling, musical events, or skeet shooting.

The main types of hearing loss are sorted into three categories:

- **Sensorineural hearing loss**, which means there is a problem occurring in either the inner ear or the auditory nerve, which delivers sound to the brain.
- **Conductive hearing loss**, which means sound is not reaching the inner ear, usually due to an obstruction or trauma
- **Mixed hearing loss** means the hearing loss is being caused by a combination of the two.

Sensorineural hearing loss

The most common type of hearing loss is sensorineural. It is a permanent hearing loss, that occurs when there is damage to either the tiny hair-like cells of the inner ear or the auditory nerve itself, which prevents or weakens the transfer of nerve signals to the brain. These blocked nerve signals carry information about the loudness and clarity of sounds.

Causes

If a child is born with sensorineural hearing loss, it is most likely due to a genetic syndrome or an infection passed from mother to fetus inside the womb, such as toxoplasmosis, rubella or herpes.

When sensorineural hearing loss develops later in life—which is more typical—it can be caused by a wide variety of triggers.

Most common causes:

- Normal aging (known medically as presbycusis, or age-related hearing loss)
- Exposure to loud noises, often acquired on the job

Less common causes

- Heart diseases and diabetes
- Infections such as mumps
- Meniere's disease
- A side effect from medicines

- Acoustic neuroma or other cancerous growths in the inner ear
- Traumatic injuries that damage the inner ear or auditory nerve
- Autoimmune diseases

Symptoms

The symptoms of sensorineural hearing loss affect both the loudness and the clarity of sounds. For many people, they will have high-frequency hearing loss, resulting in the following issues with hearing:

- Speech of others may seem slurred or mumbled, or, a feeling of you can hear but not understand
- Difficulty following a conversation when two or more people are speaking at the same time
- A consistent ringing or buzzing in the ears (tinnitus)
- Problems listening in noisy environments (e.g. train stations, construction sites, convention centers, sports arenas, etc.)
- Difficulty hearing women's or children's voices and other high-pitched sounds
- Certain speech sounds are difficult to hear during conversations (e.g. the "s" or "th" sound)
- Noises may seem too loud or too quiet (yes, too loud!)
- A feeling of being off-balance or dizzy

People with sensorineural hearing loss often say they can hear people speaking, just not clearly.

Treatment

There is no medical or surgical method of repairing the tiny hair-like cells of the inner ear or the auditory nerve if they are damaged. However, sensorineural hearing loss can be treated with hearing aids or cochlear implants, depending on the severity of the loss.

Assistive listening devices, like alerting devices, vibrating alarm clocks and captioned phones help provide a complete hearing solution. For people with severe-to-profound hearing loss, power hearing aids can help.

Conductive hearing loss

A less common type of hearing loss is conductive hearing loss, which occurs when there is an obstruction or damage to the outer or middle ear that prevents sound from being conducted to the inner ear. Conductive hearing loss may be temporary or permanent, depending on the cause.

Causes

The causes of conductive hearing loss can be differentiated by which part of the ear they affect—either the outer or the middle ear:

Outer ear

- Stenosis or a narrowing of the ear canal
- Wax impaction
- Exostoses (bone-like protrusions that can develop inside the ear canal and cause potential cause blockages)
- Otitis externa (also known as swimmer's ear)
- Obstructions caused by foreign bodies inserted into the ear
- Microtia

Middle ear

- A breach in the tympanic membrane (ear drum) caused by injury, ear infections or extreme and rapid air pressure changes
- Tympanosclerosis, a thickening of the tympanic membrane
- Otitis media (ear infection) and/or a buildup of fluid in the middle ear
- Blockages in the Eustachian tube, which connects the middle ear to the back of the nose and throat
- Otosclerosis, which affects the tiny middle ear bone known as the stapes
- Abnormal growths or tumors that form within the middle ear, such as cholesteatoma or glomus tumors
- Ossicular chain discontinuity, or a break in the connection between the bones of the middle ear, caused by injury or heavy trauma

Symptoms

Because the sensitive inner ear and auditory nerve are intact, an individual suffering from conductive hearing loss primarily has difficulty with the overall loudness of sounds, but not the clarity. Individuals with this kind of loss often find that turning up the volume of the radio or television is all it takes to improve their ability to hear. The following symptoms are also consistent with this type of loss:

- Easier time hearing out of one ear than the other
- Pain in one or both ears
- Sensation of pressure in one or both ears

- Difficulty or frustration with telephone conversations
- A foul odor coming from the ear canal
- A feeling that one's own voice sounds louder or different

Treatment

There are sometimes medical or surgical treatments that can improve the hearing ability for those with conductive hearing loss. For example, conductive losses caused by wax impaction, foreign objects, abnormal growths or ear infections can often be corrected with medical treatments, like extraction of earwax, antibiotics or surgical procedures.

Conductive hearing losses caused by other abnormalities, like stenosis of the ear canal, exostoses, otosclerosis and ossicular chain discontinuity are more difficult to treat medically and may be considered a permanent hearing loss. These conductive losses may be treated with either standard hearing aids or bone-anchored implantable devices.

Mixed hearing loss

Mixed hearing loss is any combination of sensorineural and conductive hearing loss.

Causes

Mixed hearing loss commonly occurs when the ear sustains some sort of trauma. It also can happen gradually over time when another compounds one hearing loss. For example, a person with a long-standing conductive hearing loss might experience age-related hearing loss as they age. Alternatively, a person with age-related hearing loss may have a temporary mixed hearing loss due to wax impaction.

Symptoms

The symptoms of mixed hearing loss will be some combination of those listed above for the other two types of hearing loss.

Treatment

Treatment options for mixed hearing loss will depend on whether the loss is more sensorineural or conductive in nature. If a greater portion of the loss is caused by a conductive component, surgical procedures and other medical treatments might be more effective in correcting the hearing concerns. If a greater portion of the loss is sensorineural, hearing aids or implantable devices may be the best option.

The degree of hearing loss can range from mild to profound:

Mild Hearing Loss - a person with a mild hearing loss may hear some speech sounds but soft sounds are hard to hear.

Moderate Hearing Loss - a person with a moderate hearing loss may hear almost no speech when another person is talking at a normal level.

Severe Hearing Loss - a person with severe hearing loss will hear no speech when a person is talking at a normal level and only some loud sounds.

Profound Hearing Loss - a person with a profound hearing loss will not hear any speech and only very loud sounds.

Hearing loss can also be described as:

- **Unilateral or Bilateral** - hearing loss is in one ear (unilateral) or both ears (bilateral).
- **Pre-lingual or Postlingual** - hearing loss happened before a person learned to talk (pre-lingual) or after a person learned to talk (post-lingual)
- **Symmetrical or Asymmetrical** - hearing loss is the same in both ears (symmetrical) or is different in each ear (asymmetrical).
- **Progressive or Sudden** - hearing loss worsens over time (progressive) or happens quickly (sudden).
- **Fluctuating or Stable** - hearing loss gets either better or worse over time (fluctuating) or stays the same over time (stable).
- **Congenital or Acquired/Delayed Onset** - hearing loss is present at birth (congenital) or appears sometime later in life (acquired or delayed onset).

Classification table

CRITERIA	**TYPE OF HEARING LOSS**
Causes	• Genetic or hereditary • Acquired
Localization	• Conductive or transmission • Sensorineural or perception • Mixed
Degree of loss	• Mild • Medium or moderate • Severe • Profound
Acquisition moment	• Prelingual • Post lingual
Ears	• Unilateral (left or right) • Bilateral

Pre-lingual sensorineural hearing loss is the one that affects the most in the cognitive and verbal development of the child.

Most profound hearing loss is due to the destruction of the cochlea's cells and not an injuryto the auditory nerve.

1.3. HEARING DEVICES (HEARING AIDS, COCHLEAR IMPLANT)

Hearing aids are the instrument of choice for the majority of people with hearing loss, but for those who are deaf or severely hard of hearing; cochlear implants may be a better option.

Both hearing aids and cochlear implants work best for people diagnosed with sensorineural hearing loss, meaning they have damage to the hair cells in the inner ear and/or the nerve pathways from the inner ear to the brain.

So, what is the difference between the two devices? A surgical specialist implants cochlear implant. They stimulate the auditory nerve to provide the sensation of sound for those who are deaf or severely hard of hearing. Hearing aids are removable and are used to amplify sound for people with residual hearing. The user takes them in and out of the ear canal.

1.3.1 Hearing aids

A hearing aid is a small electronic device that you wear in or behind your ear. It makes some sounds louder so that a person with hearing loss can listen, communicate, and participate more fully in daily activities. A hearing aid can help people hear more in both quiet and noisy situations. However, only about one out of five people who would benefit from a hearing aid actually uses one. A hearing aid has three basic parts: a microphone, amplifier, and speaker. The hearing aid receives sound through a microphone, which converts the sound waves to electrical signals and sends them to an amplifier. The amplifier increases the power of the signals and then sends them to the ear through a speaker.

Hearing aids are primarily useful in improving the hearing and speech comprehension of people who have hearing loss that results from damage to the small sensory cells in the inner ear, called hair cells. This type of hearing loss is called sensorineural hearing loss. The damage can occur because of disease, aging, or injury from noise or certain medicines.

A hearing aid magnifies sound vibrations entering the ear. Surviving hair cells detect the larger vibrations and convert them into neural signals that are passed along to the brain. The greater the damage to a person’s hair cells, the more severe the hearing loss, and the greater the hearing aid amplification needed to make up the difference.

However, there are practical limits to the amount of amplification a hearing aid can provide. In addition, if the inner ear is too damaged, even large vibrations will not be converted into neural signals. In this situation, a hearing aid would be ineffective.

There are three basic styles of hearing aids. The styles differ by size, their placement on or inside the ear, and the degree to which they amplify sound:

Behind-the-ear (BTE)

In-the-ear (ITE)

Canal aids

Although they work differently than the hearing aids described above, implantable hearing aids are designed to help increase the transmission of sound vibrations entering the inner ear.

A middle ear implant (MEI) is a small device attached to one of the bones of the middle ear. Rather than amplifying the sound traveling to the eardrum, an MEI moves these bones directly. Both techniques have the net result of strengthening sound vibrations entering the inner ear so that individuals with sensorineural hearing loss can detect them. A bone-anchored hearing aid (BAHA) is a small device that attaches to the bone behind the ear. The device transmits sound vibrations directly to the inner ear through the skull, bypassing the middle ear. Individuals with middle ear problems or deafness in one ear generally use bAHAs. Because surgery is required to implant either of these devices, many hearing specialists feel that the benefits may not outweigh the risks.

1.3.2 Cochlear implant

Cochlear implants are complex medical devices, which must be surgically implanted by a medical professional. These devices bypass the damaged portion of the inner ear to stimulate directly the auditory nerve. Cochlear implants do not restore hearing, rather, they provide the sensation of sound for those who are deaf or have profound hearing loss.

There are two main parts to a cochlear implant:

- The **external component** houses a microphone, speech processor and transmitter. A small wire links the microphone and speech processor to the transmitter, which is positioned outside the ear over the receiver.
- The **internal component** contains a receiver that is implanted under the skin just behind the ear, along with one or more electrode arrays which are implanted deep into the inner ear.

The two components are coupled using a strong magnet. Sound gathered from the microphone and speech processor is transmitted to the receiver, which converts it to electrical pulses and dispatches it to the electrodes. When these electrodes stimulate the auditory nerve, the brain receives a signal to process the sound.

Indicators for cochlear implant

a) To be a candidate for the implant, the following criteria must be met:

- Severe to profound bilateral sensorineural hearing loss
- Profound bilateral sensorineural hearing loss
- Profound unilateral sensorineural hearing loss
- No benefit with hearing aids after some time of use
- Prelingual and postlingual deafness
- Profound sensorineural hearing loss due to meningitis
- In the case of adolescents and adults, they must be motivated towards the implant
- Evaluation (psychological, paediatric, neurological) positive to the implant of the interdisciplinary team

b) Implant contraindications such as:

- Congenital malformations with agenesis of the cochlea
- Absence of auditory functionality
- Severe psychiatric illnesses
- Diseases that are incompatible with general anaesthesia
- Lack of motivation to implant
- Failure to meet audiological criteria

Implementation phases

The CI technique is not only a surgical intervention, on the contrary, it requires a complete program where a multidisciplinary team intervenes in the different phases of:

1. Ear Nose and Throat Diagnosis
2. Audiological, neurological, psychological, vestibular study of the candidate
3. Surgery
4. Programming
5. Speech Therapy and Auditory training

The purpose is that the implanted person gets the most out of their CI, therefore, speech therapy rehabilitation is essential within the implant program, without it the maximum hearing performance of the CI cannot be guaranteed.

The prognosis of a cochlear implant depends on the different variables that intervene in the entire process:

- age
- previous listening experience
- motivation towards the implant
- speech therapy rehabilitation
- communication channel
- educational model
- vehicular language of instruction

- availability of an inclusive communicative environment

However, it is an undeniable fact that the contribution of cochlear implants to profound deafness has been a successful technological breakthrough, because it makes it easier for the deaf person to interact with the environment, perceive speech, optimizing their understanding and oral expression.

DEAFNESS IS NOT CURED WITH A HEARING AID

RESOURCES UNIT 1

- Video about Hearing and How it Works https://www.youtube.com/watch?v=flIAxGsV1q0
- Video how do cochlear implant work. https://www.youtube.com/watch?v=k93lZHZT4yc
- Video Between Sound & Silence: How Technology is Changing Deafness | Op-Docs. https://www.youtube.com/watch?v=fY4G9mgHKQs&t=4s

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UNIT 2. PSYCHOSOCIAL IMPLICATIONS OF HEARING IMPAIRMENT

Objectives

• To know the communicative, social, and psychological repercussions that hearing disability involve in general terms.

• To become aware of the diversity in hearing impaired students.

Structure:

INTRODUCTION

It is essential to keep in mind that hearing-impaired students aged from 12 to 18 are teens just like their hearing peers. The hearing deficit is just another characteristic of these persons. Each teenager lives his/her hearing loss in a different way. Therefore, the interaction with these students should not be focused only in their hearing deficit. Students must be considered as a whole person; the deafness is one more feature on their human diversity.

Close to 80% of deafness is present at birth, and 95% of deaf children are born in hearing families, whose mother tongue is the oral language. This circumstance determines the way that parents communicate with their deaf children. Families must manage communicative interactions properly, to give security and confidence to their child.

Families must be informed about all the alternatives, communicative options, and educational models, to decide what is best for their children with hearing impairment. Therefore, the choice of the mother tongue is a right of the families, who must decide based on complete information about deafness and hearing impairment and their consequences in the development of their child, at communicative, cognitive, and social level. It must be always considered that their children can reach a level of personal autonomy like any other hearing person.

Thus, the heterogeneity of students with hearing impairment must be stressed because these students may not share the same features and skills, nor the same familiar or social environment. Consequently, not all the students may require the same educational support.

Therefore, it is necessary to avoid stereotypes or previous judgments before attending to students with deafness. Knowledge of the individual characteristics will give teachers information about how to communicate and how to help their students in the educational environment.

The principle of freedom of choice the way of communication is essential to understand the heterogeneity of the group of deaf people or with hearing impairment.

2.1. COMMUNICATIVE ASPECTS

Communication and language cannot be confused as similar concepts. Language is considered as the main means of human communication; it is an auditory-verbal medium, but communication is a much broader term that involves other ways of relation among human beings (gestural, corporal, pictographic...).

"The construction of a language by children arises from the understanding of former communicative exchanges prior to use of language. The presence of the multiple linguistic codes that structure language is what makes the difference between communication and language" (Torres, 1995)

Language is an essential tool for the transmission of information, communication between peers and to access to knowledge.

Language acquisition arises and grows through social interactions, but two competencies are essential for this:

- **Linguistic competence**: knowledge of formal aspects of a language (phonetics, morphology, syntax, lexicon)
- **Communicative competence**: ability to interact with an interlocutor through verbal and non-verbal resources to create a message.

"The development of language, together with cognitive progress, allows hearing child to access the processes of abstraction and conceptualization, needed for the knowledge of reality and the reading comprehension and written expression." (Villalba. FIAPAS 2004)

Communicating is sharing an opportunity to express and understand the others.

Communication implications in hearing impairment

Children with profound deafness, whose residual hearing does not allow them to understand speech, they have serious problems to perceive all the grammatical and syntactic elements of the oral language. Children may keep information about known and frequent words that have semantic weight (substantives, verbs, and adjectives). However, prepositions, conjunctions, adverbs, verb forms, irregular verbs or monosyllables are more difficult to identify. This causes an interference in the compression of the message (Villalba, FIAPAS 2004).

Therefore, it is essential to repeat and reinforce the learning of syntactic and grammatical aspects before 12-13 years old. However, there is no critical period for lexical learning.

Variables influencing language

It is difficult to establish detailed characteristics in the linguistic development of these students, because the following factors determine their communicative development, giving rise to the heterogeneity of students with hearing loss:

- Age of onset of hearing loss (pre-lingual, post-lingual)
- Age at diagnosis of hearing loss
- Unilateral or bilateral hearing loss
- Type of deafness and residual hearing
- Type of hearing aid (hearing aids, cochlear implant)
- Absence of hearing aids
- Attendance to the Early Care modality
- Auditory-verbal therapies / Speech therapy rehabilitation
- Mother tongue (oral language, sign language, bilingualism)
- Hearing or deaf parents
- Family involvement
- Educational modality

Some of these **aspects** will modify the perception and understanding of oral language:

- Mistakes in auditory discrimination
- Low auditory memory
- Difficulty in perception and in phonetic discrimination
- Literality in the meaning of the lexicon (absence of semantic referents)
- Difficulty understanding some set phrases, flexible expressions, sayings, jokes
- Difficulty in understanding some stylistic resources (metaphors)

Some studies have analysed the linguistic competence of students with deafness, establishing some **frequent problems** in oral expressions:

- Vocalization without intonation, and rhythm
- Mistakes with some phonemes
- Verb tense errors (omission of auxiliary verbs, incorrect use of verbal tenses or passive voice)
- Omissions of prepositions, conjunctions, adverbs, determiners
- Reduced vocabulary with respect to their hearing peers
- Grammatical concordance errors
- Tendency to declarative, active, and short sentences
- Mistakes in complex sentences

In a communicative act, the fundamental elements of communication are the transmitter, the receiver, message, channel, code, and context. When transmitter and receiver do not share the same linguistic code (oral language or sign language), the message may be incomplete or partial, which seriously affects the communicative act, even if the same context is shared.

Those students whose mother tongue is sign language, and their oral skills are insufficient, may have problems in interactions with hearing people, if they do not know sign language or have not help from an interpreter. Consequently, they often have to support each other in writing or visual aids, this may result a situation of miscommunication.

About 97% of deaf children have hearing parents, whose mother tongue is oral language. This complicates the acquisition of sign language as natural language, because, parents can learn it, but they could not have the same skills in both languages. This should be necessary external support for learning and the child would learn it later in life.

It is important to know that bilingual education (oral and sign languages) for those who choose this educational model is not regulated model in many countries. However, in some educational centers exist bilingual programs according to the variability of students with hearing disabilities. To be bilingual, children must have skills and competencies in both languages in expression and comprehension level.

To facilitate understanding, and at the risk of simplifying, some linguistic profiles could be distinguished according to the communicative model, considering the personal features of each one:

1. Students with hearing aids who have functional hearing and communicate in oral language
2. Students with hearing aids, with usable hearing remains and communicate in the oral language with some difficulty
3. Students with hearing aids who communicate in oral language and in sign language (bilingual)
4. Students without hearing aids who communicate in sign language and have weak oral skills.

The variability of hearing-impaired students makes difficult to define common communicative and linguistic aspects.

Implications in learning process

The use of a language is observed in five skills:

- Oral expression
- Oral comprehension
- Written expression
- Written comprehension
- Interaction

The acquisition of reading is not a natural activity for the human being like learning to speak. Learning to read is a process in which different brain areas intervene and requires formal and regulated training. When a hearing child access reading, he has previously been in contact with oral language and possesses the basic linguistic skills necessary for expression and understanding.

Reading is the tool that allows access to knowledge in an autonomous way

The difficulties, which hearing-impaired students have in the acquisition of reading, are not found in the codification reading process, but in reading comprehension. Not understanding what is read directly affects access to information, which affects the entire subsequent learning process.

Some of the causes that these students have in reading comprehension are due to:

- Little competence in oral language at the phonological, syntactic, and grammatical levels.
- Lack of motivation towards reading: reading without understanding generates frustration.
- Insufficient references on the content of what is read, due to lack of experience, lack of information or poor vocabulary.
- Reading-writing methods not suitable for the student's linguistic and communicative skills.

Reading and writing skills will affect the curricular learning process to varying degrees. Therefore, students with deafness who integrate linguistic and communicative skills in their spontaneous interactions may have a better academic prognosis in the process of learning and acquisition of reading and writing.

2.2. SOCIAL AND PSYCHOLOGY ASPECTS

How to live with a hearing loss will depend considerably on when it appears, what type of hearing loss is, and how the hearing loss has affected to cognitive, psychic, and social development. A hard hearing loss have not the same significance as a childhood, adolescence, maturity or elderhood hearing loss.

Students with neurosensorial, bilateral, severe or profound, and prelingual hearing loss may find more difficulties in the educative and social interactions. Nevertheless, better expectations are available for those who got early diagnosis, early intervention, proper hearing aids adaptations, and speech therapy, adapted to their audiological and communicative features.

Family as the first socializing core is of the greatest importance to open a way to the visibility of hearing impairment. The acceptance of the hearing loss, the affectivity, the communication tools and the collaboration with professionals and teachers, allow the family to participate and to promote the social inclusion, the self-esteem and self-concept of their child with hearing impairment.

Most of the students with hearing impairment study in mainstream educational centers only a low percentage are enrolled in special education centers due to other associated disabilities. This gives a global vision that deaf people have a high rate of integration into society if the optimal and accessible communication conditions exist.

When students with deafness or hearing impairment perceive that their class group (peers and teacher), as a part of support and social inclusion, are disposed to improve their motivation in an educational context. A positive and communicative relationship between the groups favours the social goals that lead students hearing loss to want to learn, despite the added difficulty of their hearing loss.

Social aspects

Deafness or hearing loss can be considered from the clinical perspective as a disability that must be treated and rehabilitated. However, from the social perspective hearing loss can be a limited capacity in some contexts. In other words, when there are no adequate, reasonable accommodations hearing loss is more incapacitating. Some examples:

1. **In an educational context**, if a deaf student attends an exposition, as a complementary activity of his school, where resources to support oral communication (audio guide with subtitles, magnetic loop) or sign language (sign guide or sign language interpreter) are available, the hearing loss is not a high limitation to participate in this activity.

2. **In a cultural context**, if deaf young want to go to the cinema and the film is subtitled and the room is equipped with a magnetic loop, they will be able to enjoy a cultural activity just like the hearing person.

There is a percentage of deaf people who do not consider themselves as ***'disabled'*** about their hearing loss, some of the reasons they use are:

"Deafness is not a disease", "Deafness is not a dysfunction", "Deafness does not make me incapable", "Deafness does not prevent me from having a normal life"

In addition to this, there is a psychosocial rationale that deafness is a differentiating feature. Growing up a feeling of belonging to a social group called **"deaf community"**, where the deaf people share a sign language, not only as communicative tool, but also as a special social identity. Deafness is considered a social and linguistic feature.

However, it should be noted that most people with hearing loss do not feel part of this "deaf community". So, it is necessary to avoid classification of all people with hearing loss in an equally community, just for not hearing.

Respect the freedom to choose to be part or not of the "deaf community" is essential to accept the diversity of people with hearing loss whatever it may be.

The problems that people with hearing loss must face are **invisibility and misunderstanding**. As deafness is not perceived visually, in certain social contexts, people with hearing impairment are criticized for being ill mannered, unsociable, aggressive, or clumsy, simply for lack of communication.

In addition, it is frequent to believe that a person wears hearing aids become hearing persons, similar to person who wears glasses and can see well. However, this is not the reality of people with severe or profound hearing loss. **The neurological deafness cannot be cured.**

They need the environment to be accessible and facilitate communication. For instance, a student with hearing aids in a noisy environment, or if speaking turns are not respected in a conversation, may lose the thread of the conversation creating boredom, lack of interest, anger, or isolation.

On the other hand, if a student who uses sign language cannot properly see the interpreter, due to low light or obstacles to read the lips, participation in any activity or event will become complicated.

Psychological effects

There are not many studies focused on the psychological development of students with deafness. Some reasons may be:

- the heterogeneity of deaf or hearing-impaired people do not allow performing standard tests,
- the difficulty of audio verbal psychological tests for people with poor linguistic or communicative skills,
- the large number of variables that influence personal development.

Therefore, it is complicated to determine specific characteristics that may explain a common psychological profile. Having a hearing impairment does not cause a generic psychological profile.

There are studies about **executive functions** in adolescents with deafness. Executive functions are **cognitive abilities** that allow:

- self-regulation of behavior,
- cognitive flexibility,
- planning and organization,
- task monitoring,
- decision-making,
- working memory

These studies have concluded that the low performance of deaf adolescents in the tasks of executive functions is commonly caused by the lack of experience in this regard, and not the hearing impairment. This highlights that educational intervention does not always provide the necessary opportunities to develop executive tasks that favor the learning process (Corral, 2016).

Interactions with people around them (family, peers, and teachers) will be decisive for the emotional development and psychological evolution of the child, in order to reach the inclusion in society, in autonomous and independent way.

Although no psychological profiles have been established, some common psychological manifestations can be observed in some students with hearing loss such as isolation, insecurity, lack of attention, immaturity, frustration, irritability.

- **The deficits in communication** with their closest environment (family, friends, colleagues), if the same communication channel and code is not shared, affect the student, generating feelings of loneliness and isolation.
- **Parental overprotection** often diminishes the autonomy and independence of the adolescent who must face parental control and the parents' fear of the supposed vulnerability of their child.
- Wearing hearing aids, expression mistakes, or the use of sign language, realizes that they are different to the rest of their hearing peers. In the adolescent society, where the image is a mode of expression, this can make **some students with hearing problems to feel marked or isolated**.
- **Poor academic results** contribute to student's uncertainty with deafness, as their efforts are sometimes not compensated by grades.
- **Permanent attention to visual aspects interferes with the attention to other information** channels leading the student to lose interest, due to attentional overexertion. Sometimes, due to a lack of understanding of the situation, they lose interest in what is happening.
- **Lack of access to information and communication** involves a loss in access to knowledge, which may limit psychological maturity in some aspects, due to lack of experience.
- **The frustration for not understanding or not being understood** can generate situations of irritability, whose emotional expressiveness is evident in their non-verbal communication and in angry reactions.

Depending on the hearing loss and the degree of integration in their group class, hearing loss will affect the deaf students in their social relations with peers. At a stage where interactions are of vital importance in psychological, emotional, and cognitive development, is essential to find a way to help and solve their uncertainty, and to encourage their confidence, their abilities but not in their limitations. This will allow students with deafness to participate in the dynamics of the group class as any other more member who can contribute a different vision of the world.

Having a hearing impairment does not determine a generic psychological profile

Other implications

When the hearing deficit is associated to other types of disorders: neurological, cognitive, developmental, behavioural, attention, the teaching and learning process is altered.

Therefore, it is necessary to have a very detailed diagnosis and pedagogical exploration in order to determine the possible alterations that may arise when deafness converges other disorders. Planning and adjusting resources, methods, and procedures to the student's individuality will improve educational intervention, highlighting the student's personal abilities and skills.

There are no unique methodologies for supporting students with hearing impairment and other associated disorders, which affect their communicative, cognitive, psychological, and social development. Educational guidance professionals will have to make the methodological, procedural, and resource adjustments they consider most encouraging to improve the communication and training of these students.

Before any intervention, the first step is to establish a communication channel and code that allows a proper interaction between teacher and student.

For some student with poor skill in reading may be useful books or documents with the parameters of Easy-Reading, in order to improve the access of the comprehension reading, consequently the access of information and knowledge.

International logo for Easy Reading documents

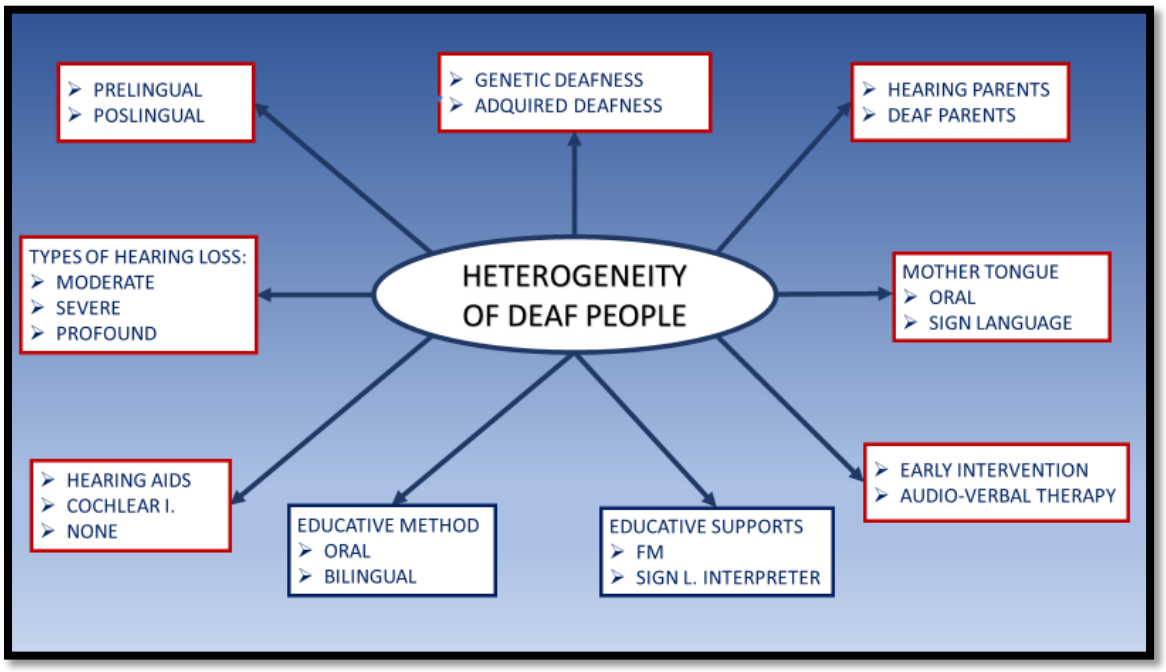
2.3. DIVERSITY OF PEOPLE WITH HEARING IMPAIRMENT

An enormous **social and communicative variability** characterizes the group of deaf or hard of hearing people. There is a growing heterogeneity of linguistic profiles reflected in the diversification of educational practices (Plaza-Pust, 2019) regardless these are aimed at oralism or bilingualism (oral language and sign language).

Therefore, it should not be assumed that all students with deafness share a similar familiar, educative, and social context; or that their interactions may contribute to similar cognitive and social experiences at individual level.

Due to deafness, no student must be recognised as part of a deaf identity or deaf culture. Hearing loss does not presuppose that all people become part of a differentiated community, with a culture and values that must be shared necessarily. **Having a hearing loss or deafness, does not obligate to communicate in sign language. The use of sign language is a personal choice**, and in the case of minors, this choice belongs to their parents as directly responsible for their education.

As has been repeatedly mentioned herein, many variables will influence the evolution of a person with deafness. The combination of all these factors has a direct impact on the overall development of hearing-impaired students. Therefore, it is possible to specify some standard communicative and social profiles, but it is complicated to define psychological profiles common to all students with deafness or hearing impairment.



**Diverse factors to consider that explain the variability of people with hearing loss.*

RESOURCES UNIT 2

- **Video: Challenges of Being Hard of Hearing: A Student's Perspective**
- **Video: Dear Hearing People - A Film by Sarah Snow & Jules Dameron**
- **Video: Navigating deafness in a hearing world | Rachel Kolb**
- **Reading: *A guide to preparing easy read information***

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UNIT 3. ACCESSIBILITY IN COMMUNICATION AND INFORMATION

Objectives:

- To be aware of what type of communication deaf people use, so to have a good interaction with hearing-impaired students.
- To know what materials, human and technical resources exist in the attention to students with hearing impairment to guarantee accessibility to information.

Structure:

INTRODUCTION

"The human being's need for communication is prior to any formalized language." *(Torres, 1995)*

Society is made up mostly of hearing people, therefore the communication problems that deaf people face daily are invisible to most of the population.
Convention on the Rights of Persons with Disabilities (CRPD) (2008) is guided by a series of guiding principles among which are: accessibility, individual autonomy, inclusion in society, and equal opportunities.
For the right to equal opportunities to be fulfilled, in all areas of society, it is essential for people with hearing problems to have access to communication and information as an unquestionable right. There are many communication barriers that they must deal with daily in their relationship with the environment, which seriously hinders their autonomy and their inclusion in society on equal terms with those of hearing people.

The Convention defines reasonable accommodations as *"the necessary and appropriate modifications and adaptations when required in a particular case, to ensure to persons with disabilities the enjoyment or exercise, on equal basis with others, of all human rights and fundamental freedoms*"

Accessibility in communication and information is essential for people who are deaf or have hearing impairment. Language, in its broadest definition, is the main communication tool. Knowledge of a language, whatever it may be, enables personal interactions, the transmission of information and therefore access to knowledge, essential pillars for development, individual autonomy, and inclusion in society.
Thus, all reasonable adjustments that are developed and put in place so that information and communication are accessible, guarantee the full inclusion of the person in their relationship with the environment.

For students with hearing loss, it is necessary to know, understand and be able to express themselves in the vehicular language of instruction that is adapted to their mother tongue, considering that learning the skills of reading and writing in the official language of their country is a students' right.

The schooling of students with a specific need for educational support must be governed by the principles of inclusion and participation, quality, equity, non-discrimination and effective equality in access and permanence in the educational system and universal accessibility for all students, counting for this with the resources it needs (FIAPAS 2020).

An inclusive education must start from the previous knowledge of the different forms of communication and access to information that students with deafness or hearing loss have, to make reasonable adjustments in terms of adaptations and implementation of adequate resources in each case.

Depending on the mother tongue in the family and the vehicular language of training, the resources will be shared or individual in some moments of the teaching activity.

AN ACCESIBLE ENVIRONMENT ENABLES
AN INACESSIBLE ENVIRONMEN DISABLES

3.1. ORAL COMMUNICATION

In any culture, children around 6-7 years dominate the language of their environment naturally. Oral language development is closely linked to hearing and auditory memory. Verbal comprehension, which involves the auditory cerebral cortex, depends on the perception of speech sounds, and acquired linguistic competence and performance (Torres, 1995).

Biology, neurolinguistic, and neuropsychology have studied the brain processes involved in language acquisition, determining that there are critical or sensitive periods for oral language acquisition. Human speech is not developed at birth, although the potential capacity to speak exists, but only by learning to speak in a specified period, turns this potentiality into reality (Mora 2013).

Brain plasticity could be defined as the ability of the brain to change its structure and function. The specific period for oral language acquisition is the early years of child development, where language learning is more stable and dynamic thanks to the neural plasticity. For this reason, the adaptation of hearing aids or cochlear implants is recommended at very early ages to take advantage of the critical period of the auditory system, whose physiological development has a shorter phase. An adaptation or implantation after that specific period of brain plasticity, does not mean that the acquisition of oral language is ineffective, but it will be a slower and more difficult process for the child.

Basic requirements for the acquisition and development of oral language:

- Normal hearing (mild loss)
- Absence of severe neurological dysfunction
- Normal organs of phonation and articulation
- Normal cognitive level
- Adequate psycho-affective evolution
- Social and communication experiences

The psychological processes necessary in the acquisition of oral language are:

- Attention
- Auditory, visual, and tactile perception
- Imitation
- Memory
- Motivation
- Emotion

Obviously, students with hearing impairment show serious problems in the basic requirement of auditive perception and auditive memory when the residual hearing is not available with hearing device. Furthermore, severe and profound hearing loss hinder auditory access to information and may interfere in all successive psychological and cognitive aspects that are directly related with the learning process (attention, emotion, memory, motivation, thinking).

A) Oral language and hearing impairment

Deaf children follow the same cognitive and developmental processes than hearing children. However, acquisition of the oral language depends on access to spoken language, on communicative experiences, and on a series of variables that directly influence oral language development:

- Age of appearance of hearing loss (pre-lingual, post-lingual)
- Age at which hearing loss was diagnosed.
- Type of deafness and residual hearing
- Adaptation of hearing aids
- Type of hearing aid (hearing aids, cochlear implant)
- Absence of hearing aids
- Assistance to the Early Care modality
- Auditory-Verbal Therapies / Speech Therapy Rehabilitation
- Mother tongue (oral language, sign language, bilingualism)
- Hearing or deaf parents
- Family participation
- Educational modality

The acquisition of oral language is based initially on auditory education through auditory-verbal therapies to take advantage of residual or functional hearing provided by hearing devices. In parallel, it will be developed an individual program of speech therapy. Sometimes, methods that facilitate oral language in its phonological aspect (Cue Speech) or in its syntactic (Bimodal) may be needed, in addition to technical resources favorable to the use of hearing aids (FM, magnetic loop).

However, it should be noted that, in practice, the different materials and methodological resources are used with some flexibility; speech therapists and specialist teachers may incorporate and combine them in a personalized itinerary for each child, depending on the variables indicated above.

The acquisition of oral language requires effort on the part of children with hearing loss of deafness and their families. Wearing hearing aids does not necessarily guarantee natural oral language acquisition, as in hearing people.

A complete process of individual speech therapy rehabilitation is necessary, including teaching and learning linguistic aspects (phonological, grammatical, semantic, or metalinguistic), and communicative aspects at expressive and comprehensive levels, through immersion in communicative experiences. In a natural approach, the child is helped to abstract, differentiate, synthesis, use, and integrate the linguistic and communicative rules starting from controlled

situations to everyday ones. The goal is that oral speech is an integral part of student communication (pragmatic).

For this purpose, the role of the families is essential as the first socializing environment. Consequently, it is crucial to provide information and to train them on the communicative skills for deaf children for a natural acquisition of the oral language. The family offers social and communicative experiences that will be determinative for the children.

B) Access to oral communication

Some goals of the current methodologies to gain access to oral communication for students with deafness are:

- Optimise residual hearing
- Guarantee good hearing discrimination
- Improve hearing intelligibility
- Enhance auditory memory
- Re-educate breathing for vocalization
- Raise awareness of phonological aspects (intonation, volume, tone, melody, rhythm, pronunciation)
- Optimise lip reading for discrimination of phonemes with the same point of articulation
- Expand lexical content (expressive and comprehensive vocabulary)
- Raise awareness about the semantic relationships of words
- Acquisition of the grammatical aspects of oral discourse (verb tenses, prepositions, conjunctions, pronouns, articles ...)
- Ability to represent reality through their oral discourse
- Coherence and cohesion of oral discourse
- Coherence and cohesion in written expression
- Motivation and participation in oral communication
- Comprehensive reading of sentences and texts in their different formats

C) Lip reading

It is a technique used by some deaf or hard of hearing people to complement the information of the other person's message through the reading of the movements of their lips when they speak. This requires:

- good visual perception to observe the mouth of the speaker.
- training in this technique
- correct vocalization of the speaker for a good reading
- mental substitution to complete information, which cannot be read, through context.

However, not all deaf students have the same ability to develop this technique. It involves a series of difficulties when some phonemes that are articulated in the same position / p / / b / / m /, (e.g.: *mama-papa*, would have the same visual representation in the mouth). Another difficulty is the hidden phonemes that are articulated in the soft palate / k / / g / / j / (e.g.: *jam-ham, caught-hot...).*

For this reason, other complementary systems have been developed to reinforce oral language such as the Cue Speech and the Bimodal system.

Oral language competence is the first condition for access to effective reading. Understanding texts is the basis for a good school performance [...] The access to the oral language is crucial for acquisition and development of higher cognitive processes, such as learning and use of comprehensive reading. (FIAPAS, 2009)

3.2. SIGN LANGUAGE

Each country or geographic-cultural community develops its own sign language

Many countries have already recognised sign language as an official language.
Sign language is the language used by deaf signer people, deaf-blind people, and people who, for reasons of impairment, cannot express with oral language.
Sign language is a visual and gestural language in which the hands, facial expression and body language are used. Hand gestures follow a precise configuration, location, and movement.
Like oral languages it consists of a grammar, a syntactic structure, vocabulary and pragmatic, specific for each language. Consequently, teaching and learning process are required to acquire the necessary skills in terms of expression and understanding. Sign language structure does not correspond to oral language. Instead, it is made up of minimum units with meaning (signs) and without meaning (keremas).

DIFFERENCES BETWEEN ORAL AND SIGN LANGUAGE

	ORAL LANGUAGE	**SIGN LANGUAGE**
CANAL	AUDITIVE-VERBAL	GESTURAL-VISUAL
SIGNIFICANT	WORD	SIGN
MINIMUN UNIT WITH SIGNIFICANT	PHONEME	CHEREMA/KEREMA
PRODUCTION	LINEAL O TEMPORAL	SIMULTANEOUS

A) Dactylological Alphabet
It is the manual representation of the alphabet of the oral language (manual alphabet). It is performed in the air at chin level with the dominant hand. It should be stressed that it is not a signed language, but a sign language tool representing the oral language alphabet.
It is a tool used to spell words and to facilitate communication with:

- a new, unknown, or complex word
- a word does not have an assigned sign, or
- when a person is introduced for the first time and has not his/her sign yet.

It is impossible to maintain a conversation by spelling letter by letter, unless it is the communication system of a person who is deaf-blind, then the manual alphabet would be supported on the hand palm of the deaf-blind person (palm alphabet).

B) Parameters of the signs

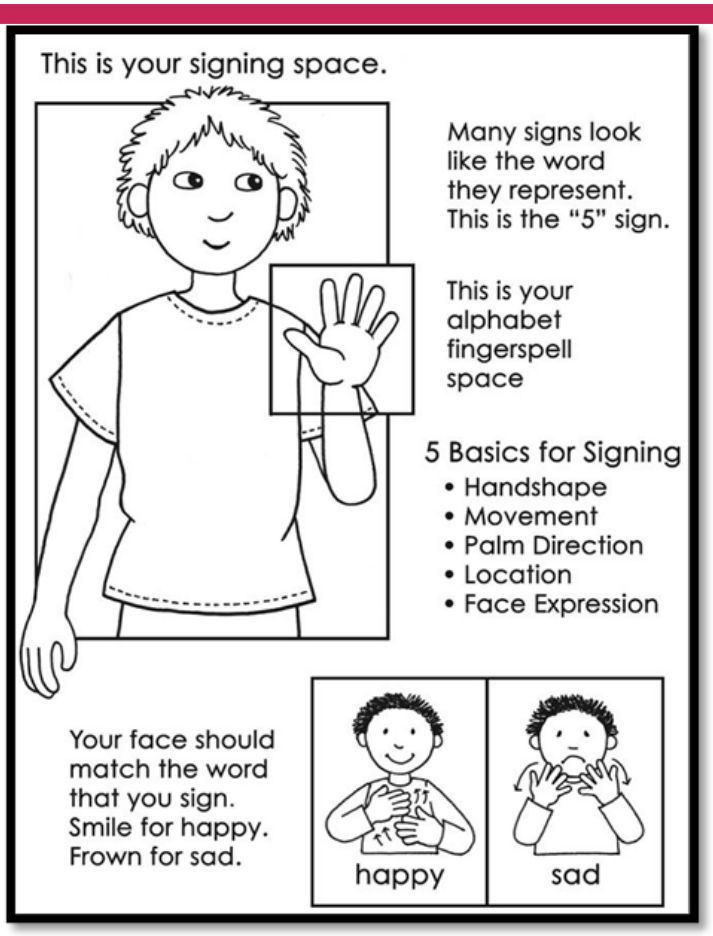
The signs can be:

a) **Iconic**: usually originated from common natural gestures, these signs are recognised for what they represent (ex.: me, eating, sleeping, drinking, numbers...)

b) **Arbitrary**: signs established by a community of deaf people signers which started from a previous common reference, but which is difficult to relate to their meaning.

Signs must follow a series of parameters in their execution.

- **Handshape**: the shape of the hand when making a sign.
- **Palm Orientation**: orientation of the hand palm in relation to the signer (down/up, left/right, towards the signer, towards the front)
- **Location or place of articulation**: place or height where the sign is performed in the body (head, shoulder, chest), the vertical usable space includes from the hip to the top of the head, and the horizontal space of the half-opened arms.
- **Movement:** the signs are not static, they include movement (turns, straight, semi-circular, zigzag, simultaneous with both hands)
- **Contact point**: the dominant hand touches a part of the body (other hand, face, head, chest, shoulder, waist...)
- **Non-manual component** includes facial expression, body expression, the articulation of words (lip reading), body movements accompanying the performance of gestures.



C) Paralinguistic elements

- Call the attention of a deaf person through a light touch on the shoulder or arm to start a conversation.
- Keep constant eye contact during conversation
- Facial expression should accompany the subject as an essential non-verbal communication needed in some cases to discern different meanings represented by the same sign.
- Visual connectors to hold the conversation: nodding, assertive gestures, close body posture, looks or smile depending on the topic of the conversation.
- Warn when the conversation is going to be momentarily interrupted
- Warn before closing the conversation with politeness, excusing ourselves, apologising
- Always speak to the deaf person, NOT to the sign language interpreter
- Sign language, as oral language, has an informal and a formal register depending on the social context.

SIGN LANGUAGE IS NOT UNIVERSAL FOR ALL DEAF PEOPLE

3.3. UNIVERSAL ACCESSIBILITY FOR PEOPLE WITH HEARING IMPAIRMENT

Nowadays, technology has undergone a substantial and qualitative advance in the new hearing devices models and cochlear implants. Nevertheless, deaf people need technical support in daily life situations to favour access to information and communication. These situations are often unnoticed by hearing people, but the intelligibility of the message for people with hearing loss is difficult.

A) Technical supports for students with hearing impairment

Visual helps: different devices or supports that help in the daily life of deaf people:

- Lighted sign, bells, and intercoms
- Visual and bright alarm and emergency systems
- Warning signs with text or signs
- Audiovisual technology with subtitles and sign language interpretation
- Explanatory posters, labels
- Mobile instant messages (WhatsApp, Messenger)
- Mobile video calls (WhatsApp, Skype, Zoom, Meet)
- Online video calls and video conferences (Skype, Teams, Zoom, Meet)
- Signal Guidance that combines video, audio, and text in the same device
- Subtitles of live public events in real-time: conferences, interviews, meetings
- Recorded subtitles: resource used to transcribe to text the spoken message and auditory information (sounds, onomatopoeias, noises) in television, cinema, theatre, museums, libraries

Auditory supports: devices and systems that improve the intelligibility of sound and message

- Sound Amplifiers
- Wireless Bluetooth microphones that connect with the hearing aid or cochlear implant
- Frequency Modulated System
- Magnetic induction system (magnetic loops)
- Audio-guides
- Voice-to-text recognition systems
- Subtitles and captions

B) Human/personal assistance for students with hearing impairment

Some professionals directly intervene as mediators in the communicative interaction between a deaf person and his/her environment.

a) **Sign language interpreter**: professional who interprets and translates information from oral and written language to national sign language and vice versa. The goal is to ensure the communication between deaf or hearing-impaired people (who use sign language and hearing person) and their social environment.

b) **Sign language tele-interpreter**: a professional who remotely interprets and translates information, using public video telephony (through fixed and mobile networks) or other technologies in a tele-interpretation centre. This enables a communication bridge between a person who uses oral language and another who uses sign language, making telecommunications services accessible.

c) **Guide-interpreter for deaf-blindness**: a professional who interprets and translates information from oral and written language to sign language or to different systems and means of communication support used by the deaf-blind person and vice versa.

d) **Stenotypist**: professional who makes possible subtitle up-to-the-minute, through a fast-writing system, which makes real-time transcription of the speech of a speaker to a written text. For this purpose, a stenotype keyboard and a word processor software are needed. The written text will be shown on the screen.

C) Communicative interaction strategies

A first step to communicate with a person with a sensory impairment is to know some basic communicative interaction strategies. These guidelines are general for all communicative environments.

Introducing the deaf classmate (if he or she agrees) to the class, is one of the first activities that the teacher can carry out, to encourage empathy among classmates. Information about the implications of hearing loss is provided, giving the student himself the opportunity to explain his/her needs and difficulties in class.

The interaction practices aim not to break the visual or auditory contact between the speaker and the receiver. Therefore, to favour access to information, several primary indications must be considered. These are evident and uncomplicated but relevant; the objective is to improve students' communication and access to information.

Introduction to communication

- Get their attention when with a light touch, a sign or by saying their name or touching their shoulder
- Start talking when you know there are eye contact and direct attention
- Always speak in front of the student

- Introduce the topic of conversation for the previous reference

In the Conversation

- Talk naturally, neither quickly nor slowly
- Vocalize well without exaggerating, with voice, but without shouting
- Use corrects, accurate phrases that do not lead to confusion
- Repeat if necessary
- Always respect the speaking time
- Always talk the person with hearing loss, not the sign language interpreter or companion
- Lip-reading is very important for people who are deaf or hearing impaired. Do not put any object or hand in front of the mouth while speaking
- Support on visual resources (natural gestures, images, drawings, written words)
- Help with fingerprinting for new terms or words with students who use sign language.

End of conversation

- Indicate when the conversation is over
- Do not turn around without reason you can confuse the student.

REMEMBER:

The students with hearing impairment cannot follow the explanation and take notes at the same time, because they will lose the visual contact with the teacher or with the sign language interpreter, which makes it difficult to follow the explanation.

3.4. TECHNICAL RESOURCES FOR COMMUNICATIVE ACCESSIBILITY

A significant number of technical and technological resources help people with deafness or hearing loss to access information and in their communicative interactions. Some of these technological aids are aimed at users of hearing aids or cochlear implants, and others for deaf people in general.

In education, these resources greatly support students with hearing impairment facilitating access to curricular content and improving the intelligibility within the classroom. Intelligibility is the percentage of words correctly interpreted by the listener (around 85%-90% of words), this listening can be affected by the reverberation of the space and the level of background noise, both inside and outside the classroom.

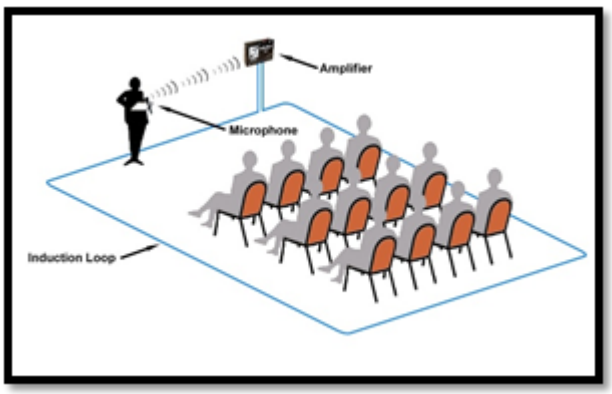
3.4.1. Magnetic Loops/hearing loops

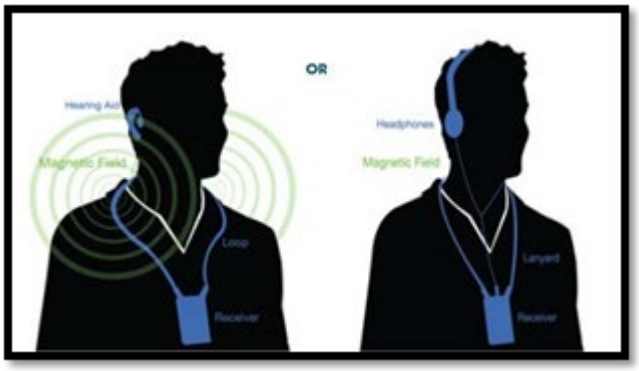
It is a hearing aid system, also called a magnetic induction loop. It is a system that connects the audio signal from a microphone to an amplifier that passes it to a cable (loop), creating a magnetic field, this signal is received by the hearing aid or cochlear implant with its Telecoil (position T). Everyone inside the area around the magnetic loop can benefit if they have the Telecoil activated, regardless of the type of hearing aid.

Its function is to eliminate ambient noise, the acoustic reverberation, and to transmit the sound signal clearly and without delay.

There are different types of magnetic loop depending on the target space:

- Room induction loop for large areas and collective use (auditoriums, cinemas, theatres, conference hall, museums, exhibitions)
- Counter induction loop for small spaces (customer service, counters, hotel reception) could be permanent in a desk or portable.
- Neck loop for individual use that can adjust to multimedia devices (mobile telephony, audio guides, sign guides)





This universal system that does not need updates. All spaces that have such a hearing accessibility system must be marked with the symbol that identifies it.

3.4.2. FM system

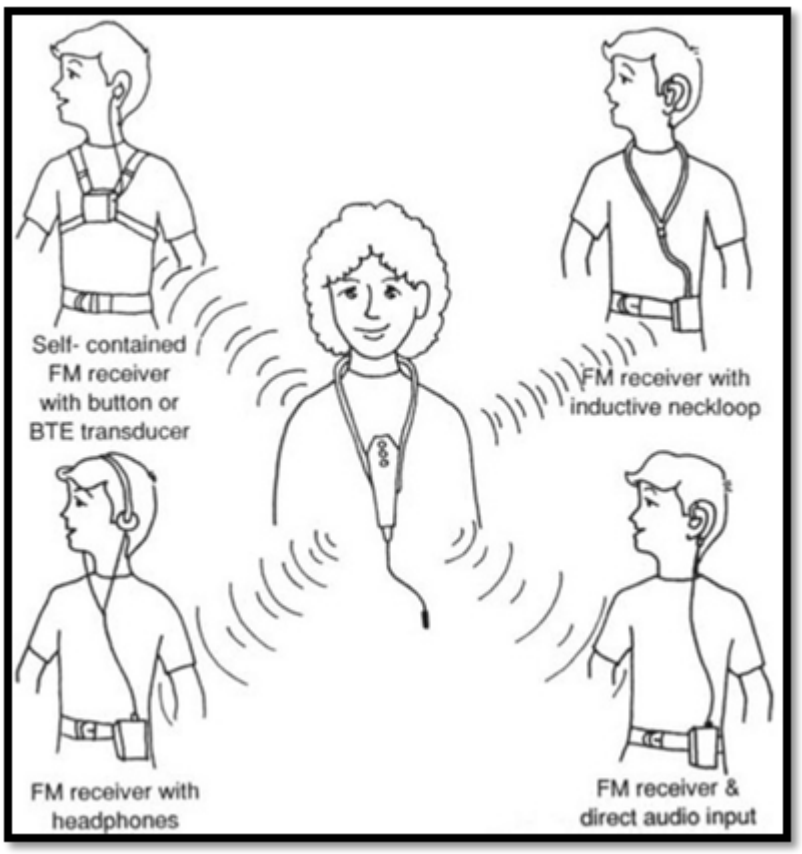
The distance between a sound source or speaker and the person with hearing problems affects the reception of the message. In addition to length, all ambient noises and reverberation can alter speech intelligibility.

FM devices are often used at school for students with hearing impairment who use hearing aids or cochlear implants.

FM system uses radio waves to deliver speech signals directly from the speaker's voice to the listener through a radio frequency designated for personal use. Personal FM system reduce the background noise and improve the clarity of messages.

FM system includes a transmitter microphone worn by the teacher or speaker. Most modern systems receive the signal from mobile devices such as tablets, loudspeakers. The microphone encodes their voice into a frequency-modulated signal. The receiver picks up the radio signals transmitted by the microphone to the hearing aids or C.I., up to 15 meters away.

Types of FM receivers



3.4.3. Captions and Subtitles

Subtitles are essential as a universal accessibility tool for people with hearing problems and for all those who do not speak a language or are in situations where ambient noise makes it difficult to receive audio.

Compensating the problems of access to auditory information in an audiovisual format through subtitles is of utmost importance for people with deafness or hearing loss. It could be a TV program, video hosted on the internet, platform films, cinemas, theatres, museum or exhibition audiovisuals, conferences ... There are many situations where information is auditory verbal.

Objectives for subtitling:

- Provide in text the sound information of an audiovisual
- Present the text long enough for it to be read
- Encourage comfortable reading
- Help identify the characters
- Understand the original dialogues
- Adapt the speed of exposure of the subtitles to the target audience (children, adults)

Types of subtitles

1. Automatic subtitling: Technique by voice recognition
2. Simultaneous subtitling: Technique of stenotype. Requirements for simultaneous subtitling are Stenotypist, Complete stenotype equipment and Computer technician

Captions and Subtitles ensures accessibility to the information for people with deafness or hearing loss because they allow to transcribe audio and sounds to text.

The people with hearing loss can know: What it said/Who said what/How it is said/What is heard/What is watch

3.5. NEW TECHNOLOGIES

Society is constantly evolving, adapting to the historical, demographic, social context and to new forms of knowledge. This dynamism has experienced a significant change due to new technologies, which have revolutionised all areas in which people live (familiar, educational, work, social, scientific, cultural, and environmental). All technological and digital advances have created new ways of relating, learning, and working, also modifying the way we communicate and teach.

There is no doubt that new technologies have facilitated relationships for people with hearing difficulties through email, social networks and instant messaging (chats, video calls); both for deaf people who use oral language and those who communicate in sign language, giving them the opportunity to access information and knowledge in an autonomous, fast and dynamic way.

A) Technology and education

Digital technology is increasingly integrated into education. Education professionals learned to teach with methodologies that, in a short time, have become a bit obsolete for students who, for the most part, live daily in the digital world. This situation has shown that new strategies are needed to benefit both teachers and students in the teaching and learning process.

The teacher-student relationship is one of the best tools for communication and interaction to favour the educational process. Emotional curiosity encourages attention; everything that is new, interesting, and exciting promoting learning and storage in memory (Mora, 2017). The emotion of both teachers and learners must be in line with the world around them. The new technologies are important in the world of education nowadays and an innovative and dynamic learning opportunity.

Recent studies indicate that more than 50% of students who are in primary school will have jobs that are currently unknown but linked to technology and the digital world. Consequently, training on IT (information technologies) for teachers and students is essential for future adults.

Many technological elements in education intervene in the teaching and learning process. Computers and other devices have been incorporated into the classes, and also technological software has also been developed for learning platforms and virtual environments, with content created by online or collaborative training companies (wikis), thematic channels of knowledge (scientific, technical, artistic, historical, literary ...). There is a whole digital universe in the educational field.

The educational platforms host educational tools through digital resources:

- Contents through recorded classes or live classes
- Educational resources: podcasts, presentations, infographics, questionnaires, evaluations, documents
- Communication tools: forums, chats, email, video calls, notifications and, online tutoring sessions.

These technological advances have not always considered accessibility to guarantee access to the contents of these platforms or websites by students.

It is not necessary to create specific platforms for students with hearing impairment. The need for accessibility of these students must be considered to enable access to new learning methods with the same opportunities as their hearing peers.

The current pandemic situation caused by Covid-19 has highlighted the importance of accessibility to online education due to the difficulties it has caused for students with hearing loss. It has been revealed that not all the students had an Internet connection or personal computing devices (computer, tablet), and accessibility in platforms and resources was poor.

There are several guidelines to be considered to make accessible the materials and resources for teaching, learning and assessment. These adjustments in information, communication and training will facilitate deaf students' accessibility to knowledge and development of their skills.

Digital learning tools must include all students, so it is necessary to consider:

- **Subtitles in all audiovisual formats:** videos, recorded classes and live classes**.**
- **Speech-to-text transcription through speech recognition applications or programs,** which can be installed on the devices of hearing -impaired students.
- **Video-calling programs that allow subtitles** (Skype, Google Meet, Webex Meetings) or the presence of an LS interpreter for students who need this resource.

B) Technology for communication and deaf young people

There are some examples of students with hearing loss, how they use the new technologies in daily life:

- **Video: Deaf young people talk about NDCS Technology - Radio aids**
- **Video: Deaf young people talk about NDCS Technology – Headphones**
- **Video: Deaf young people share how they listen to music and TV**

C) Other technologic resources for communication

Nowadays it has been designed many apps to improve the communication for people with hearing loss and deafness.

RESOURCES UNIT 3

- **Video: Sentence Structure. Word Order in American Sign Language**
- **Video: Alphabet in international sign language**
- **Web of sign language with different languages around the world https://www.spreadthesign.com/en.gb**
- **Video: Providing Services and Accommodations for Deaf and Hard of Hearing Students in a Mainstream Setting**
- **Video: How to communicate with people who have hearing loss (deaf awareness)**
- **Video: What is a Hearing Loop?**
- **Video: What is a loop system and how does it work?**
- **Video: Using an FM system**
- **Video: Using a FM system in classroom**
- **Video: Add your own closed caption (YouTube help)**
- **Reading: *UNESCO ICT Competency Framework for Teachers* (version 3)**
- **Reading: *Efficient strategies for integrating universal design for learning in the online classroom***
- **Reading:Assistive-Technology-for-Deaf-People-Based-on-Android-Platform.pdf**
- **YouTube Chanel about TIC resources**
- **Reading: Universal design learning**

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- YouTube **Chanel about TIC resources** https://www.youtube.com/c/FlippedClassroomTutorials/videos
- Web **BBC- Subtitles Guidelines** https://bbc.github.io/subtitle-guidelines/

UNIT 4. METHODOLOGICAL CONSIDERATIONS IN EDUCATIONAL AND TRAINING ATTENTION

OBJECTIVES:

- To understand methodological considerations in educational and training attention according to needs of people with hearing impairments in the educational environment.
- To learn communication strategies for hearing impairment students, at the same time to understand their educational and professional implications.
- To have information about National Sign Language, besides this to help professionals' learning about Augmentative communication systems.

Structure:

INTRODUCTION

In the education of hearing-impaired children, it is very effective to support the teaching of knowledge and skills with visual tools as much as possible, to organize educational environments and to enable peer interaction. In addition, considering the importance of learning by experience in the permanence of what has been learned, the importance of active learning based on practice in the education of the hearing impaired is quite remarkable.

4.1. COMMUNICATIVE INTERACTION STRATEGIES

Communication is the transfer of feelings, thoughts, or information to others in any way imaginable. The purpose of this process is to "be understood".
Communication is not an exchange of information. It is a different whole formed by the emotion and behaviour affecting the information given. It is a whole with verbal and non-verbal communication signs. Non-verbal components of communication are body language and tone of voice. Body language and tone of voice determine the style, attitude, and perception of what is said.

Body Language

Body language is our oldest communication tool in human history. Body language is the reflection of our feelings and thoughts. In the face-to-face relationship people establish, words are 10% important, tone of voice 30%, body language 60%.

Body Language Elements

- Body posture Gestures
- Mimics Eye contact
- Use of the head
- Use of the feet
- Place chosen to sit
- Seating style
- Distance
- Clothing used accessories.
- Care and make-up

Direct Eye Contact

One of the most important things to consider when talking to a person is where you are looking. Looking directly at the person you are talking to helps convey your sincerity to the other person and increases the impact of your message. Talking by looking down or looking away will be interpreted as accepting the superiority of the other person.

At the same time, it is necessary not to overdo it when making eye contact. Constantly looking into a person's eyes both causes discomfort for that person and is unnecessary.

Direct eye relationship can also be improved over time. For this, you need to focus your attention on your eye contact and be aware of the way you use your eyes when talking to someone.

Body Posture (Posture)

People have very different postures in their relationships with each other. The person who is discussing a very specific topic with someone leans forward slightly. An adult who speaks leaning to the child will find a much more cooperative child.

The person who directly faces the person with whom he is in a relationship and who has an upright posture will add a safe feature to his message.

Just as the bent, bowed, "sheepish" postures are erroneous, the body postures with the shoulders thrown back, the chest protruding, the head bowed, challenging, inviting to war are equally erroneous.

It is possible to talk and listen by holding the head and body upright, and by paying attention to develop the body posture towards safe attitude over time.

Distance and Physical Contact

In any society, social distance has a major effect on human relationships. Interpersonal distance or personal space is the invisible area that surrounds everyone in their dealings with others. It is the physical distance between two people that varies according to the relationship between those two people, the social and cultural context of each of them.

Intimate distance is a measure of the distance that everyone typically lives in an elevator, and you feel uncomfortable when you are close to people you don't know.

In any society, distance has an important effect on human relationships. Sitting too close to a person or standing close to him, putting his hand on his shoulder, on his back, touching his arm and hand add a certain "autonomy, closeness and warmth to the relationship between two people."

Attention should be paid to how the other person perceives the distance or bodily contact. Otherwise, uncomfortable comments and unwanted results will be inevitable.

Gestures

Gestures made in appropriate amounts and with appropriate intensity add strength to a conversation. It is important not to use gestures as a tool to complement the missing words in speech. Moreover, it should not be forgotten that harsh and angry gestures cause discomfort in the audience. Comfortable, calm, and soft gestures are interpreted as revealing the speaker's self-confidence and mastery of the subject he / she speaks.

Mimics

Nothing in human relationships is as important and meaningful as facial expression, perhaps. It is inappropriate to express sadness or anger with a smiling expression and joy with a scowl. A safe statement is a statement in harmony with the given message. An angry message or dissatisfaction can be conveyed most clearly with a dull expression.

Tone, Intensity and Fluency of Speech

The use of tone of voice is the most important part of verbal communication.

The smallest tension experienced in interpersonal relationships first reveals itself in the tone of voice. Most of the time, a lively, cheerful, and energetic tone of voice leaves a positive effect on people in everyday relationships. However, if there is tension and a problem, the soft and calm tone of the voice prevents conflict and facilitates cooperation.

With a monotonous, boring, and easily distracted speech style, the person will have difficulty in being persuasive, no matter how many original ideas they present.

The harsh and firm way of speaking often causes advocacy and discomfort in the listener. In addition, people who give an apologetic tone to their voices are easily rejected by others, or their statements are seen as unimportant.

Speech fluency must be accompanied by correct vocalization, since the hearing-Impaired person must follow the oral speech by using his/her functional auditory residual and lip-reading.

Teachers should pay attention to the following points while communicating with hearing impaired students:

- Stand or sit at eye level while students are speaking.
- Do not walk around the classroom while talking, lecturing.
- Do not speak while writing on the board.
- Do not speak too loudly or in a whisper, make sure your tone of voice is normal.
- Do not look in other directions while talking.
- Make clear and short sentences while speaking.
- Make sure the subject is clear and understandable.
- While speaking, do not leave your sentences incomplete, complete them.
- Make sure the environment is not too noisy when you speak.
- Do not cover your mouth with anything such as a hand or paper while speaking.
- While speaking, make sure that your face is towards the students.
- When speaking with students, make sure that the distance between you is not too far or too close.
- Pay attention to the light coming towards your face, it will be difficult for students to see your face and follow what you say in a dark environment.
- Be careful not to exaggerate the gestures and gestures you use while speaking.
- Avoid distracting body movements while talking.
- Make sure students participate in all kinds of activities.
- Apply your daily schedules regularly. Hearing-impaired students will feel more confident if they know what to do during the day.
- Some hearing-impaired students may make strange sounds. Since they do not hear these voices themselves, they are unaware, and these sounds can be disturbing. Prevent them from making these sounds by warning them properly without frightening them.
- Provide hearing-impaired students the opportunity to change their seating so they can better see and hear you and their friends.
- Be calm and patient and remember that communication with your students will take time.

4.2. EDUCATIONAL AND PROFESSIONAL IMPLICATIONS OF HEARING IMPAIRMENT

Some students who are hearing impairment feel socially isolated from others. It has been found that even a mild hearing loss may result in a profound communication barrier (50% to 60% of communication can be lost).
The emphasis should be on visual learning strategies for students who are hard of hearing or hearing impairment.

To enhance the learning environment, consider the following:

- If the student relies on lip-reading, repeat comments made by the other students in a discussion to ensure the student understands
- Introduce interpreters and computerized note-takers to the class and give them the opportunity to explain their role
- Be prepared for interruptions by note-takers and interpreters for clarification, should someone speak inaudibly, several people speak at one time, or a concept is not clear
- Do not say anything to the interpreter or computerized note-taker during class that you do not want communicated to the student
- Typing and interpreting take intense concentration and physical stamina, thereby requiring at least one 10-minute break for every 50 minutes of class time depending on the course content
- Speak at a reasonable pace, clearly and in a normal tone but be aware that interpreting and computerized note- taking requires a few seconds delay
- If a class is cancelled or relocated ensure that all parties (student, interpreter and/or note-taker) are notified
- Access Ability Services can be contacted for more information on these methods of communication
- Be prepared to meet with interpreters and note-takers for consultation and planning
- Work closely with Access Ability Services to ensure a successful learning experience for the student
- Outline lesson at beginning of class and provide a list of content specific or technical terms to the student and interpreter before each class
- Reinforce verbal presentations with written text (any computer-generated document allows you to face the front)
- Use captioned videos where available
- Avoid movements which will distract or block the student's view of the interpreter or the computer screen
- When speaking, face the students, try to avoid back-lighting and remain in one place
- Restate or paraphrase if the student does not seem to understand
- Eliminate background noise and other distractions

SPECIFIC TIPS

- If you have an interpreter in your class: The interpreter is not a tutor or a teacher.
- The interpreter is there to facilitate communication between the instructor and the student and is part of the educational team.
- Interpreters belong to a professional group, bound by a Code of Ethics that stresses confidentiality, impartiality, and integrity.
- Situate yourself and the interpreter along one sight line so that hearing impairment students can follow any action
- Speak directly to the hearing impairment student, not the interpreter
- Look at the student not the interpreter when responses are being interpreted
- The interpreter (or student) will be happy to teach you a few ASL signs of greeting and instructions if you are interested
- Specific tips if you have a computerized note-taker in your class: An in-class computerized note-taker relays the lecture and class discussion.

The note-taker must have passed the College Computerized Note-taking Screening and must type at least 70 wpm. The staff of the Access Ability Centre regularly monitors the quality of notes for accuracy and thoroughness.

- Note-takers can transcribe audio materials such as video or audio tapes if given the materials in advance of the class
- Notes taken by the computerized note-takers are for the use of the hearing impairment or hard of hearing students only

Students with disabilities are expected to accomplish the "core competencies" of their programs. To achieve this, harmony is provided to minimize or eliminate any disadvantage their disability presents. Harmony are unique to everyone. The Access Ability Centre makes these recommendations based on confidential documentation that the student provides to the college. Some of the most provided academic harmony to students who are hearing-impairment or hard of hearing include:

- Priority seating for the students, their computerized note-takers, and their interpreters
- Access to computerized note-taker or an interpreter and manual note-taker
- Provision of extended time for tests and exams - the amount of extra time is determined by the Access Ability Centre
- Access to an interpreter during tests and exams, to interpret questions Ø Provide clarification on tests, exams, and assignments - if interpreter is not available, ensure the conversation is written down
- Ensure that any last-minute changes or errors on tests and exams are provided to the student in writing Use of sign/oral language interpreters for oral assignments
- Access to assistive devices such as FM systems
- Use computer for completion of test/assignments
- Extended time to complete the program and/or reduced course load
- Adapted methods of evaluation such as marking on content rather than writing style
- Provision of advance reading lists, texts, and content specific vocabulary

- Provide computerized note-takers and interpreters with copies of reading material and videos at least one week in advance of when it is being taught

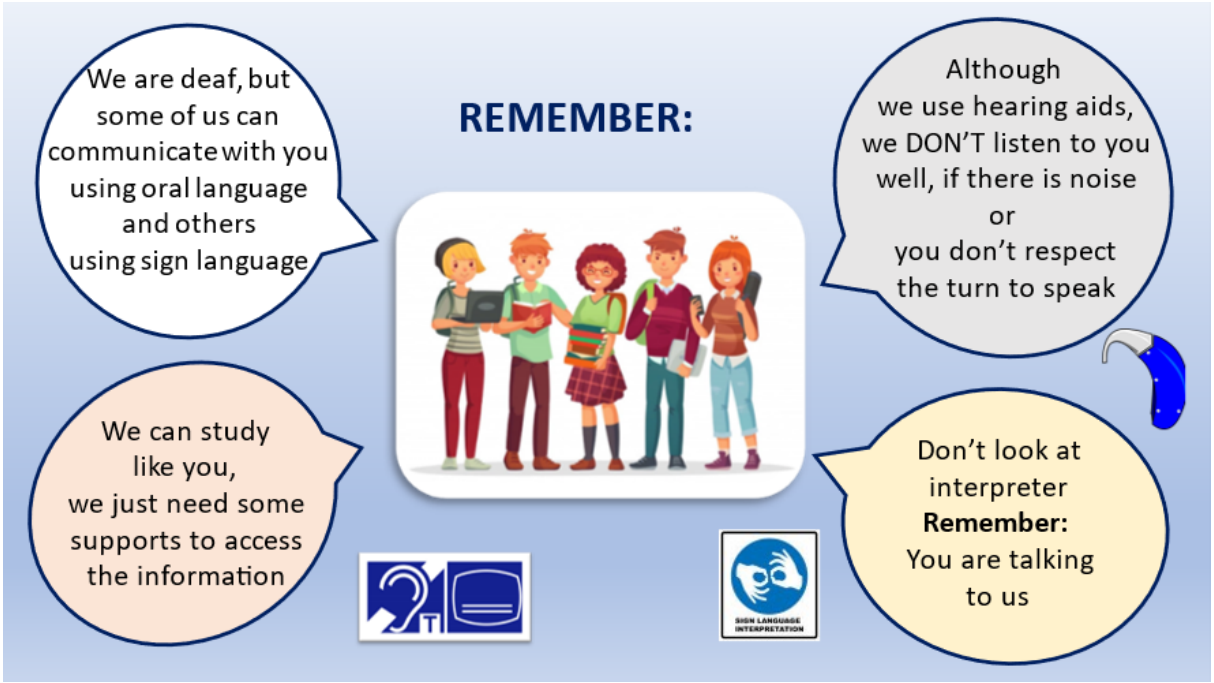
PEER INTERACTION AND COLLABORATIVE LEARNING

It is necessary to allow peer interaction. In the teaching process, it is important to create opportunities for students to interact with each other and to model each other when necessary, and to work together. Creating small study groups by bringing students from different levels together is also essential in collaborative learning.

For collaborative learning and peer support:

- **Paying attention to bringing students of different characteristics and levels together while creating study groups,**
- **Each child in the group to know their own duties and responsibilities,**
- **Ensuring that every student takes an active role because of group work,**

Care should be taken that students of different levels sit side by side. Thus, students will support each other in academic and social areas, and the teacher's classroom control will be easier.



4.3. ORAL AND VISUAL COMMUNICATION SUPPORT FOR HEARING IMPAIRMENT

The biggest problem faced by the teacher who is responsible for the education of a child with hearing impairment is how to communicate with the child and how to teach the individual how to communicate with other people. There are different approaches to supporting oral communication in the education of people with hearing impairments.

- Oral, auditory-verbal methods
- Methods supported by gestures or signs.

A) ORAL AND AUDITORY COMMUNICATION METHODS

1. Natural Oral Hearing Method / Oralism

With this method, young children with hearing impairment access their mother tongue following the natural process of acquiring language such as listeners, although in the case of severe hearing loss this acquisition leads to a delay and some difficulties depending on the type of deafness. Children with hearing loss can develop their mother tongue through meaningful interaction with those around them.

The use of a hearing aid (hearing aids or cochlear implants) is a prerequisite for the development of this method. A properly adaptation of hearing aids allows the perception and understanding of oral language if children have a good residual and functional hearing. This method lets the development of auditory perception naturally, rather than teaching spoken language directly without rigid patterns.

2. Auditory Verbal Therapy

It is an early intervention method with hearing impaired hearing aid users for language development. It is based on developing auditory and communicative skills focusing exclusively on hearing. Family involvement is an essential part of such therapy. The most significant difference from the natural auditory-verbal approach is that lip reading, the dactyl alphabet, the Cue Speech are not used. It is a one-in-one methodological approach, only aimed at perception and auditory memory.

3. Structural Verbal-Oral Method

In this method, the language, structured with the idea that the language can and should be taught, is taught to children with certain patterns and in a certain order. This structuring covers all studies under the headings of speech training, articulation studies, hearing training, lip reading training, language, and speech training. Studies are carried out according to the idea that the language should be taught.

4. Lip Reading

It is a technique that some deaf people use to complement auditory information. They read on the lips the vocalization of the speaker. Training and skills are needed to be a good lip reader because some phonemes are visually similar and have the same articulation point, or because some are not visible phonemes and can confuse, which requires contextual information for full message compression.

B) METHODS SUPPORTED BY GESTURES OR SIGNS

1. Dactylological alphabet/ finger alphabet

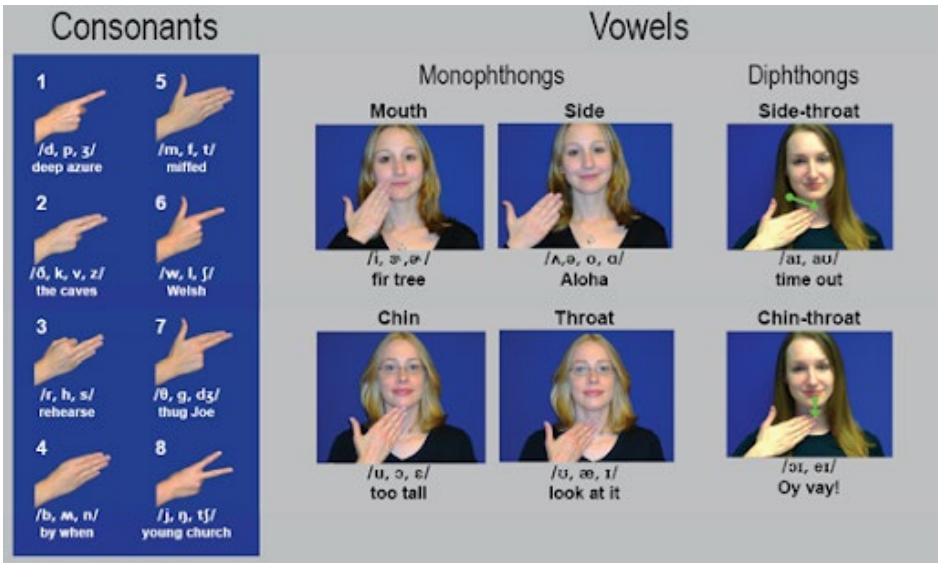
It is a manual alphabet that identifies every letter of the alphabet. It is a gestural method for visualizing the oral alphabet, but it is very limited to have a conversation. Used to spell new or complex words.

2. Phonetic support gestures/Hand cue technique

It is a technique used in speech therapy. It consists of a series of hand gestures that help the visual perception of some parameters of the vocalic and consonant sounds, either to improve pronunciation or discrimination of phonemes when they can be confused with others. Once the child has acquired phonological awareness, these gestures would be used in a timely manner to help with new or complex words.

3. Cue Speech

Total communication is an educational method based on using all the verbal, auditory, written and sign-based methods used in language acquisition. Advocates of this method are the educational method they use, asserting that children with severe and profound hearing loss should be supported with methods such as signs, lip reading, and writing, and suggest that all methods should be used together in the education of hearing-impaired children. For the child to be successful, both parents and teachers should receive sign language training and be able to use these skills effectively. Because this method focuses on sign language.



4.4. NATIONAL SIGN LANGUAGE

What is American Sign Language?

American Sign Language (ASL) is a complete, natural language that has the same linguistic properties as spoken languages, with grammar that differs from English. ASL is expressed by movements of the hands and face. It is the primary language of many North Americans who are hearing-impaired and hard of hearing and is used by many hearing people as well.

Is Sign Language the Same in Other Countries?

There is no universal sign language. Different sign languages are used in different countries or regions. For example, British Sign Language (BSL) is a different language from ASL, and Americans who know ASL may not understand BSL. Some countries adopt features of ASL in their sign languages.

Where Did ASL Originate?

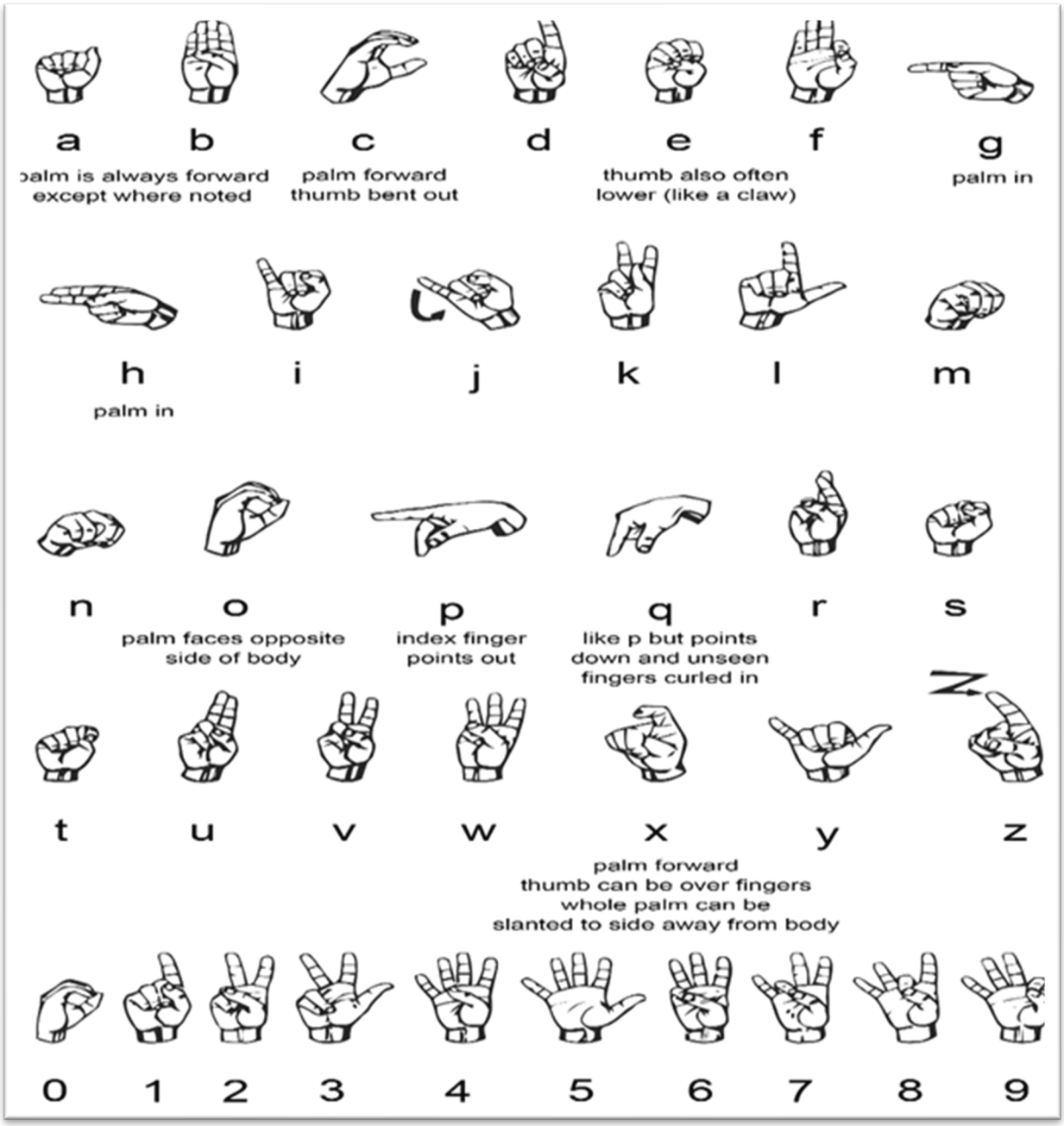
No person or committee invented ASL. The exact beginnings of ASL are not clear, but some suggest that it arose more than 200 years ago from the intermixing of local sign languages and French Sign Language (LSF, or Langue des Signs Française). Today's ASL includes some elements of LSF plus the original local sign languages; over time, these have melded and changed into a rich, complex, and mature language. Modern ASL and modern LSF are distinct languages. While they still contain some similar signs, they can no longer be understood by each other's users.

How Does ASL Compare with Spoken Language?

ASL is a language separate and distinct from English. It contains all the fundamental features of language, with its own rules for pronunciation, word formation, and word order. While every language has ways of signalling different functions, such as asking a question rather than making a statement, languages differ in how this is done. For example, English speakers may ask a question by raising the pitch of their voices and by adjusting word order; ASL users ask a question by raising their eyebrows, widening their eyes, and tilting their bodies forward.

Just as with other languages, specific ways of expressing ideas in ASL vary as much as ASL users themselves. In addition to individual differences in expression, ASL has regional accents and dialects; just as certain English words are spoken differently in different parts of the country, ASL has regional variations in the rhythm of signing, pronunciation, slang, and signs used. Other sociological factors, including age and gender, can affect ASL usage and contribute to its variety, just as with spoken languages.

Fingerspelling is part of ASL and is used to spell out English words. In the fingerspelled alphabet, each letter corresponds to a distinct handshape. Fingerspelling is often used for proper names or to indicate the English word for something.



TWO-LANGUAGE METHOD (BILINGUAL)

- It is a new method in the education of the hearing impaired.
- It is generally based on the simultaneous learning of two languages at an early age.

- From the perspective of the education of the hearing impaired, sign language can be defined as learning the first language and verbal language as the second language. There is no question of any language being superior to another.
- One of the starting points of the method is the thoughts that the "hearing impaired" due to hearing loss are not disabled but are a subgroup with their own distinct languages and identities.
- It is argued that sign language is a native language that meets the communication and needs of the hearing-impaired individual and is preferred by the hearing impaired.
- It is claimed that the hearing impaired should also learn the verbal language, because in today's world, a lot of information is presented in written form and illiteracy may result in the person being qualified as a disabled person in the society.
- Once the sign language is being spoken competently, the verbal language, especially the literacy dimension, needs to be taught.
- In this approach, it is thought that the child will learn sign language at an early age (such as 1 year old) and be ready for academic knowledge by solving all communication problems.

4.5. AUGMENTATIVE COMMUNICATION SYSTEMS

Augmentative and Alternative Communication (AAC) is a communication strategy for people who experience significant difficulties in speaking and communicating. They are an educational and speech therapy tool in cases where speech is very altered, either due to a combination of hearing impairment with other disabilities or due to a disorder (developmental, cognitive or physical) that hinders the ability to express oneself orally or in sign.

The strategy or technique used by the individual aims to maximize the communication skills (i.e. production and comprehension) for the functional and effective communication of an individual's needs, preferences, and desires. An AAC system can be used permanently or temporarily.

There are two main types of AAC:

1. **Unaided AAC**: Communication techniques that do not require the use of external assistance: This means that the person uses what is available to him, usually his own body. Examples of unaided AAC include eye contact, facial expression, body language, gestures, and the use of manual gestures.
2. **Assisted AAC**: Any external element used to assist communication

   Examples of assisted AAC include:

- High technology systems (I -Pad, tablet, speech generating device)
- Low technology systems (real objects, communication books, pen and paper, pictures)

What are the key points to pay attention to?

- AAC is not a substitute for speech or language, but rather an approach that promotes the development of spoken language.
- The key to success in establishing an effective AAC system is to use an individual-centred approach. Involving the individual in the selection and testing of various systems will ensure that the systems match the individual's cognitive skills and personal preferences.
- A single AAC system or strategy may not always be sufficient to meet all of their needs. A person with more complex needs may need a high-tech system, a low-tech system, or an unaided system, depending on where they are and with whom they are communicating.
- The effectiveness of AAC also depends on the person with whom the person communicates and how much support and training they have received. It is very important to provide a flexible communication environment.
- AAC systems may need to be replaced over time with additional pages of symbols or words or photographs created to reflect the person's activities and communication abilities.

Other available devices:

- Text messaging
- Telephone amplifiers
- Flashing and vibration alarms
- Voice loop systems
- Infrared listening devices
- Portable audio amplifiers
- TTY (Text Phone or teleprinter)

RESOURCES UNIT 4

- Top 10 Tips for Teachers of Students with Hearing Loss: https://www.youtube.com/watch?v=z2EfxREKmsA&t=9s
- American Sign Language 2: https://www.youtube.com/watch?v=B2c-BOYh7Vc&t=11s

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- Web Sites: Canadian Association of the Deaf: www.cad.ca
- Canadian Hard of Hearing Association: www.chha.ca
- Canadian Hearing Society: www.chs.ca
- Deaf World Web: www.deafworldweb.org
- Pepnet2: www.pepnet.org
- The Canadian Cultural Society of the Deaf: www.deafculturecentre.ca
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UNIT 5. CLASS MANAGEMENT TO INCLUDE STUDENTS WITH HEARING IMPAIRMENTS

Objectives:

• To clarify of the situation of these students, the difficulties they face and the general principles for their integration in the educational process.
• To help professionals providing them with some adapted activities and the way to apply them to integrate these individuals.

Structure:

INTRODUCTION

There are multiple ways to define impairment and describe people with it. Each of its possible definitions depends on the perspective and the purpose for which it is attempted. For example, we define disability in a different way from a medical point of view while in a different way from a professional point of view.

Possible criteria on an impairment definition are:

- The social rules and the form of society.
- The type of disability and the scientific perspective on which we approach it.
- The social or occupational disadvantages.

The WHO definition of impairment is summarized below:

"Impairment is defined as a complex and changing phenomenon, due to the interaction of a person's personal characteristics and the characteristics of the environment in which he lives. It is the result of organic or environmental causes, which create a set of obstacles and constraints in important areas of life, such as self-care, employment, education, entertainment, and general social participation."

Possible criteria for defining impairment are the social rules, the type of impairment from a scientific point of view and its social or occupational disadvantages.

5.1 MANAGEMENT GUIDELINES

5.1.1 PEOPLE WITH HEARING IMPAIRMENTS

There are many reasons that lead to hearing impairment. As with visual, its reasons are related to problems before, during or even after the person is born, to illness, to accidents and other causes.

There are also many levels and forms of hearing impairment:

- There are people with partial or total hearing loss.
- There are also people who are in the process of healing or improving their hearing, as well as people whose hearing is declining over time.
- Finally, there are people who also have other problems, except a hearing impairment, related or not to the ability to perceive the environment.

Those individuals have the visual advantage over the visually impaired ones but have serious problems in the listening part.

There are many types and forms of hearing impairment and specific difficulties in the process of integration into the school and wider environment.

5.1.2 MANAGEMENT GUIDELINES TO INCLUDE STUDENTS WITH HEARING IMPAIRMENTS

Each case of hearing impairment is different and with special characteristics. However, there are some common rules and management guidelines for their inclusion.

These guidelines address three key issues:

A) Equipment of all kinds and technical and practical support.

B) Teaching methods and interaction with educational material.

C) The individual's position in the community, dealing with the disadvantages and his / her role in the group.

A) Equipment of all kinds and technical and practical support.

In terms of equipment and technical support, the goal is to provide the student with hearing impairments all the necessary means in order to attend the class and participate in the educational process.

1. Encouraging and providing all the tools that the student already uses in his/her daily life, to facilitate him/her during the educational process, depending on the type and level of his impairment.
2. The configuration of all the parts of the classroom in which he is located, in order to easily use them despite his impairment.
3. The proper selection of tools already used in the educational process, in such a way as to develop his / her skills and talents, avoiding a sense of disadvantage and exclusion.

Here is an example that can explain the above:

"When Sam aged 12, a boy with hearing impairment after a car accident 4 years ago, using a behind-the-ear (BTE) hearing aid in both ears, went to a secondary school, judging by the problems and the loneliness he felt with the children of his neighborhood and in primary school, he considered that things would be very difficult. He believed that, for impaired people like him, it is difficult to participate, since while there are many things he could do in class, there are just as many and important things he could not do. How could he understand oral teaching or classroom discussion? How could he communicate with his classmates without being able to listen the way they did? How could he even read the lips of everyone who spoke in class? During the first few days, he was quiet, closed to others and to the teacher. He thought he could not correspond to what others did. Everything seemed so difficult to him, even if he finally realizes that the teacher was trying to make his life easier."

B) Teaching methods and interaction with educational material

In terms of the teaching methods and the interaction with the educational material, the aim is to use them in such a way that there are no difficulties or obstacles for such people.

To achieve this goal, the following are useful:

1. Avoiding methods or ways that make participation for the hearing impaired difficult or impossible.
2. Utilizing all the tools so that these people can equally access the educational material or not be excluded from it.
3. The combination of methods and educational material in such a way as to ensure the development of the teacher's initiative, adaptability to the needs of these individuals and ultimately their smooth integration.
4. The personal relationship and interaction of the teacher and these people in order to ensure the continuous smooth participation and understanding during the educational process.

Continuing the previous example:

"Sam was placed by the teacher in a central position in the class, so that he could see all his classmates if necessary. It was also easy for him to have eye contact with the teacher, to be able to read his lips and movements, as he always made sure to be in front of him while changing positions in the class. Kevin was placed there with him. They soon discovered that they live close by, and that it was easy to move to the school together and become friends. Kevin likes a lot of Sam's jokes while they chat a lot via email and other virtual ways, when they are not together. At the same time, Kevin. helps him inside and outside the classroom, writing him down everything necessary, giving notes and everything that S. does not manage to note or understand, especially the oral discussions. At the same time, Sam, being a better student, explains and solves many of his learning problems. Based on an idea they got from the class and at the instigation of their teacher, they like to watch movies where Kevin always makes sure there are subtitles used, just as they do at school. This had also helped him a lot in the classroom, since he made sure to have eye contact so that he could read everything it

was written or understand the meanings by reading the lips, hands, and body movement in general."

C) The individual's position in the community, dealing with the disadvantages and his / her role in the group.

In terms of the individual's position in the community, dealing with disability and with his role in the group, the goal is:

- the development of the parity of these people with the rest of the students,
- their smooth integration and acceptance by the whole
- developing roles that these individuals can have based on their abilities.

To achieve this goal, the following are useful:

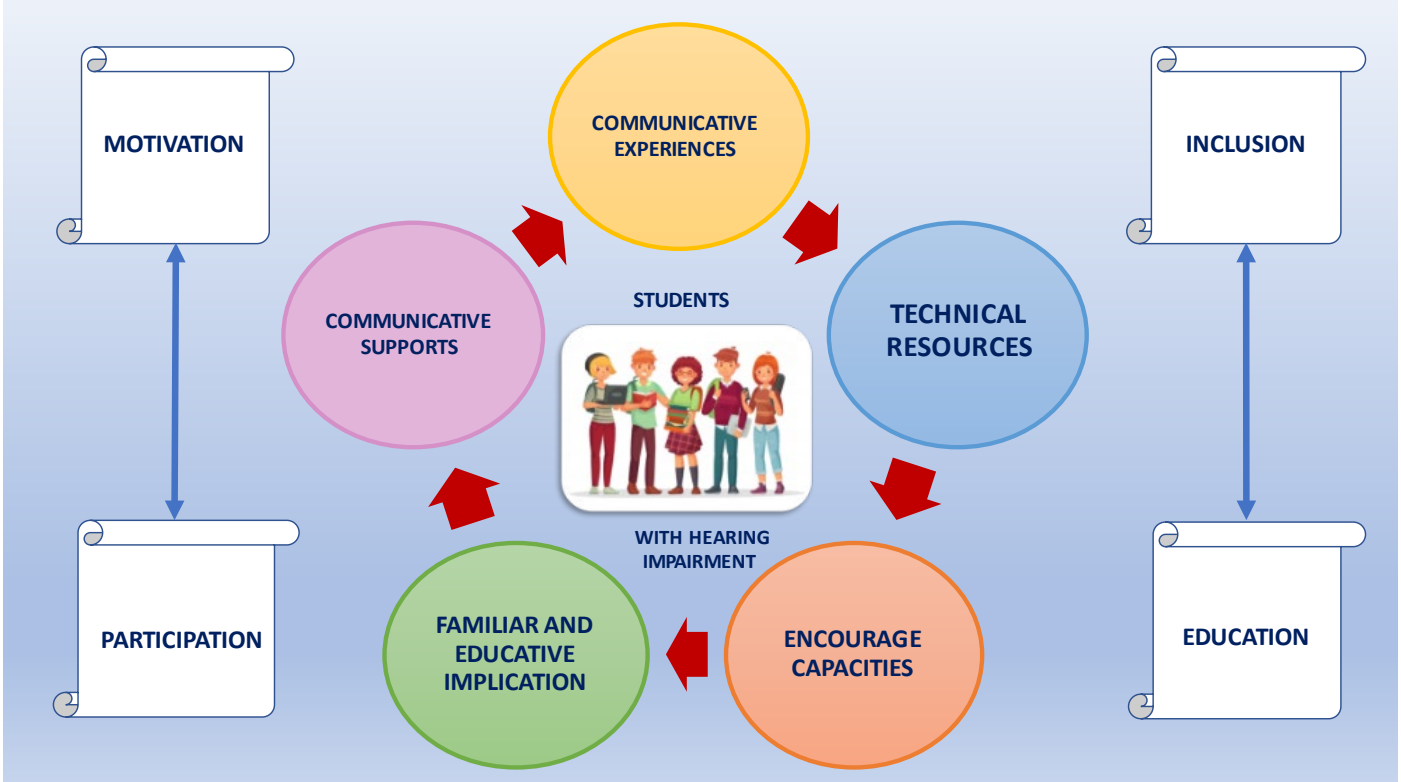
1. The preparation of the other students to welcome these people and to treat them as equals in their common activities.
2. Dealing with the sense of disadvantage that is often observed in these individuals and in their relationships with the whole.
3. The continuous encouragement and facilitation of these individuals to actively participate in activities outside the educational process.
4. The reminder of the equal position of these people among all students.
5. The development of the personal relationship of individuals with the teacher, in order to ensure the solution of problems that arise during the process of integration into the educational community.
6. The development of the personal abilities of the individual and their promotion both during and after the educational process.

Concluding the example:

"Especially during his days at school, Sam considered that one of the lessons from that he would definitely be excluded was Music. He found it impossible to attend a lesson during which he had to use his hearing. He thought this would put him in a difficult position. It seemed unlikely to anyone to deal with him during the lesson and he thought he would just silently wait for his time to pass. The teacher, however, took care to adapt this lesson to his needs. He showed the children that in addition to listening to music, it is important that they can understand the way it is composed, that is, it is written in notes in order to be played. He also showed them how important music is in other art forms, such as theater and in general where it could be combined with speech. Sam, despite his initial reluctance, showed particular interest in studying lyrics and melodic poems, and thus increase his knowledge of music. As if all this were not enough, and at the suggestion of the teacher, a theatrical group was organized at the school, with music, dance and of course speech. Sam, who as we said before was good at oral speech and had a good sense of humor, played, and co-directed, since he liked to invent texts and dialogues, to observe others to speak and express themselves without listening to them, in from lip reading and body language. As for his relationship with Kevin, they met with other children from the neighborhood and are thinking of organizing their first radio station, where everyone will have their role, with music shows, but also reading plays, poems, and texts."

For some, the example can be seen from an excessively positive or not real perspective, but the casuistry in students with hearing disabilities is very diverse.

Management guidelines for the integration of people with hearing impairments can be based on equipment and technical support, teaching methods and interaction with educational materials and the individual's position in the community, dealing with disability and the role in a group.



5.2 ADAPTED ACTIVITIES

Having seen the guidelines and general principles for including students with a hearing impairment, here are some activities you can do to integrate them. Those activities are related to the topics we used above:

1. **Related to the equipment and technical support:**
    1. Configure the classroom space to ensure adequate visibility for the hearing impaired. Constant visual contact with the teacher and other students enables them to follow the oral speech and the non-verbal means of the participants (lip reading and body language).
    2. Make sure to explain and encourage these students to use within the classroom all the tools they use in their daily lives (headphones, companion).
    3. Ensure that every space used by students outside of classroom (the complete educative center) is properly designed and equipped to be accessible for student with hearing impairment.
    4. Guarantee the proper functioning of the means of support for oral communication (FM, magnetic loop, Bluetooth amplifiers) for students who use hearing aids.
    5. Seek and consider the supply of special equipment, exclusively for the hearing impaired, such as special computers and software for the conversion of speech to written notes.
    6. In the case of people with total hearing loss, make sure the educational material is accessible to them. Employ the conversion, acquisition and use of the educational material in an appropriate form (written form, manuals and teaching of sign language).
    7. Help these people to listen. Put them at a suitable distance from you, depending on their level of hearing. The more appropriate distance depending on the occasion, the easier their participation will be.
    8. Especially when using multimedia, it is good to have headphones available and you should explain to these people that they can move to nearby or convenient places to facilitate their interaction with these media.
    9. The use of appropriate lighting facilitates distance reading and eye contact. Take care of that. Ask these students if lighting prevents them from seeing and reading or understanding what they see.
    10. Consult, discuss and use, if necessary, specialist trainers for the hearing impaired both in relation to equipment and in general.
    11. If you also deem it necessary, consult a specialist educator for people with hearing disabilities, for inclusion issues, inside and outside the educational process.
    12. Finally, the use of educational material that is not accessible or creates too much difficulty for deaf students should be avoided in advance.

Related to the teaching methods and the interaction with the educational material:

1. Remember that the goal is to include these people in the whole educational process, from the opening to the closing, as well as during the exams.
2. Take care of all the details for their participation in the educational process, so that they do not feel excluded from it.
3. Emphasize the use of image and reading to complete the sound or verbal information.
4. In general, utilize and highlight the role of other senses, such as touch, sight, and even smell, both for these individuals and for all students.
5. Take care of your position and movement in the space, in order to maintain visual contact with these people.
6. Other types and forms of educational process, interactive and non-interactive, based on nonverbal means, such as theatrical play, may be useful to you.
7. Do not hesitate to give roles and responsibilities to these people and help cope with them, even if they think they cannot.
8. More specifically, give them the opportunity to participate or undertake presentations and activities to the class and the students.
9. Encourage students' interaction. Organize small classes.
10. Develop movement and expressiveness, both in yourself and in other students. It is helpful for these people to understand the spoken word and to participate actively.
11. For the same reasons, when using multimedia, pay special attention to the use of subtitles, notes, and generally reading-based media to facilitate these individuals.
12. Be sure to give copies to these individuals, especially those with partial rather than total hearing loss, from the notes on the board, from a map or from the presentation files used in the educational process.
13. In general, help them become familiar with all the materials by giving them in advance (notes, map, table, multimedia).
14. In case of using music and sounds, facilitate people through its combination with other art forms that are more comprehensible to them, such as painting, writing or poetry.
15. It is also a good idea to place a classmate near them so he can help to understand and explain what is happening during the learning process.
16. Give them the time they need to assimilate all the information available during the training process.
17. The development of individualized or supportive teaching methods for these individuals, along with the rest of it, may also prove useful.
18. Ask for help in turn. Talk to experienced instructors as well as collaborate with a qualified associate trainer if needed.

19. Do not hesitate to feel free in your role. The constant re-evaluation of the educational material and its re-modification based on the needs and the new data will be necessary.

Related to the position in the community, the management of the disadvantage and the role in the group:

1. Remember that the most important need of these people is safety.
2. In addition, make sure they feel confident, both during and outside the lesson.
3. Do not forget that your role remains important for these people. It is good to earn their trust.
4. Discuss with them. Do not forget that it is often difficult to overcome the stereotypes they develop, related to the means that facilitate them, their presence in the classroom, and their participation during the course.
5. Also discuss with them in order to discover their abilities and talents.
6. Be constantly encouraging and supportive to them but also to all the students. Every child is unique, and its particularities are respected.
7. Do not forget that treatment to these individuals must not cause a sense of privilege or disadvantage but should be aimed at inclusion and parity.
8. Through your teaching methods, develop teamwork as a way of life.
9. Create working groups, role and responsibility groups, and activity groups.
10. Suggest extracurricular activities with the participation of these people.
11. Emphasize activities based on the ability of these people to overcome their difficulties.
12. Also emphasize activities that highlight their talents and other skills.
13. Equip and inform the educational community itself with the holistic culture of inclusion and acceptance.
14. Use appropriate preparation and acceptance material intended for other trainees and staff.
15. Also develop methods related to inclusion, through discussion with members of the educational community.
16. The extracurricular environment often plays an important role in including or not these people, so it is a good idea to explore it. Possibly work with their family and environment to get a complete picture of these people.
17. As we said, you are important to these people. Probably in the context of a trustful and supportive relationship, it would be good to socialize with them, inside or outside the educational community.
18. Be vigilant. Diagnose in time possible potential mistreatment of these individuals by co-learners, family or the wider social environment.
19. Do not forget to take advantage of the help given to you. The smooth cooperation and coordination with all the parallel methods that are employed for these people (supportive, individualized teaching) but also with special trainers, helps in the feedback and the adaptability of your methods.

Applied techniques for the inclusion of people with hearing impairment can be shaped based on equipment and technical support, teaching methods and interaction with educational materials, the individual's position in the community, dealing with disability and the role in a group.

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UNIT 6. COUNSELLING AND COMMUNICATIVE SKILLS

Objectives:

- To learn to improve communication with students with hearing disabilities in classroom.
- To aware the importance of empathy and some techniques of empathy.
- To learn what professional counselors or a teacher with hearing impaired students should pay attention to educational activities in the classroom.

Structure:

INTRODUCTION

Hearing has great importance in the acquisition of speaking, comprehension, learning, reading skills and meeting emotional needs of individuals with hearing impairment. Problems related to hearing are frequently encountered and especially in childhood, when development is the fastest, the presence of a hearing problem significantly affects developmental areas and especially school success. The sooner the hearing impairment is detected, the earlier the education of these children will be started. Children with hearing impairment do not develop much differently than their peers. The development area they are most affected by is language development. In order not to interrupt this developmental area, the right to life of individuals with different developmental levels should be respected, and the education of children with hearing impairment should be started at a very early age without separating them from their peers who do not have any disabilities

6.1. TECHNIQUES TO BE ABLE TO EMPATHISE WITH SENSORY IMPAIRED INDIVIDUALS

Empathise with sensory impaired students is global citizenship responsibility. It is extremely important for children with hearing impairment to be enrolled in inclusive education, which is the least restrictive environment for them to grow up as socially healthy individuals with equal educational environments.

6.1.1 EMPATHY

Communication is the process of producing, transferring and interpreting information. In general, two systems are required to be able to communicate. We can accept the information exchange between the two systems as communication (Dökmen, 2005: 19).

In interpersonal communication, individuals can understand each other and feel and communicate on healthy foundations.

Definition of empathy

The concept of empathy plays a very important role in its progress. In its simplest definition, empathy is putting oneself in the other person's shoes and understanding their feelings and thoughts and transferring them to them.

When the literature is examined, it is seen that the concept of empathy has been defined in different ways in the historical process. First, in 1897, Tepeodor Lipps called the process of reflecting oneself on an opposite object - such as a work of art -, feeling inside it, and understanding that object by absorbing it (cf. Barrent) Lennard, 1981 and Wispe, 1986). Lipps used the word einfühlung instead of the concept of empathy at that time. Lipps, in his work after 1897, mentioned that einfühlung may appear during the perception of people as well as objects.

In 1909, Edward B. Titchener translated the term einfühlung into English as "empathy," using the Greek term "empatheia". In Greek, "em" meant into, "patheia" meant perception. Thus, the adventure of empathy in psychology and psychiatry literature started (Dökmen, 2005: 134-135).

According to Baret (1981); Adler defines empathy as seeing with someone else's eyes, hearing with someone else's ear, and feeling with someone else's heart. Karen Horney defined empathy as being able to feel the world of the other person through imagination (cited in Geçtan, 1981: 5-7).

From this point on, the subject of empathy has gone through three main stages in psychology (Baston et al., 1987).

1. The first stage is the use of empathy from the beginning of the 1900s to the end of the 1950s in the sense that a believer knows the other person and gains knowledge about the characteristics of the other person by putting himself in his place.
2. In the second stage, it was stated that empathy had an emotional side in the 1960s. According to this understanding, it is a prerequisite for a person to take the role of the other person, but the main thing is to feel the emotions he / she feels.

3. The third stage is the definition of empathy in the way of understanding the particular emotion of the other person and conveying this feeling to him in the 1970s. According to this new perception, the person who empathizes focuses on the opposite person rather than himself (cited in Dokmen, 1988: 156-157).

Today, the most valid definition of empathy is defined by Roger (1975) as a person putting himself in the other person's position and looking at the events from his perspective, understanding and feeling. The feelings and thoughts of that person correctly and communicating this situation to him. Dymond (1949) defines empathy as taking the thoughts, feelings, and actions of the other into one's own imagination, while Hoffman (1982) defines empathy as the most appropriate indirect emotional response to the situation of the other person rather than his / her own situation (Cited in Yüksel, 2015: 3-4).). Dökmen (2005) listed the elements necessary for a person to empathize with the other person as follows:
a) The person who will empathize should put himself in the other person's shoes and look at the events from his perspective.
b) To be considered empathetic, it is necessary to understand the feelings and thoughts of the other person correctly. Understanding the other person's feelings or just their thoughts is not enough. Here, two basic components of empathy come into play. These are the cognitive and emotional components of empathy.
c) The last element in the definition of empathy is the behavior of conveying the empathic understanding formed in the mind of the person who empathizes to the other person. Even if the feelings and thoughts of the other person are fully understood, the process of empathy will not be complete unless the understood ones are expressed (p: 135-136).

Ünal (1972) used empathy as equivalent to the expression ability to understand people. While empathizing, he emphasized how the other person was understood and stated that he had three views on this issue:
• **According to Inference Theory,** individuals state that their emotions, thoughts and excitement are accompanied by body posture, shape and movements, and the tension or slackness of their muscles. Thus, physical expressions are matched with inner lives. In other words, physical expressions are interpreted as signs of internal states. They make inferences about the inner state of the other person from the physical state of the other person by matching their personal physical expressions and inner states.
• **According to the Role Playing Theory,** empathy is defined as imitating the people around and understanding the perspectives of others by putting themselves in the other person's shoes and developing expectations about their behaviors. Role playing behavior begins with imitating adults and meeting their expectations in children. The more the child repeats this, the better he will understand the other person's expectations in the future adulthood.
• **Empathy as a Diffusion of Excitement;** According to this view put forward by Harry Stack Sullivan, there is an emotional connection between the child and the person who carries it out, in the sense of some kind of convulsion or participation. Sullivan called it empathy. In this sense, empathy provides communication between the child and the adult caring for him. When Krech and Crutchfield (1958) perceive the external symptoms of another person's excitement,

the same excitement can be awakened within the person. A person who catches someone else's excitement and expresses it in himself empathizes with the other person (p: 71-79).

Classification of Empathy

Dökmen (1988) revealed the gradual empathy classification as a result of his studies. Gradual empathy classification has three basic steps. These steps are They Level, I Level and You Level. Each of these steps consists of two sub-steps as "thought" and "feeling"..

You Step: What do you think and feel about your problems?

Level I: What do I think and feel about your problems?

They Step: What do they (society) think and feel in the face of your problems?

Progressive Empathy Classification

A person who reacts at the "They" Step does not think about the problem that the other person explains to him and does not pay attention to the feelings and thoughts of the problem owner. While giving feedback, the opinions of the society are expressed. A person who reacts empathically on the I Step is egocentric. Instead of focusing on the feelings and thoughts of the person describing the problem, he criticizes the owner of the problem, gives advice and mentions himself. The person who reacts empathetically at the you level takes the role of the person who conveys his problem to him. He looks at events from that person's point of view. It focuses on the feelings and thoughts of the other person (Dökmen, 1988: 170)

Components of Empathy

The concept of empathy has been defined differently by different theorists in the psychology literature. This difference also manifests itself in the components of empathy, and different components have been determined by different people. Kurdek and Rodgon (1975) divided the components of empathy into perceptual perspective taking, cognitive perspective taking, and emotional perspective taking.

Hoffman (1979) mentions that empathy has three components, cognitive, emotional and motivational (Cited in Yüksel, 2015: 5-11).

According to the three-component model of Feschbah (1979), the components of empathy are the ability to distinguish the emotional state of others, the ability to take the role and perspective of others, and the ability to react emotionally.

Davis (1996) mentions four dimensions of empathy. These; empathic interest, imagination, personal distress and perspective taking. (Cited in Yüksel, 2015: 10).

Gallo (1989) mentions two components of empathy, cognitive and emotional. Understanding how someone else feels is cognitive, and emotional communication with someone else is the emotional component (cited in Cotton, 1992: 8).

EMPATHY WITH HEARING- IMPAIRED STUDENTS

In order to empathize with the hearing-impaired individual, it is necessary to examine the report on the disability, to know the family and to know the past education level. Deaf persons should decide which type of communication he / she will use (oral, sign language). Knowing whether there is any other disability other than hearing impairment (mental disorder, speech disorder etc.) will contribute to the healthy results of the empathy to be established. In the classroom, some activities can be organised to better understand hearing impairment, so that everyone can experience the sensation of not hearing or not hearing well during a lesson, the viewing of an audiovisual, a chat between friends at recess, an oral presentation..

*For example, the "Dialogue in Silence" event (which is organised in Turkey), can be attended with students so everyone can experience the feeling of not hearing. Earplugs or wax plugs can be used in the classroom and a certain part of a lesson can be taught together with students.

Situations in different social environments can be recreated in order to identify the communication problems that some people with hearing loss have in their daily life (medical appointment, a job interview, an oral exam, a trial, a speech, an administrative management...).

Again, a simple experiment can be designed with students. A demijohn's air is taken by means of a pump that provides air intake, a phone is placed in it and then called. Since the sound does not spread in an airless environment, nobody can hear the sound, which makes empathy for only one of the difficulties that a deaf person will face in daily life.

A silent cinema event can be organized to empathize with someone with both hearing and speech impairments.

To empathize with hearing-impaired students:

- Create an environment of trust in tutorials and in class
- Use the student's language of communication: oral and/or sign language (if not known through an SL interpreter)
- Listen actively (know how you feel, how you think and what you need, gives information on how to act to empathize and motivate towards learning)
- Try to put yourself in the student's shoes (both as a student and as a hearing-impaired person in a hearing society)
- Convey understanding of what is being heard
- The verbal and non-verbal communication of the teacher must be consistent in their message so as not to create confusion.
- Express clear, precise messages
- Check that the student has understood our message

6.1.2 ACTIVITIES TO MOTIVATE HEARING-IMPAIRED STUDENTS IN THE CLASSROOM

The teacher's ability to keep students' attention alive will depend on the success or failure of the teaching-learning process. For this reason, the teacher's attitude is determinant for the learning process. Like other students, a student with a sensory disability knows how to recognize the passion in a teacher.

Here are some possible strategies a teacher can set up to motivate students with sensory disabilities:

- Presenting new or surprising information. It can be very effective to arouse curiosity. A surprise can be made using different materials.
- Opening discussions are always positive, to raise issues and questions, and for everyone to participate without creating too much complexity.
- Get students to know the importance tasks. It is very important that young people find a value in learning, a value that can be moved to their daily lives. When students perceive that what they are studying will really help them or can be applied in their lives, they face the subject with much more motivation and interest.
- Use graphic materials to accompany the explanations that make the content easier to understand. What is not understood does not motivate or encourage it.
- Give the hearing-impaired students a chance and let these students join the class. It is not enough for only the teacher to be active in the classroom. In addition to student initiatives, new ideas, information, and making the lesson more enjoyable can also be effective.
- Even if students' answers are not entirely correct, it is important to point out the positive aspects. It is also important that the student does not receive messages that could affect their self-confidence or self-esteem. In this sense, it is always a recommended strategy to point out the bright side of everything.
- New technologies are a tool for creativity and allow for a variety of learning activities and situations.
- Propose projects that will be developed by the students during the lesson. Let students think and plan a project during the course. It is an effective way to work on responsibility, commitment, work, collaboration.

Motivation and participation of students with hearing disabilities:

• Guarantee the accessibility of technological materials and resources for training and communication

• Promote effective communication between teacher-student and between peers

• Do not focus only on hearing loss, they are adolescents just like hearing

• Letting them know the usefulness of what they have learned helps them know how to apply it in daily life and creates interest in learning.

• Be aware of the extra effort that the entire learning process, which is based on auditory-verbal information, entails for a child or adolescent with hearing impairment.

• Recognize and encourage the skills and abilities of these students

Inclusion is full participation

Activity 1: Creative drama

Warm-up work: The classroom-hall is arranged so that it is easy to move around. Students first walk rhythmically accompanied by moving music. Whenever the music is stopped, in accordance with the teacher's instructions, he takes the hand of his friend, enters his arm, touches his nose and ear. Then the game where are you is played. The students form a circle, two volunteers are determined. Taking it inside the circle, one's eyes are tied. With eyes closed "where are you?" asks the question. He tries to catch his friend who moves by answering "I'm here". In the concentration study, the students close their eyes and listen to the sounds in the classroom first. The eyes are opened to explain what was heard. The voices outside the classroom and inside the building are listened to, and what is heard is explained.

Finally, the sounds outside the building are listened to. Opinions about the voices heard and students' feelings are obtained.

Activity 2: Improvisation

The students are divided into groups and the following paragraph is read. With improvisation, the story is desired to be expanded and animated. "Ali is having communication difficulties with her hearing impaired friend Zehra, who is new to his classes. He tells his mother about Zehra's condition and asks questions about the importance of hearing. In the face of this situation, the mother asks Ali to cover his ears. By opening a foreign channel on the TV, it lowers its voice and allows Ali to watch it for a while. "

Discussion and evaluation: As a result of improvisation, the roles played are evaluated. Students are asked about their feelings . Their opinions about the importance of hearing can be listened.

6.1.3. GENERAL REVIEW

Empathy was first used in 1897 by Tepeodor Lipps. Today, the most valid definition of empathy is defined by Roger (1975) as a person putting himself in the other person's position and looking at events from his perspective, understanding and feeling the feelings and thoughts of that person correctly, and telling this situation to him.
As a result of his studies by Üstün Dökmen (1988), he revealed the steps of gradual empathy classification. These steps are 'YOU', 'I' and 'THEM' levels.
The concept of empathy has been defined differently by different theorists in the psychology literature. Kurdek and Rodgon (1975) divided the components of empathy into perceptual perspective taking, cognitive perspective taking, and emotional perspective taking. Hoffman (1979) mentions that empathy has three components, cognitive, emotional and motivational.

As a result of the parents' ignoring, denial or insufficient attention to the problem of their hearing impaired children, it causes problems in the individual's social and emotional lives. In this case, stress, anger attacks and psychological problems can occur in individuals with hearing-speech impairment.In order to prevent such problems, families, teachers, peer groups and counseling services should work in coordination. With the correct use of empathy and communication, such problems are prevented before they occur.

In order to empathize with the hearing impaired individual, it is necessary to examine the report on his disability, to know the family and his past education level. The disabled person should decide which type of communication he / she will use (such as lip reading, sign language). Knowing whether there is any other disability other than hearing impairment (mental retardation, speech disorder, etc.) will contribute to the healthy results of the empathy to be established.

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