

**"EDUCATING THE EDUCATORS ON
HEARING IMPAIRMENT"**

REG. NO. M9703

*A INDEPENDENT PROJECT SUBMITTED AS PART
FULFILMENT OF FIRST YEAR M.Sc. (SPEECH AND HEARING)
TO THE UNIVERSITY OF MYSORE*

ALL INDIA INSTITUTE OF SPEECH AND HEARING
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MAY 1998

"THE GREAT MAN SHOW HIS GREATNESS
BY THE WAY HE TREATS THE SMALL
MAN"

**DEDICATED TO
APPOOPAN**

THE GREATEST MAN I'VE KNOWN

CERTIFICATE

*This is to certify that the Independent Project entitled "**EDUCATING THE EDUCATORS ON HEARING IMPAIRMENT**" is a bonafide work in part fulfilment of the First Year M.Sc., in Speech and Hearing of the student with **Reg.No M 9703**.*

Mysore
May 1998

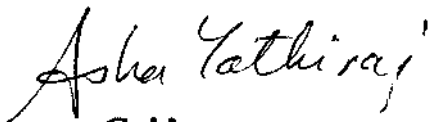


DIRECTOR
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CERTIFICATE

This is to certify that this Independent Project "EDUCATING THE EDUCATORS ON HEARING IMPAIRMENT". has been prepared under my supervision and guidance.

Mysore
May 1998


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DECLARATION

I hereby declare that this Independent Project entitled **"EDUCATING THE EDUCATORS ON HEARING IMPAIRMENT"** is the result of my own study under the guidance of **Dr.ASHA YATHIRAJ**, Reader in Audiology, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier to any university for any other Diploma or Degree.

Mysore

May 1998

Reg No. M 9703

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INTRODUCTION

The invisible handicap of hearing impairment affects the life of an individual in more ways than one. Early identification and appropriate management will alleviate the problem and aid the young hearing impaired child grow into a well balanced individual.

There has never been a "one-man band" approach in the management of the hearing impaired (Alderman, 1985). Once the hearing impaired child has been identified, his rehabilitation process needs to be stated. This includes the provision of appropriate and suitable hearing aids, providing training in hearing, assistance in language acquisition, vocabulary building and providing training in speech reading abilities.

Hearing impaired people grow up in a hearing world, within a system dominated by hearing people. In 19th century, the hearing impaired people themselves were a dominant force in educational programmes for hearing impaired children in the United States, but that was to change. Increasing emphasis upon the teaching of speech to hearing impaired children was to result in a marked shortage in the number of teachers of the hearing impaired.

Presently, two kinds of educational establishments can be identified for the hearing impaired:

- Special Schools : That is, those that cater specifically to the needs of the hearing impaired.
- Regular Schools : Wherein, the hearing impaired child is accepted as apart of the normal Student population.

The National Sample Survey Organisation (NSSO) have from time to time conducted surveys in order to estimate the number of disabled in the country. According to the 1991 survey the NSSO have estimated that there are 16.15 million physically disabled persons in the country and they constitute about 1.9 percent of the total population. Among these, the

- > Hearing handicapped constitute around 3.242 million
- > Speech handicapped constitute around 1.966 million.
- > Hearing & speech handicapped (excluding the 0-4 age group) constitute 4.482 million. (Pandey and Advani, 1995)

Considering this large number of hearing and speech handicapped population, the number of special school facilities and special educators fall far short than their' need.

Therefore, placing these handicapped children into a regular school set up seems to be the order of the day.

Integrating a hearing impaired child into a regular school programme may not be easy all the time. However, any teacher who really understands young children can work with

the handicapped. One essential ingredient is to get to know each child well. Another is to develop an awareness of the likes, dislikes, Joys and anxieties of each child. Teacher who can do this can teach all young children effectively (Allen, 1980).

Certain factors however, help the teacher to be better prepared for the role he/she is required to perform. These include:

- > a knowledge of the nature of the hearing impairment.
- > the effect of a hearing impairment on the child's development.
- > the various modifications that may be made within a regular classroom to better accommodate the hearing impaired student.
- > an understanding of the role of other related professionals in the management of such a child.
- > the importance of parent - teacher interaction.
- > the behavioral problems seen in these children which the teachers will be required to deal with.

This project targets at reacting out to the school teachers, to help them realize their role in the rehabilitative team. The project is a lecture script which is divided into 4 subtopics.

(A) INTRODUCTION: Which will include

- > a brief look into the ANATOMY of the hearing mechanism
- > the NATURE of hearing impairment

-> the EFFECTS of a hearing impairment.

- (B) **PREVENTION** - Role of teachers in the prevention of a hearing loss.
- (C) **IDENTIFICATION** - Warning signs that will aid the teacher in early identification.
- (D) **MANAGEMENT** of the hearing impaired student by a regular school teacher.

Each of these sub-topics is divided in the following two ways:

1. A one-hour orientation programme which gives in brief the teachers role in the prevention, identification and management of the hearing impaired.
2. A one-day orientation program which provides more elaborate information on the role of the teachers in prevention, identification and management of the hearing impaired. Special emphasis on the management of the hearing impaired is given.

The lecture script will be augmented with appropriate illustrations, slides and transparencies.

NEED FOR THE PROJECT:

The curriculum of a regular B.Ed. programme does not include the role of a regular school teacher in the management of the handicapped child and the hearing impaired per se. With increasing awareness of mainstreaming and

integration, we hope that more hearing impaired students will find their place in a regular school set up. It is important in these circumstances that the teacher be informed enough to be able to perform his/her role in the management of these children.

Most teachers in regular schools in India, do not undergo any formal training to deal with the handicapped children who are available. NCERT, since May 1983, does provide such training for teachers, however, only a limited number of teachers can undergo this training. Lectures and workshops conducted for the teachers provide excellent hearing experience regarding how to handle the hearing impaired in regular schools. Films, articles, books and booklets offer other helpful information (Allen, 1980).

SCRIPT FOR A ONE-HOUR LECTURE.

Integrated education system is now becoming the order of the day. Integrated education means educating a disabled child along with normal children in a regular school. The child's disability may be one of- hearing impairment, visual impairment, physical impairment or any other. As regular school teachers, you may have to face a situation of having to handle such a hearing impaired child within the regular classroom.

We will now give you a short orientation into hearing impairment and the management of such a child within a class of normal children.

Before we proceed, let us see what is meant by hearing impairment.

To put it very simply, a hearing impairment refers to any loss of hearing function.

The Disability Act (1995) defines it as "hearing impairment" means a loss of 60 dB or more in the better ear in the conversational range of frequencies. This implies an impairment less than 50% in the better ear.

You would like to know the various causes of this hearing impairment, but before we deal with this, we shall quickly look into the anatomy of the ear. [Picture no.2; Appendix II].

This gives you a complete pictures of the auditory mechanism.

The hearing mechanism is divided into four part3:-

(**SLIDE # 1; APPENDIX I**)

- > the external ear
- > the middle ear
- > the inner ear &
- > the auditory pathway.

The External Ear:

The external ear consists of the pinna and the external auditory canal. The pinna is a flap like structure that is visible externally. The ear canal is a curved tube leading into the ear drum.

The external ear aids in collecting and routing the sounds into the muddle ear & also aids in determining the direction of sound sources.

The Middle Ear:

The middle ear is a six-sided air filled cavity. Its main components are a chain of tiny bones, which connect the ear drum with the wall of the inner ear. It also has muscles & tiny ligaments that control the movements of these bones & holds them in place.

The middle ear does an important function of bridging the external ear and the inner ear.

The Inner Ear:

The inner ear houses the organ of hearing - the cochlea. This is an important part that receives the sounds transmitted from the external & middle ear.

The Auditory Pathway:

The signals from the cochlea are picked up by the auditory nerve and transmitted to the brain via the auditory pathway. The auditory centre in the brain analyses these impulses & interprets them as sound.

Thus, we see, the entire process of hearing is a complicated one.

A defect in any part of the auditory system leads to a hearing impairment. Depending upon the site of the defect, the impairment may be permanent or temporary.

NATURE OF HEARING IMPAIRMENT

[SLIDE # 2; APPENDIX I]

A hearing impairment can be described in terms of

-> Type

-> Degree/Severity.

Hearing Impairment is of 3 types:-

Conductive: Any defect in the external or middle ear would result in a conductive hearing loss.

This is most often a reversible hearing loss.

Sensorineral:

An abnormality in the cochlea & for the auditory nerve would result in a seneouneural hearing loss.

This is of a permanent nature.

Mixed:-

If the disordered condition extends to include the external, middle & inner ear, the resultant would in a mixed hearing loss.

Hearing impairment also occurs in various degrees ranging from

Mild

Moderate

Moderately severe

Severe

Profound.

[SLIDE # 3; APPENDIX I]

MILD: This person has a difficulty hearing faint or distant speech.

Moderate: This individual understand conversational speech only at a distance of about 3 to 5 ft.

Moderately severe: For this person, conversation must be loud to be understood.

Severe: The individual may not be able to hear a loud voice beyond a distance of 1 or 2 feet.

Profound: This child will not rely on hearing as the primary learning channel.

We will now briefly scan through the causes of a hearing impairment.

[SLIDE #13; APPENDIX I]

This slide lists down the various conditions that could lead to a hearing problem..

Effect of A Hearing Impairment on a Child's Development

Growing up with a hearing impairment is not easy. The presence of a hearing impairment can have adverse effects on several areas of a child's functioning.

[SLIDE #4, APPENDIX I]

We will consider the effects of a hearing impairment.

Oral Communication Development:

The hearing impairments has a great effect on a child's ability to communicate. It effects both the child's ability to produce as well as to hear understand speech.

-> Unless identified early, and appropriate management strategies taken up, most hearing impaired children are significantly delayed in their ability to communicate.

-> A hearing loss also prevents a child to know the direction from where the sound is coming from. This is especially true if the hearing loss in the two ear are unequal.

-> A hearing impaired child will also have problems in associating the written form of words with the oral form.

SOCIAL DEVELOPMENT

The inability to communicate effectively using language will have adverse effects on the social interactions of the hearing impaired child. They tends to be more dependent on adults then normal children.

ROLE OF TEACHERS IN PREVENTION OF HEARING LOSS.

[SLIDE #12 ; APPENDIX I]

Now that you have seen the effect that a hearing impairment can have in the child's development, we need not have to over emphasize on the need for preventing a hearing loss. Like any other disease, "Prevention is better than cure" applies to hearing impairment also.

We will now brief you up on the role played by teachers to prevent a hearing loss from occurring. Though small, this is not insignificant, so do not over look this aspect.

[SLIDE #14 ; APPENDIX I]

* Educate the children on ear care & the importance of hearing.

Caution them against

- > playing in dirty water as water lodged between the ears could lead into an infection.
- > putting any object into the ear.
- > cleaning the ear with any object they find. They may use a cotton swab but they should avoid going very deep into the ears.
- > hitting anybody on the ears.
- > listening to loud music
- * You should avoid punishments like slapping the child on his face.
- * You should be informed enough to pick up any stray indications of a possible hearing impairment.

ROLE OF TEACHERS IN IDENTIFYING A HEARING LOSS

We mentioned above that teachers should be able to identify a possible hearing impairment in a child. As we discussed before a hearing loss can occur at any stage of a child's development. Therefore, even a once normal hearing child can develop a hearing loss. So you should be alert to detect such a problem.

There are 2 ways by which a possible hearing impairment can be indicated.

- > Behavioral Indications
- > Medical Indications

[SLIDE #15; APPENDIX I]

Behavioral Indications

These include

- 1) Lack of attention.
- 2) Difficulty following directions
- 3) Turning the head in order to hear better
- 4) Requests for frequent repetitions.
- 5) Disparity between expected & actual achievement.
- 6) Reluctance to participate in oral activities.
- 7) Better performances in small groups.
- 8) Dependence on classmates for instructions.
- 9) Shy or withdrawn behaviour.

[SLIDE 16; APPENDIX I]

Medical Indications

1. Frequent complains of earache
2. Ear discharge
3. Frequent cold & sore throat.

-> If a child shows any of the above symptoms, refer him/her to an audiologist or an ENT specialist.

MANAGEMENT OF THE HEARING IMPAIRED STUDENT

As teachers, your primary concern will be in the management of the hearing impaired student within a regular classroom.

But before that, you need to get acquainted with an the most primary tool of a hearing impaired child - his hearing aid.

WHAT IS A HEARING AID ?**[SLIDE #20, APPENDIX I]**

The hearing aid as the terms suggests is an electronic device that 'aids' hearing. It is not a remedial measure like medicine or surgery. It does not cure an individual of his hearing impairment, but makes sounds louder thus enabling him to hear.

It can be considered as a personal loudspeaker.

The hearing aid will help the person's hearing capacity only as long as he wears it.

Let us now discuss some of the common questions that are asked about hearing aids.

*** HOW OFTEN SHOULD & HEARING AID BE USED?**

Once the child is fitted with an appropriate hearing aid, the aid should be used throughout the day or might except while sleeping or bathing, or if he is out in the rain.

*** WHO PRESCRIBES A HEARING AID?**

After the child's hearing is testing & the need for hearing aid is confirmed, the audiologist will select an appropriate hearing aid that is suitable to the child's requirements. Various settings on the hearing aid are also prescribed by the audiologist.

*** WHAT SHOULD A TEACHER KNOW/CHECK REGARDING A HEARING AID ?**

- > The hearing aid should always be in the ON position.
- > Check whether the various controls are maintained at their prescribed positions.
- > Do not drop the hearing aid
- > Do not keep it on extreme hot/cold surfaces.
- > Water should not enter the hearing aid. In case of such an incident
 - * Remove the batteries immediately
 - * Drain the water
 - * Dry the hearing aid with an absorbent cloth.
- > Take care that no one hits the child when he is using the hearing aid for the safety of the child as well as the hearing aid.

We shall now discuss the management of the hearing impaired student.

While teaching the hearing impaired, you should keep 2 vital points in mind:-

I Optimising the Auditory Reception

II Enhancing the visual Reception.

We shall look into each of these separately.

[SLIDE #22; APPENDIX I]*** Optimizing the Auditory Reception**

This requires us to make use of the child's listening skills. This can be improved by making a few modifications in the classroom acoustics in order to accommodate a hearing impaired child.

Any environment will contain some amount of noise or unwanted sounds along with the requirement sound signal. IN order for effective communication, the level of the required signal should be above the level of the noise. It is seen that hearing impaired listeners perform poorer than normal listeners under similar noise levels. Therefore, the noise level should be lesses in a class if a hearing impaired child is one of the students, than if there are only normal hearing children in the class.

[SLIDE #24; APPENDIX I]

NOISE/Unwanted sound, within the school can originate from 3 sources.

-> Sounds generated outside the school building - EXTERNAL NOISE.

eg: Traffic noise, construction site noise etc.

-> Sounds generated within the school but outside the class room - INTERNAL NOISE.

eg: Noise from music rooms, adjacent classrooms, considers, playground.

-> Sounds created within the classroom - CLASSROOM NOISE.

eg: talking, shuffling feet, moving chairs, fane.

Each of these noise sources can be controlled to an extent.

[SLIDE #25; APPENDIX I]

CONSIDERATIONS FOR REDUCTION OF EXTERNAL NOISE.

- 1) Various architectural designs and construction techniques can be considered
- 2) Site selection is a vital concern. The side for a school should be selected such that there is minimal traffic, factories & other such noise sources.
- 3) The quality of construction is of prime importance in noise reduction.
- 4) A room with solid outside walls is able to absorb external noise better than one with many windows.

Landscaping can also serve as a buffer from cen wanted sounds. By landscaping, we mean the school being surrounded by evergreen trees & shrubs.

CONSIDERED FOR REDUCTION OF INTERNAL NOISE.

Fourcin et.al., (1980) has recommend the following procedures:-

- 1) Increase the distance between the teaching area and the noise source.

2) Interpose non teaching area between the source of the noise & the teaching area.

[eg: libraries or storage rooms etc. between the classroom & playground]

3) Long straight corridors should be avoided.

4) Select a class at the end the corridor

5) Partitions between classes should be made of bricks extending upto the roof.

CONSIDERATIONS FOR REDUCTION OF CLASSROOM NOISE

1) Cover the desk legs & chairs with rubber bushes to avoid noise created by sticking a hard surface.

2) Use of quieter fans. If they are noisy, get them serviced.

3) Avoid doors & windows banging by using stoppers.

Another procedure to optimize the auditory reception is to minimize reverberation.

[SLIDE #26; APPENDIX I]

REVERBERATION is the persistence of sound within an enclosed space.

All rooms will exhibit some degree of reverberation. This needs to be minimized within the classroom.

The next vital point to be kept in mind is ENHANCING THE VISUAL RECEPTION.

[SLIDE #29; APPENDIX I]

By visual reception we mean the child's ability to make use of the visually available information in order to understand a message.

These visual classes include.

- 1) The lip movements of the speaker
- 2) The facial expression of the speaker.
- 3) The contextual clues regarding the matter being spoken about eg. write the key words or the main words being spoken about on the board, or use pictures or models about the topic of discussion.
- 4) The reactions of others in the class etc.

Use of all this information is an aid to what the child hears with the help of the amplification and will help him to receive a total picture of what is happening & will therefore increase his understanding.

MODIFICATIONS TO FACILITATE BETTER VISUAL RECEPTION

- 1) Ensure that the class is well lighted.
 - 2) The light should fall on the teacher's face to allow the student to make use of the lip movements and facial expressions.
 - 3) Preferential seating.
- > Reduce the distance between the teacher & the child

-> Seat the child in such a way that he also has a view of his classmates.

4) The Teacher's Pronunciation

As it is necessary for the student to observe the lip movements of the teacher, it is important that the teacher's pronunciation skills should be good.

5) Gain the student's attention.

The teacher should frequently monitor whether the student is attending to his/her lip movements while he/she is speaking.

6) The teacher should try to remain stationary when talking and should face the students. Use plenty of pictures, models & write down key words to emphasize the context.

7) Unusual hairstyles, mustaches, beards that covers the lips & excessive jewellery should avoided by teachers.

We shall now look into the role played by a group of allied precessionals - the speech therapists.

[SLIDE # 30; APPENDIX I]

The speech therapist deals with the speech and language problems of the hearing impaired child.

Any remediation program for the hearing impaired child is highly dependent on good co-operative working relationships

between the speech therapist and the regular classroom teachers.

[SLIDE #31; APPENDIX I]

-> The therapist can help make modifications in the class which will improve the acoustics and lighting. This in turn will help the hearing impaired children communicate better.

-> The speech therapist will work to improve the communication abilities of the child, thereby making it easier to handle this child in school.

-> The speech therapist can also help the teachers monitor & identify students with speech & hearing problems.

*** How can teachers help speech therapists?**

-> It is very important for you to make sure that your classroom efforts are consistent with and complementary to the specialized efforts provided on therapy.

-> You could help out or serve the students with mild speech problems once you have consulted the speech therapist.

-> Any changes in the behaviour of the child and his overall status should be brought to the notice of the speech therapist.

-> The classroom teachers must also refer students with any speech & hearing problems to the speech therapist.

We shall now briefly discuss how you can help the child adjust within a regular classroom.

[SLIDE #34; APPENDIX I]

Adapting into a hearing world is no easy task. Hearing impairment results in immature development of social skill.

Social skills are learned behaviors which enables a child to respond appropriately to children & adults at home & away from home.

As teachers, you have a major role in developing these social skill, helping there children to adjust & identify themselves within a class of normal hearing children. Unless this is achieved, the integration process cannot be considered a success. ,

[SLIDE #35; APPENDIX I]

Helping the Impaired child

-> The teacher will need to help the child in learning the rules of a game.

-> Teachers should plan activities for groups of three or four children & include the handicapped child into these. Encourage any kind of imitation on the part of the child.

-> Teachers should also be alert to any kind of interactions that occurs naturally among the children & reinforce these without interrupting the children.

-> Teachers should also encourage the children to share among themselves thereby improving the interactions.

-> Give extra attention to the child in or outside the class.

Helping the Peers.

The normal hearing children will also need help in accepting and adjusting to the handicapped child. Here also, teachers play an important role.

-> Inform the children that a new student with special needs, is going to be a part of the class.

-> Explain in simple terms, the nature of hearing impairment, the need of a hearing aid & other specific needs of the child.

-> Let the children handle the hearing aid under your supervision & explain that this expensive device should not be manhandled by them.

-> Clear any misconceptions that the children may have regarding a hearing loss.

-> Instruct the children to use speech while communicating with the hearing impaired child.

Teachers therefore play an important role to play in helping both groups of children identify with each other.

Also, it should be emphasized on the relationship that the teachers must have with the parents of the handicapped.

[SIDE #32; APPENDIX I]

The teachers need to have a good rapport with the parents & need their co-operation in handling the child in the class. The parents should be made aware of any changes in the status of the child. They should also be informed well before hand regarding the academic schedule so that they can start preparing their child.

With this short lecture, we hope that we have added on to your knowledge regarding hearing impairment and how to handle such a child in your class. The entire essence of mainstreaming can be obtained only if the teachers have a favourable attitude towards handling these young handicapped children. An understanding into the nature of handicapped we hope, will enable you to help the child better.

SCRIPT FOR A FULL-DAY LECTURE

It is always good to have a knowledge of the task we have to perform before we begin. Keeping this in mind, our aim is to provide you with an overview into the nature of a hearing impairment & how the teachers can handle such a student within the regular classroom

We begin with a look into the anatomy of the hearing mechanism.

THE HEARING MECHANISM

The ear has more to it than meets the eye. For the layman the ear is that part of the human body that projects from either side of the face (Picture -# 1; Appendix II). The hearing mechanism is a much more elaborate and delicate structure which co-ordinates in its functioning to connect man with his environment.

(PICTURE # 2; APPENDIX II).

The human hearing mechanism can be divided on the basis of its location and functions into

[SLIDE * 1; APPENDIX I]

The External Ear

The Middle Ear

The Inner Ear and

The Auditory Centre in the brain.

(PICTURE # 3; APPENDIX II).

To understand the different parts of the ear and their functioning, let us compare it to the working of a governmental organisation which consists of Class-I, II, III and IV staff. For any organisation to function efficiently the presence and co-operation of each of the staff members are required.

The External Ear

The external ear is the first portion of the hearing mechanism. It is divided into two parts

- > the pinna which is the most obvious part of the ear &
- > the auditory canal which is an S-shaped tube extending from the pinna.

[PICTURE 4; APPENDIX II]

The two parts of the external ear can be compared to the class IV staff of an organization.

The work of the pinna is to receive the sounds entering the ear & also in identifying the direction from which the sound was produced.

The ear canal is responsible for carrying the messages collected by the pinna to the higher authorities in charge.

The Middle Ear

The middle ear is the second part of the hearing mechanism. It can be visualized as a six-walled room within the hearing mechanism. One of its walls, which can be seen if you look through the ear canal is comprised of a thin, diluted curtain called the 'tympanic membrane'. Within the middle ear are 3 tiny middle ear are 3 tiny bones which are in the shape of a hammer, anvil & stirrup, better known as the malleus, incus, & stapes.

[PICTURE #5; APPENDIX II]

The positioning of these three bones can be considered to be similar to 3 people sitting in a row with their arms linked to each others & to the side walls, ie. the malleus is

connected to the tympanic membrane on one side & to the incus on the other. The incus lies in between the malleus & the stapes & is connected to each of them. The stapes is connected to the incus on one side and to a small window-like opening on the other side. This window-like opening called the 'Oval-window' can be considered to be like a counter of the next level within the hearing mechanism is the Inner Ear. It is the stapes therefore that has a direct connection to the Inner Ear through the 'Oval window' These structures are therefore similar to the class III officers.

* Any message brought in by the ear canal will lightly move the curtain of the tympanic membrane which will sequentially set the three bones into motion & the final movement of the stapes will transmit the sound waves into the next chamber of the hearing mechanism.

The Inner Ear

The Inner Ear is the third portion of the hearing mechanism. The Inner Ear unit has the Dept. of Balance & the Dept. of Hearing. We will concern ourselves with the latter. The structures within the Inner Ear hearing section includes: the organ of hearing called the Cochlea which is shaped in the form of a snail-shell.

[PICTURE #6; APPENDIX II]

The cochlea contains a number of cells called 'haircells' & 'supporting cells' all of which are embedded in a fluid medium.

All these structures can be considered similar to the class II officers within a governmental organization. Sound waves coming in from the middle ear sets the fluid and the hair cells into motion. This movement converts the sound signals into tiny electrical signals.

The Auditory Centre

[PICTURE #7; APPENDIX II]

Just like any organization has a Head, we can consider the hearing mechanism also to have a Head. It is the 'auditory centre' or the 'hearing centre, which located in the brain, that can be considered similar to such a 'Head'

* All the signals, i.e, the tiny electrical signals we spoke of before, that are generated in the cochlea travel along the auditory nerve to the brain. The hearing centers are located on the lt & Rt sides of the brain and each of these centers receives the messages from both ears. The message is now analyzed at the hearing centre and interpreted as 'sound'.

Now that we have looked into the various parts of the hearing mechanism & their respective functions, let us quickly brief up the entire functioning of the hearing mechanism in order to interpret a sound.

- > First, the sound is transmitted or routed from the external ear to the inner ear.
- > Second, the sound signal is converted to electrical signals within the inner ear.

-> Thirdly, there is conduction of these electrical signals to the higher auditory centers by the auditory nerve.

-> Fourthly, the analysis of these signals and their interpretation as 'sound' within the auditory centers.

Any defect in this highly co-ordinated & complex process may occur as a result of an anatomical or functional abnormality and this will affect the functioning of the entire hearing mechanism.

MATURE OF HEARING IMPAIRMENT

In order to fully understand the nature of hearing impairment we divide it into two.

1. TYPE OF HEARING IMPAIRMENT:
2. DEGREE/SEVERITY

[SLIDE # 2; APPENDIX I]

TYPE OF HEARING IMPAIRMENT:

Depending on the location of the defect within the auditory mechanism, hearing impairment is divided into 2 major types: Conductive and "sensorineural" there is also a third type of hearing impairment called 'mixed¹ hearing loss.

We shall now consider each of these in brief as your hearing impaired student may fall in one of these 3 categories.

(PICTURE # 2 APPENDIX II)

CONDUCTIVE HEARING LOSS:

Going back to our analogy of the functioning of a governmental organisation, if the Class IV and Class III staff i.e. the Pinna, the ear canal and the middle ear are disordered and do not function adequately it results in a conductive hearing loss.

The conductive hearing loss is most often a reversible hearing loss and can be corrected with surgery or medication.

Sensorineural Hearing Loss:

If the class II staff in an organization, in this case the cochlea and the auditory nerve function inefficiently, the resultant is a sensorineural hearing loss.

This type of a hearing loss is of a permanent nature. The only available remedial measures being the regular use of a hearing aid.

Mixed Hearing Loss:

In this third type of hearing loss which we mentioned, the disordered condition extends to include the external and/or the middle ear (ME) as well as the inner ear (IE).

As this type of hearing loss is a mixture of the previous two, the treatment also follows on similar lines- suitable remedial measures are utilized to treat the middle ear condition along with the use of a hearing aid.

SEVERITY OF THE HEARING IMPAIRMENT:

[SLIDE t 3; APPENDIX I]

After we have looked into the type of the hearing impairment, we shall now consider the severity of the hearing impairment.

Based on severity hearing impairment is classified into the following categories:

- > Mild
- > Moderate
- > Moderately Severe
- > Severe
- > Profound
- > The hearing ability is measured in terms of the frequency and intensity in which a person can hear. Frequency is expressed in Hertz (Hz) and intensity in decibels (dB).

We shall now look into the difficulties faced by and the help required for individuals having different degrees of hearing loss.

MILD:

- This person has difficulty with faint or distant speech.
- The student :
- : May need favourable seating
 - : May benefit from speech reading lip reading instruction.
 - : Vocabulary and language instruction or a combination of these and
 - : May need speech therapy.

MODERATE:

- This individual can understand conversational speech only at a distance of 3 to 5 ft. This student will need
- : a hearing aid
 - : training in hearing
 - : speech reading/lip reading instruction

- : favourable seating and
- : speech therapy.

The extent of services provided by the special or resource teacher may vary, depending upon the student's actual achievement in the regular classroom.

MODERATELY SEVERE:

For this student, conversation must be loud to be understood. His speech will probably be defective and he may have limited vocabulary. He may face difficulty in group and classroom activities. He may need all the services proceeded for students with mild and moderate losses and in addition- will require specific assistance from a special teacher called a resource teacher.

SEVERE:

This student may not be able to hear a loud voice beyond a distance of 1 or 2 feet. He may be able to distinguish some environmental sounds and will have difficulty with consonants but not necessarily with vowels. He will need all the services required by hearing impaired students with less severe losses and much more intensive services from a resource teacher and a speech pathologist/speech therapist.

PROFOUND:

This individual will not rely on hearing as the primary learning channel. This student will need all the previously

mentioned services and possibly more intensive services from the resource teacher. He will require special assistance with language; however, he may be able to attend regular classes on a part-time basis or attend classes that do not require language skills. (Gearheart and Weishahn, 1976).

As we have just seen, the problems faced by the child increase with increase in severity. It is therefore important that you should know the severity of your students hearing impairment so as to understand him, as well as to deal with him appropriately.

EFFECTS OF HEARING IMPAIRMENT ON DEVELOPMENT OF A CHILD

We will consider the effects of a hearing impairment on the motor development, communication development, and social development.

[SLIDE # 4; APPENDIX I]

*** Motor development:-**

By the term motor development we mean the child's ability to sit, stand and walk. Generally, a hearing impairment alone will not affect the child's abilities in this area.

*** Oral Communication Development:-**

This refers to speech and language, A hearing impairments greatest effect on the developing child occurs in this regard keeping in mind the educational implications, we will discuss.

-Articulation

-Voice

-Delayed language

[SLIDE # 5; APPENDIX I]

Articulation problems refer to the mispronunciations of a part of the word or the entire word Articulation problems can be classified into

- * Substitutions: Examples of this error are 'wove for 'love ' 'tite' for 'kite'
- * Omissions: Occur when sounds are deleted from words.
 eg: 'ouse' for 'house' where 'h'is deleted
 'pa' for 'pass' where 's'is deleted
- * Distortions: Refers to the child's production of a sound that is completely unidentifiable as any other sound in that language.

These problems in pronunciations can be partly accounted for by the way the child hears/perceives sounds through his hearing aid. The quality of the sounds are slightly changed when it passes through the hearing aid and the hearing impaired child does not perceive the sound in the same manner as the normal hearing child.

In the classroom situations articulation errors might interfere with the student's performance in the following ways:-

[SLIDE f 6; APPENDIX I]

- > what the child speaks is difficult for others to understand.
 - > phonics training will be effected.
 - > students social interactions would be influenced.
- Voice: - Problems fall into these categories - pitch, intensity and quality.

[SLIDE # 7; APPENDIX I]

*** Pitch:** refers to how an individual perceives the frequency of the voice. A high frequency voice will be perceived as high pitched and a low frequency voice will be perceived at low pitched. The most frequent problem noticed in the hearing impaired child's the use of too high a pitch on a voice that does not change in pitch like it occurs in a normal hearing person.

***Intensity:** refers to the volumes of the voice. The hearing impaired child may tend to speak in either a very loud voice or a very soft voice.

***Quality:** characteristics of the voice quality include

- hoarseness and breathiness which may be the result of excess strain.
- nasality where on the voice sounds to be coming out of the nose.

Some hearing impaired children may also have a flat voice where in there is very little change or variation in the pitch and loudness of the voice.

DELAYED LANGUAGE:**[SLIDE # 8; APPENDIX I]**

The term 'language' here refers to the grammar and the meaning conveyed by any form of communication.

Unless identified. early and appropriate management strategies taken up, most hearing impaired children could be significantly delayed in their development of language skills in these develop at a very slow rate compared to normal hearing children.

[SLIDE # 9; APPENDIX I]

Specific educational problems would be

- > delays in reading, writing and spelling
- > difficulties in understanding classroom discussions.
- > difficulties in subjects like languages, science and social studies. (Turnbull and Schulz, 1979).

*** SOCIAL DEVELOPMENT:-**

[SLIDE #10; APPENDIX I]

The presence of language delays and problems of articulation, voice and quality will have adverse effects on the social interactions of the hearing impaired child. There is a marked deviation from the age appropriate behaviour and social expectations. A hearing impaired child can often be described as:

- > lacking self confidence
- > fearful
- > depressed
- > anxious
- > passive

At times, they may also appear to be sluggish and lazy and tend to be more dependent on their teachers and parents than their peers even at an older age.

They, therefore, tend to be socially immature. Social interactions also tends to be below that of a normal child both within and outside the family. Since, there children are usually unable to communicate effectively through speech, they tend to be more aggressive.

There children also have more adjustment problems than normal children.

[SLIDE #11; APPENDIX I]

Educational Implications could be

- > unable to cope with academic difficulties.
- > inappropriate behaviors leading to classroom disruptions.
- > children who are overly passive, shy and withdrawn tend to get overlooked inspite of the teacher's best intentions.
- > inadequate peer relationships.

B-ROLE OF TEACHERS IN THE PREVENTION OF HEARING LOSS**[SLIDE #12; APPENDIX II]**

Hearing loss, as we have seen in the previous section is a disabling condition. It affects different areas of the child's growth. Like all other diseased conditions, the adage, "Prevention is better than cure" applies to hearing impairment also.

Before going into prevention, we shall quickly scan through the various causes of hearing loss.

[SLIDE #13; APPENDIX I].

These cause can broadly be grouped into - prenatal
 - perinatal &
 - post natal causes

Prenatal causes

Prenatal refers to the stage before the child is born. These are many causes which may result in a hearing loss at this stage. These include:

- > certain genetic abnormalities
- > marriage among blood relatives [consanguinity]
- > infections diseases contracted by the mother during pregnancy.
eg. Rubella/German measles.
- > intake of certain drugs during pregnancy.
- > improper growth of the brain or the auditory system.
- > exposure to X-rays during pregnancy.

Perinatal:

This phase refers to the period during the birth/delivery of the baby. Any traumatic experiences faced during birth may cause hearing impairment.

These causes may be:-

- > prolonged labour
- > induced labour
- > lack of oxygen (anoxia) leading to a blue colouration of the infant (cyanosis)
- > injudicious use of forceps during delivery.
- > instrumental delivery.
- > premature delivery followed immediately by jaundice.

These birth traumas cause hearing problems, but if due care is taken at birth, these problems can be minimized.

Postnatal causes:

These causes are acquired after birth or any stage of life. These causes may be:-

- > infectious diseases like German measles, mumps, meningitis, encephalitis.
- > infections of the oral-nasal cavities which may pass to the middle ear
- > accidents & trauma
- > toxic drugs
- > exposure to very loud sounds
- > age, itself can be a factor in deafness

Educating children about the causes of a hearing loss, can help them take the necessary preventive measures later in their life. During their student life they should mainly be aware of causes that result in a hearing Loss after the birth of the child & the precaution they should take to prevent it from occurring.

[SLIDE #14; APPENDIX I]

You should initially explain to the children why they should take care of their hearing.

Caution them against:

- > playing or swimming in dirty water as water lodged within the ear would lead to an infection.
- > putting pencil leads, erasers, beads of any other objects into the ear.
- > cleaning their ears with any object they find. They may use a cotton swab but they should avoid going very deep into the ear.
- > hitting anybody on the ears.
- > listening to very loud music or other noise.
- * You should avoid punishments like slapping the child on his face.

These are a few ways by which you could contribute to prevent the occurrence of a hearing impairment.

We shall now go into our next section, that deals with the various indications that signals towards the possibility of a hearing loss in the child.

[c]. IDENTIFYING A CHILD WITH A HEARING IMPAIRMENT

As the children spend most of their day at school, it is important for the teacher to be aware of any signs / indications that may be shown by the child. We can divide these indications into:

I - Behavioural Indications

II - Medical Indications.

Behavioural Indications:

[SLIDE #15; APPENDIX I].

(1) Lack of Attention: If the child has been showing a lack of attention, it may be that the child has a hearing loss. It is difficult to pay attention to something that has not been heard.

(2) Difficulty in following directions: Another indicator may be that the child has a difficulty in understanding oral instructions. The same instructions may be followed when it is given in writing.

(3) Turning of the head: Sometimes, in order to hear better, the student may position his head in an unusual way.

(4) Requests for frequent repetitions: The student may also for very frequent repetitions what you say in the class.

(5) Disparity between expected and actual achievement: A marked difference between the child's abilities and the

performance of the child, should call the teachers attention to a possible hearing problem.

(6) Reluctance to participate in oral activities: Sometimes the child may not co-operate to join in oral activities. The child may not be able to understand a joke when it is told to him. The child may often during oral reading as he/ she cannot hear or has difficulty in hearing what others are reading.

(7) Better performance in small groups: The child's performance may be better when in a quiet atmosphere and when he works with a small group of other students rather than large group activities.

(8) Dependence on classmates for Instructions: Another indication is the student who constantly looks at the other students to see what they are doing, before beginning his own work.

(9) Shy or Withdrawn Behaviour: A child with a hearing impairment may not interact with other children, portraying a shy or withdrawn personality. Sometimes, in order to vent his frustrations of not being able to hear, he reacts by 'acting out' or throwing temper tantrum and acting stubborn.

The teacher should be sensitive to each of these behavioural indications by keeping a keen watch over when they occur and not ignore them as irrelevant.

Medical Indications

[SLIDE #16; APPENDIX I].

1. Frequent Earaches:-

An important indication which points towards an ear infection is the presence of pain. A child complaining of an ear ache should not be dismissed lightly. The teacher should make it a point to bring it to the note of the parents and suggest that he **sees** a medical practitioner.

2. Ear Discharge:-

Discharge or fluid running from the **ears** implies that an infection has already set in. It may be accompanied with or without pain. If adequate measures are not being implemented by the parents, it will be the teacher's area to bring it to their notice and monitor that appropriate care is being taken.

3. Frequent colds and sore throats:-

A common cold and sore throat may not usually be considered significant. However, it is important to remember that very frequent attacks of colds may affect the child's hearing in the long run. (Gearheart and Weishahn, 1976).

All these indications must be immediately brought to the notice of the parents and physicians.

D: MANAGEMENT OF THE HEARING IMPAIRED;**[SLIDE #17; APPENDIX I].**

As teachers of a hearing impaired student, your primary concern will be in his/her management within a regular classroom. We shall discuss this aspect at length. But before we get into this area, we shall quickly look at the various management strategies that are available for a hearing impaired individual.

We have already looked into the various effects a hearing impairment can have on an individual's life. Keeping this in mind, we can conclude that the management of such a child is also multifaceted. There are various aspects in the management of a hearing impaired child, some may be given more prominence during a particular period of development than the other, however this does not make any one of them less important. In other words, management has to be wholistic.

[SLIDE # 18; APPENDIX I]

The first and indispensable objective in the management of such children is to help them make maximum use of what little hearing they have left.

For this reason, after a hearing loss is identified, remedial measures such as medications or surgery may be taken up. If either of these measures are not suitable for a

particular child, the next step will be to select and fit the child with a suitable hearing aid.

Once provided with a hearing aid, the child will need to be trained to make the best use of whatever he is hearing. We have already discussed the adverse effects a hearing impairment can have on the child's speech. Speech and language therapy is therefore, mandatory for every hearing impaired child once he is fit with a hearing aid.

At this point, let us be clear on what we mean by speech and language therapy. It should not be considered equivalent to the language classes in school, includes training the child to understand what is spoken to him and training him/her to express his/her needs, thoughts and feelings in a way that can be understood by others. This training requires to be intensive and for an extended period of time, if any positive results are to be seen.

Still another aspect, although indirectly related to the child is counselling and guidance to the parents of the hearing impaired child. The parents require all the help and guidance they can receive while handling the child and this professional information needs to be provided to them as and when required. This is provided by the speech and hearing professional and at times by a psychologist. As teachers, you may face a situation when the parents may approach you with a particular problem related to the child and you may need to be equipped with some information. If, however, you

are unscare regarding giving appropriate advice, always refer them to a speech and hearing professional and in most instances, that could be the best move you could make!

Apart from all the above, the hearing impaired child may require a lot of help to develop into a productive member of society. This inducts aspects like peer - relationships, vocational counselling and the like.

An important area during this course is the classroom management of the child, but before we deal with this, let us look at the most primary object as far as the hearing impaired child is concerned his hearing aid.

THE HEARING AID

You may have a student in your class who uses a hearing aid. Let me give you some information-regarding it.

[SLIDE #19; APPENDIX I]

- * What is a Hearing Aid ?

The hearing aid as the term suggests is an electronic device that 'aids' hearing. It is NOT a remedial measure like medicine or surgery. It does not cure an individual of his hearing impairment, but makes sounds louder, thus enabling him to hear. It can be considered as a personal loudspeaker.

We can compare a hearing aid to a pair of spectacles. Just like the spectacles improves a person's vision only when he/she wears it , the hearing aid will help the person's hearing capacity only as long as he /she wears it.

***How Often Should A Hearing Aid Be Used**

Consider a condition in which each of you are allowed to hear clearly only during certain times of the day and at other times, you can hear little or nothing at all. You would'nt be comfortable at all, would you?

Remember, a child can hear better only as long as he is wearing the aid. So naturally, the longer he uses it, the better it is for him.

Therefore a child should use the hearing aid throughout the day and night except while sleeping and bathing, or if he is out in the rain.

*** Styles of Hearing Aid**

There are different styles of hearing aids, and these can be grouped as

1. Body level hearing aids

(PICTURE # 8; APPENDIX II]

These are most often rectangular in shape and is one of the most common type of aid available in India. It can be either worn in a shirt pocket or special harness, or clipped to clothing. A wire cord runs from the aid to the ear.

2. Behind - the - ear hearing aid (BTE)

(PICTURE # 9; APPENDIX II]

As the name suggested these rest behind the ear i.e., on the pinna. A plastic tube connects the hearing aid to the ear.

3. Spectacle Aid :

(PICTURE # 10; APPENDIX II]

In this type, the hearing aid is attached to the temple portion of the frame of the spectacles and rests behind the ear.

4. In the Ear (ITE) In the can a ITC Aids

(PICTURE #11; APPENDIX II]

These are the tiniest hearing aids. These can be placed directly into the ear as in case of the ITC's or into the

canal as in case of ITC' s, and therefore cannot be seen from the front.

*** PARTS OF A HEARING AID**

(PICTURE # 12 APPENDIX II).

To improve our understanding of the hearing aid, let us look at its various parts.

(1) Microphone :

The microphone of the hearing aid picks up the sound signals from the environment. The microphone can always be seen on the outer panel of any hearing aid, but its exact location varies depending on the model of the hearing aid.

It is very important that the microphone should never be covered. Covering the mic will distort the sound picked up by it. Therefore, you should frequently check for this in the class room.

(2) ON / Off switch :

As we mentioned before, the hearing aid is an electronic device and like any other electronic device it also has an ON /OFF switch, which sets it into function. Again the location of the switch varies according to the model.

You should always make sure that the hearing aid is the ON position when the child is hearing it.

(3) Volume control :

Just like a TV/radio, the hearing aid will also have a volume control dial to increase or decrease the output.

An appropriate volume will be prescribed for each child by the audiologist & you must check that this is maintained. This may be increased if the battery gets weak or if the sound he is listening to is too soft. He can reduce the volume if the sounds around him are too loud.

(4) TONE CONTROL :

The Tone control is a component of the hearing aid that can change certain aspects of the sounds. It gives 3 options 'H' 'L' 'N' which can be set according to the needs of the child.

If only the low frequencies need to be amplified , the tone control is set to L.

If only the high frequencies need to be amplified, the tone control is set to H.

In most cases both the low and high frequencies will need to be amplified and in that case the tone control is set to N.

The tone control may be seen on the outer panel of the hearing aid or may be built into the body of the hearing aid, according to the type of aid.

The tone control setting is also prescribed to the child by the audiologist and you must check that this setting is maintained.

(5) AMPLIFIER :

All hearing aids will have an inbuilt amplifier which will increase the amplitude of the sound signal that is picked up by the mic.

(6) RECEIVER :

The component of the hearing aid that converts the amplified electrical signal back into sound is called the receiver.

In case of the body level aids the receiver is separated from the main body of the hearing aid. In all the other types the receiver is located within the hearing aid.

(7) CORD :

This is present only in the body type hearing aids. The cord is the wire that connects the receiver to the rest of the hearing aid. The cord should always be free of any knots and should not be excessively stiff.

(8) BATTERY COMPARTMENT

All hearing aids will have a compartment that will house the battery. Usually a battery will last about 15-25 days ,

depending on the battery type and the number of hours hearing aid is used.

PRESCRIBING A HEARING AID

(SLIDE #21 APPENDIX I)

Once a hearing evaluation has been completed and the degree and type of loss has been obtained , the audiologist will prescribe the case with an appropriate hearing aid. A hearing aid that is best suited to the case in terms of

- Degree of hearing loss
- Type of hearing loss
- Ability to discriminate speech
- Abilities to tolerate loud sounds
- Age of the case
- Lifestyle of the case
- Financial constraints

The Government of India. Ministry of Welfare has put forward a "Scheme of Assistance to Disabled Persons for Purchase/Fitting of Aid3/ Appliances ", As per this scheme, those who are economically backward are provided, a body level hearing aid either free of cost a at a subsidized rate.

The aid3/appliances are provided free of cost, to those having income upto Rs 1200/-per month and at 50% of the cost to those having income above Rs 1200/- per month and

upto Rs 2500/- per month. (No 4.113/93- HW . I Government of India).

*** MODE OF AMPLIFICATION :**

(PICTURE # 13, APPENDIX II)

A hearing aid may be fitted in the following 3 ways:

1. Mono aural :

Mono - one

Aural - ear

Here , the amplification is provided to one ear only. This is not usually recommended for children , but may be prescribed when the hearing in the poorer ear is so low that it cannot be benefitted even with a hearing aid.

2. Binaural :

Bi - two

Aural - ears

Here, the amplification is provided to both ear using two separate hearing aids this is considered to be the best mode of amplification for children.

3. Pseudobindural

Pseudo meaning false , this type involves the use of a single hearing aid to deliver sounds to both the ears.

WHY IS BINAURAL BETTER ?**(SLIDE * 20 APPENDIX I**

We shall now consider why binaural amplification is considered superior to either monaural or pseudobinaural.

- (1) Use of two separate hearing aids to each ear will help the child to locate the source of the sound better, especially if the hearing aids are ear level ones.
- (2) The use of two separate hearing aids will help the child to interpret speech better in the presence of background noise i.e., better speech identification.
- (3) With the use of two separate hearing aids the child will need to put in lesser effort for comfortable listening.
- (4) The use of two hearing aids will provide a better sound quality to the child.

*** The EARMOULD****(PICTURE # 14, APPENDIX II)**

The earmould is a device that conducts the amplified sound signal from the hearing aid into the ear canal as efficiently as possible.

The earmould is placed within the external ear. Thus the ear mould helps to anchor the hearing aid more securely into the ear.

The ear mould is made specifically for each individual after taking an impression of the ear. This is similar to how a dentist takes an impression in order to make a pair of braces or dentures.

These are different types of ear moulds and the audiologist will recommend the appropriate type for each child.

The earmould has a sound bore which is placed into the ear canal. It is through their bore that the sounds are transmitted. It is therefore vital that the sound bore should not be blocked by wax or any other object as it will affect the passage of the sound.

*** CARE And MAINTENANCE OF THE HEARING AID**

Although as a teacher you may not be directly involved with the care of a hearing aid, there are certain basic points to be kept on mind.

(SLIDE * 21, APPENDIX II)

REMEMBER

- (1) The hearing aid is a very delicate instrument and needs to be handled properly for effective functioning.
- (2) The hearing aid should not be thrown on the ground. It may be kept pinned to the child clothing or pocket using the clip if it is a body level hearing aid.

- (3) The hearing aid should not be kept on extremely hot as cold surfaces or on any electronic device.
- (4) Water should not enter the hearing aid. In case of such an incident.
 - Remove the batteries immediately
 - Drain the water
 - Dry the hearing aid with an absorbent cloth.
- (5) Take care that no one hits the child when he is using the hearing aid for the safety of the child as well as the hearing aid.

It is important that the teacher should be aware of all these aspects of the hearing aid as it is one of the most important tools in the rehabilitation of the hearing impaired child.

OPTIMIZING THE AUDITORY RECEPTION**(SLIDE #22: APPENDIX-I)**

The auditory reception requires us to make use of the child's listening skills. This can be improved by making few modifications in the classroom acoustics in order to accommodate a hearing impaired student.

Before we look at the various modifications that can be made within the classroom, we shall very briefly deal with a few basic concepts that will be needed to fully understand the nature of the required modifications.

(SLIDE #23: APPENDIX-I)

An important fact to be kept in mind is that the proportion of the signal, or the teacher's speech should be above the proportion of the noise. Any environment will contain some amount of noise or unwanted sounds along with the required sound signals. For eg. at this moment, we can take noise to include the fan noise/AC noise etc" (at the lecturer's discretion). In order for effective communication, the level of the signal should be above the level of the noise. This will be common experience to each one of you i.e., when the noise in your classroom is very high, you would have found that your students do not hear you clearly. It is seen that hearing impaired listeners perform poorer than normal listeners under similar noise levels. Therefore the noise level should be lesser in a class, if a hearing

impaired child is one of the students, than if there are only normal hearing children in the class.

Gengel (1971) and Olsen (1977), hearing impaired listeners need the signal to be 20 to 30 dB higher than the noise optimal for speech reception.

Let us now list down the various factors that can contribute to adverse listening or understanding of speech.

- (1) Noise i.e., any unwanted sound
- (2) Reverberation this refers to the persistence of a sound within an environment even after the source of the sound is terminated.
- (3) The degree and type of hearing loss - as we have already seen before the higher the degree of hearing loss, the child will tend to face greater difficulty.
- (4) Age of the child - as in the case of any normal hearing children, the younger the hearing impaired child, the more pronounced will be his listening difficulties.
- (5) Linguistic abilities of the child - if the child already has some amount of language, he will face lesser problems than the child who does not have adequate language abilities.

Out of all these factors listed, those that can be dealt by the teacher include

- (1) Noise &
- (2) Reverberation

NOISE**(SLIDE t 24: APPENDIX-I)**

Noise\unwanted sound, within the school can originate from three specific sources:- (Bess and McConnell, 1981).

(1) sounds generated outside of the school building - External Noise. eg.: traffic noise, construction site noise etc. ,

(2) Sounds generated within the school but outside the classroom - Internal Noise.

eg: The noise from music rooms, adjacent classrooms, corridors, play ground.

(3) Sounds created within the classroom - Classroom Noise, eg: talking shuffling feet, moving chairs, fans.

Each of these noise sources can be controlled to an extent. Usually it is difficult to reduce external noise [eg: we cannot be in control of the traffic on the roads], the most effective means of noise control is to prevent noise from entering the classroom.

(SLIDE * 25: APPENDIX-I)

Considerations for Reduction of External Noise.

(1) Various architectural design and construction techniques can be considered to reduce external noise.

(2) Site selection is a vital concern. The site for a school should be selected such that there is minimal traffic, factories and other such noise sources.

(3) The quality of construction is of prime importance in noise reduction.

eg: mortar must fill all the gaps between the bricks.

(4) A room with solid outside walls is able to absorb external noise better than one with many windows.

(5) Landscaping can also serve as a buffer from unwanted external sounds. By landscaping we mean the school being surrounded by ever green trees and shrubs.

Considerations for Reduction of internal Noise

Fourcin et.al., (1980) has recommended the following procedures.

(1) Increase the distance between the teaching area and the noise source.

(2) Interpose non teaching areas between the source of the noise and the teaching area. [eg: libraries or storage rooms etc between the classroom and playground].

(3) Long, straight corridors should be avoided.

(4) Select a class at the end of the corridor.

(5) Partitions between classes should be made of bricks extending upto the roof.

Considerations for Reduction of Classroom Noise

- (1) Cover the desk legs and chairs with rubber, bushes to avoid noise created by striking a hard surface.
- (2) Use of quieter air circulation systems or if they are noisy, get them serviced.
- (3) Controlling the noise created by talking.
- (4) Avoid door³ and windows banging by using stoppers.

REVERBERATION**(SLIDE # 26; APPENDIX I)**

Reverberation is the persistence of sound within an enclosed space. (Bess and McConnell, 1981)

(PICTURE #15; APPENDIX II)

Sound waves strike the floor, ceiling and walls of a room and are then reflected back. When these reflected waves strike another hard surface they are once again reflected into the environment. This process continues until the sound energy is dissipated or scattered away.

All rooms will exhibit some degree of reverberation. This reverberation is dependent on the absorption capacity of the surface encountered by the sound wave. The harder and less absorbent the surface, (eg hard tiles, brick floor etc) the more persistent the sound wave will be. Instead softer materials like carpets will absorb the sound waves.

Reverberation that persists for a longer duration in a room, will interfere with the speech being heard clearly.

Considerations for reduction of Reverberation

(SLIDE #27; APPENDIX I)

As we mentioned before, harder the surface, the less absorbent it is. Therefore, to reduce reverberation,

* Cover hard reflective surfaces with some type of sound absorbing materials.

Niemoller (1981) has offered the following suggestions:

- (a) Make the ceiling and front wall reflective, they will provide strong early reflections to the auditors.
- (b) Cover the floor with carpet
- (c) Cover the rear wall with an acoustical absorbent [eg:cork]
- (d) The side walls are usually best treated with patches of absorbant material in sufficient quality to achieve the desired reverberation time.

Other suggestions include.

- a) Strategic placement of cork bulletin boards on walls.
- b) Positioning of mobile bulletin boards or other similar partitions at angles to the walls.
- c) Attaching empty egg cartons to the walls (Olsen, 1977).
- d) Opposite parallel surfaces of a room should be treated so that sound will not be continually reflected between walls

- e) Tilting blackboards at a 6 - degree angle may be useful if they are opposite a hard, untreatable area like a cupboard.
- f) Thick, heavy curtains and bamboo screens will help in reducing the reverberation.

In addition, use of certain special devices such as FM hearing aids can also help a hearing impaired child hear better in the class.

The verbal information that you are providing to a hearing impaired child must also be supplemented visually. We shall look into this aspect in the following section.

ENHANCING THE VISUAL RECEPTION**(SLIDE # 28; APPENDIX I)**

In order to achieve this, certain modifications of the regular teaching strategies need to be taken for the hearing impaired student.

(SLIDE * 29; APPENDIX I)

By visual reception , we mean the child's ability to make use of the visually available information in order to understand a message. Although the use of a hearing aid in a favourable environment will facilitate increased auditory reception of the signal, some parts of the information will be lost to the child. This part of the information that is lost auditorily will have to be picked up by the child using the visual clues.

These visual clues includes;-

- (1) the lip movements of the speakers.
- (2) the facial expressions
- (3) the context in which a particular statement is spoken which can be emphasized through pictures, models, writing key words on the black board.
- (4) the reactions of others in the class etc.

Use of all this information is an aid to what the child hears with the help of the amplification and will help him to

receive a total picture of what is happening and will therefore increase his understanding.

Various minor modifications can be taken into consideration in order to facilitate better visual reception. These include:-

- (1) ensuring that the class is well lit.
- (2) The light should fall on the teacher's face to allow the student to make use of the lip movements and facial expressions.
- (3) Preferential Seating:

Reducing the distance between the teacher and the child not only allows better visual recognition, but it also facilitates the child hearing the signal louder than the noise in the class.

The child should be seated in such a way that he also has a view of his classmates. This may require seating the child near the right or left corner which brings the rest of the class into view when the child turns to see who is speaking.

* Therefore, while seating a hearing impaired child you must take the above mentioned facts into consideration.

- (4) The Teacher's Pronunciation:

As it is necessary for the student to observe the lip movements of the teacher it is important that the teacher's pronunciation skills should be good.

* This does not imply that the teacher exaggerate her/his lip movements. What is needed is that the teacher should speak slowly and clearly, but as naturally as possible.

(5) Gain the Students Attention:

The teacher should make sure that the child is watching him/her prior to talking, by frequently monitoring whether the child is attending to him/her.

(6) The teacher should try to remain stationary when talking and should face the students.

(7) Unusual hairstyles moustaches, beards that cover the lips and excessive jewellery worn by teachers often creates distractions and interferes with the hearing impaired students ability to read lips.

Having discussed on the class room acoustics and modifications of teaching strategies that are required to suit the hearing impaired child, we shall now continue our discussion on the role of the speech therapist.

ROLE OF THE SPEECH THERAPIST**(SLIDE # 30; APPENDIX I)**

We shall now brief up on the role played by a group of allied professionals who play a very active role in the management of our young hearing handicapped child.

If you could recollect what we spoke of earlier in the introductory part of this lecture, on the affects, a hearing impairment can have on the child, you will remember the innumerou³ speech and language problems that are a resultant of the hearing loss.

So, if we put it very simply, these problems in speech and language of the hearing impaired child is dealt with by the speech therapist. Therefore, the work of a speech therapist can be understood as one aimed at improving the child's speech and language abilities to make a better communicator of the child - to make the child understand what is spoken to him and to be better understood by others.

Mind you, this is no simple task - it requires systematic work, regular and reported training and immense patience on the part of all concerned. Speech therapy is an on going lengthy process. The child can attend school and still attend speech therapy. He/she may attend speech therapy both either within the school hours or later. For eg. he/she may be exempted from certain classes during which is he/she can attend therapy or he may attend therapy after

3school hours. The first option is possible only if the school has appointed a speech therapist either on a part time or full -time basis.

(PICTURE # 16; APPENDIX II)

Visualize a musical concert, where there are a large number of musicians all playing their respective instruments. Picture that man there in the middle, with that little stick in his hand? He is the conductor. He makes sura that each of the musicians are totally in tune with each other so that the final product we hear is a beautiful symphony.

(PICTURE #17; APPENDIX II)

If we apply this picture to what we are dealing with, we see each of you teachers and the others who the child is in contact (parents, siblings,peers)as the musicians, playing your part. The speech therapist plays the role of the conductor. The final product aimed at is a totally well-adjusted and well - balanced hearing impaired child.

What I am trying to emphasize with this analogy is that any remediation program for the hearing impaired child is highly dependent on good co-operative working relationships between the speech therapist and the regular classroom teachers.

(SLIDE # 31 ; APPENDIX I)

Apart from doing her own job, here's how the speech therapist can help you --

* Remember, the speech therapist is a person who has taken specialized training to deal with various communication problems. So, the speech therapist can help you with factors that help the students develop good communicative skills, especially those factors that can be a part of the regular classrooms.

* Communication problems may range anywhere from mild to severe and includes many types of articulation problems.

The speech therapist will work to improve each of these problems, making it easier for you to handle this child when he is placed along with a group of normally hearing children.

* The speech therapist can also help you to constantly monitor the students of your class and help to identify any one with hearing and speech problems.

Now, let us see how you teachers can help the speech therapist -

* It is very important for you to make sure that your classroom efforts are consistent with and complementary to the specialized efforts provided in therapy.

- * While the speech therapist will handle the student with the more severe problems, you could help out or serve the students with mild speech problems once you have consulted the speech therapist.
- * Any changes in the behaviour of the child and his overall status should be brought to the notice of the speech therapist.
- * The regular classroom teacher must also refer students with any of the above discussed associated problems to the speech therapist.

We have now given you a view of the role played by a speech therapist and how essential it is for each of you to tune in with each other. Remember, you both are aimed at the same goal- to produce that beautiful piece of music.

THE PARENT - TEACHER INTERACTION:**(SLIDE # 31; APPENDIX I)**

We will now deal with an important aspect of our lecturers; the relationship that teachers need to share with the parents of the students, especially the handicapped. Many a times, we as professionals might consider ourselves the final authority in the management of the hearing impaired child because we are specially trained for the purpose. What we often tend to overlook is the role played by the parents - they are the ones who are coping with the child day in and day out, helping the child to get adjusted to the world around him while at the same time getting adjusted themselves. They are able to accurately identify even a small improvement or regression made by the child. In other words, although parents may sometimes need our help in deciding what is best for the child, the fact remains that we need their help in understanding the child the best.

Keeping this in mind, we cannot understate the relationship that needs to be shared between us professionals and the parents.

We need to realize and be sensitive to the fact that coping with handicapped child is no easy task.

(SLIDE # 33; APPENDIX I)

During the initial stages, when the parents have just identified the child's impairment, they will need help and support in coping with the news.

- > You may organize meetings between the parents of the different handicapped children in your school so that the parents do not feel that they are alone in the race.
 - > Inform the parents regarding the class schedule for the next day, so that they can prepare the child in advance. Keep the parents informed regarding the dates of various examinations and tests so that they may start working at it.
 - > The parents must also be made aware of the performance of the child both within and outside the class, in his interactions with teachers and peers.
 - > At the same time, you should build rapport with the parents in such a way, that any small changes noticed by the parents at home will be informed to you.
 - > There should also be co-ordination between what is expected of the child at school and at home.
- eg: If you require the child to apologize following a misdeed and if the same is not expected of him at home, . the child could become confused and rebellious.

The bond between the parents and teacher should, therefore, be such that they both work towards the best interest of the child.

HELPING THE CHILD ADJUST IN A REGULAR CLASSROOM**[SLIDE #34; APPENDIX I]**

We have already discussed the various effects that a hearing impairment can have on the social skills of an individual.

Adapting into a hearing world is no easy task. A successful life depends on satisfying interactions. These satisfying interactions cannot take place unless the child has learned the appropriate social skills.

Social skills are learned behaviours which enable a child to respond appropriately to children & adults at home & away from home.

Some children are deprived of social stimulation through no fault of parents or caretakers. A potentially sound social environment cannot guarantee normal happy development for hearing impaired children.

As teachers, you have a major role in developing their social skills, helping these children to adjust & identify themselves within a class of normal hearing children. Unless this is achieved, the integration process cannot be considered a success.

[SLIDE #35; APPENDIX I]**Helping the Impaired child**

Teachers of integrated hearing impaired -children have the responsibility of including the handicapped and developmentally delayed children into the activities that are taken up in the classroom. Unless teachers make this conscious effort, the handicapped children will not spontaneously participate in the activities.

-> The teacher will need to help the child in teaching the rules of a game.

-> Teachers should plan activities for groups of three or four children and include the handicapped child into these. They should encourage any kind of imitation on the part of the child.

-> Teachers should also be alert to any kind of interactions that occurs naturally among the children & reinforce these without interrupting the children.

-> Teachers should also encourage the children to share among themselves, thereby improving the interactions.

[Allen, 1980]

Helping the peers

The normal hearing children will also **need** help in accepting & adjusting to the handicapped child. Here also, the teacher's role is important.

- > Inform the children priorily that a new student with 'special needs' is going to be a part of the class.
- > Explain in simple terms, the nature of the hearing impairment, the need of a hearing aid & the other specific needs of the child.
- > Let the children handle the hearing aid under your supervision and explain that thi3 expensive device should not be manhandled by them.
- > Clear any misconceptions that the children may have regarding a hearing loss.
- > Tell the children to use move of speech to communicate to the hearing impaired child.
- > Encourage the children in their attempts to help and co-operative with the impaired child.

Teachers, therefore, have an important role to play in helping both groups of children identify with each other.

[SLIDE #36; APPENDIX I]

We will have now give you a few suggestion on how you can help the hearing impaired student cope in a regular classroom. Remember, there are only a few suggestions - you are always at liberty to try to fit the best means that helps the hearing impaired child the best.

*** Using a "listening helper" or a "buddy"**

The use of a "listening helper" or "buddy" can be of considerable assistance to the hearing impaired students. This peer may sit next to the hearing impaired student to ensure his turning to the correct page or taking notes. He can also assist in adjusting to a new class or school or help the hearing impaired child to participate in activities such as physical education. The listening helper may be rotated weekly or monthly, if required.

Caution must be exercised so that the helper or buddy provides assistance only when needed; otherwise the very purpose of the integrated educational experience may be defeated.

II Facilitating Desirable Speech Habits:

Adjusting to a normal speaking environment requires the mastery of good speech habits like good pronunciation etc. Although this is tackled by the speech therapist, reinforcements in the classroom is essential if needed carry over & maintenance are expected. As teachers you can therefore help in the following ways:

- 1) Encourage the student to participate in oral discussions & expect him to use complete sentences while speaking. He should be encouraged to participate in conversation, reading, story telling & creative dramatize.

2. The teacher should not be hesitant to talk to the student about his speech problems. The hearing impaired need to be told when they are speaking too loudly or too softly. The teacher can do a great deal to keep the student from developing dull & expressionless speech habits by speaking with him honestly. .
3. Praise and encourage the students when he has correctly pronounced a previously difficult word.
4. Provide a relaxed language environment to the child.
5. Encourage the student to use the dictionary to aid in pronunciation of difficult words. This, however, depends on the age & reading ability of the child.

III Discussing New Materials or Assignments Ahead of class time.

Whenever possible, the teacher should briefly discuss topics ahead of time that are to be presented later in class. This may be accomplished by providing the student with an outline of the material to be discussed. Some times pre-reading of assignments is very helpful. A list of key vocabulary words that deal with the new material may be provided to the child. When giving an assignment, you could writs it on the board in addition to giving it orally.

IV Audiovisual Equipment

Such facilities are of particular value to a teacher who has a hearing impaired student in her class. Overhead projectors can greatly enhance the achievement of hearing impaired students. Supplementary diagrams & pictures should be used as often as possible. A complete narrative script to a film strip or audio tape, if possible, may be given to older hearing impaired students. [Gearheart & Weishahn, 1976].

As teachers of hearing impaired child who is being integrated you will need to make these extra but relatively simple modifications to accommodate the child into a class of normal hearing children.

SUPPORT SERVICES FOR THE HEARING IMPAIRED**(SLIDE #37, APPENDIX-I)**

The Ministry of Welfare initiated a centrally sponsored scheme of Integrated Education of the Disabled (IED). The scheme is now handled by the Ministry of Human Resource Development and the latest revision has been made in 1992. The centrally sponsored scheme of Integrated Education of the Disabled children was proposed to provide educational opportunities for the disabled children in regular schools, to facilitate their retention in the school system, and also to place in the regular schools, such children already placed in special schools after they acquire the communication and daily living skills at the functional level. The scope of the scheme includes:

(SLIDE #38, APPENDIX-I)

- > Pre-school training for the disabled children
- > Counselling for the parents
- > Special training for hearing handicapped children
- > Mobility and orientation training for the visually handicapped children
- > Daily living and communication skills training required by children with other disabilities
- > Training in home management of these children. (Sharma, 1988).

(SLIDE # 39 , APPENDIX-I)

According to The Persons With Disability Act (1995), "hearing impairment" means a loss of 60dB or more in the better ear in the conversational range of frequencies. This implies an impairment less than 50% in the better ear.

The The Persons With Disability Act (1995) under its chapter on Education, states the following

(SLIDE #40, APPENDIX-I)

26. The appropriate Governments and local authorities shall-
- a) ensure that every child with a disability has access to free education in an appropriate environment till he attains the age of eighteen years.
 - b) endeavour to promote the integration of students with disabilities in normal schools.
21. The appropriate Governments and the local authorities shall by notification make schemes for-
- c) imparting non-formal education by utilizing the available manpower in rural areas after giving them appropriate orientation.
 - f) Providing every child with disability free of cost special books and equipments needed for his education.
29. The appropriate Governments shall set up adequate number of teacher's training institutions and assist the national

institutes and other voluntary organizations to develop teacher's training programmes specializing in disabilities so that requisite trained manpower is available for special schools and integrated schools for children with disabilities.

30. Without prejudice to the foregoing provisions, the appropriate Governments shall by notification prepare a comprehensive education scheme which shall make provision for-

- d) the grant of scholarship to students with disabilities.
- b) restructuring the curriculum for benefit of students with hearing impairment to facilitate them to take only one language as part of their curriculum.

(SLIDE #41, APPENDIX-I)

The Integrated Education of the Disabled scheme is proposed to provide educational facilities to mildly and moderately hearing impaired and also to the severe and profound hearing impaired children following a period of pre-school training which is also undertaken by the scheme. The education of the disabled children under this scheme will continue upto the senior secondary schools levels and include vocational courses equivalent to the senior secondary stage.

FACILITIES FOR THE DISABLED (With Respect To The Hearing Handicapped)

(SLIDE #42, APPENDIX-I)

As per the IED scheme, a disabled child may be given the following kinds of facilities.

- a) Books and stationary allowance of Rs. 400/- per annum.
- b) Uniform allowance of Rs. 200/- p.a.
- c) Transport allowance of Rs. 50/- per month.
- d) Actual cost of equipment subject to a maximum of Rs.2000/- per student for a period of five years. (Pandey and Advani, 1995).

The teachers are required to have the same qualification and pay-scale as the teachers for the normal schools but are required to have prescribed training in special education after acquiring which they are given a special pay of Rs. 150/- per month in urban areas and Rs. 200/- per months in rural areas. Training in handling multi-category disability is preferred.

(SLIDE #43, APPENDIX-I)

A resource room having all the essential equipment, learning aids and material is supported to be provided under the scheme for a cluster of schools implementing the scheme of integrated education. The NCERT (1986) has prepared a handbook which also indicates the type of facilities which may be provided in the resource room. The average cost of

such equipment is estimated as Rs. 30,000/- subject to availability of resources, the cumulative enrollment would reach Rs. 50,000/- by the end of the 8th plan.

Equipments Required for Hearing Impairment (IEDC).

1. Sound discrimination toys (loud to refined)
2. Group hearing aids
3. Individual hearing aids
4. Audiometer with all accessories.
5. Speech trainer with all accessories
6. Model of speech and hearing mechanisms
7. Studies, charts on defects/deformities of speech and hearing impairments.
8. Charts/studies on speech articulation/felt cut outs in English and in any other regional language.
9. Speech correction exercise available at speech and hearing centers.
10. Mirror for speech correction. (MCERT,1986).

When you are dealing with a hearing handicapped child, it is important that you keep these legislations and steps taken up by the Government. in favour of the handicapped. Not only will you be well-informed, you will also be able to provide to the student what is due to him/her.

**DO'S AND DONT'S IN THE MANAGEMENT OF A
HEARING IMPAIRED STUDENT
(SLIDE #26, APPENDIX-I)**

Before we conclude, we will briefly summarize the main points that need to be kept in mind while you are dealing with the hearing impaired child.

DO's:

- 1) Always make sure that the child has his/her hearing aid on.
- 2) Check whether the hearing aid is working atleast once and day.
- 3) Maintain a low level of background noise within the classroom
- 4) Obtain the child's attention to what you are saying to him/her.
- 5) Make sure adequate light falls on your face so that the child can see your facial expressions & lip movements clearly.
- 6) Seat the child in such a way so that he can visualize the teacher as well as the students clearly.
- 7) Help all the students of the class to accept and adjust to the special needs of the hearing impaired child.
- 8) Maintain a good rapport with the child's parents & his their therapist.
- 9) Be patient & encouraging with the child in his attempts.
- 10) Speak slowly & clearly.

Don'ts

- 1) Do not over look the need for the hearing aid.
- 2) Do not try to talk above the background noise.
- 3) Do not talk while facing the black board.
- 4) Do not talk with your back to the window/any other light source.
- 5) Do not work independently of the parents/therapist's suggestions.
- 6) Do not exaggerate your lip movements or place undue stress on syllables while speaking to the child.

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APPENDIX-I

THE FOLLOWING MATERIALS MAY BE DISPLAYED ON
SLIDES/ TRANSPARENCIES

SLIDE # 1:

Part AI: THE HEARING MECHANISM

- >The external ear
- >the middle ear
- >the inner ear
- >the auditory centre.

SLIDE # 2

HEARING IMPAIRMENT

- > TYPE
- > DEGREE

TYPE OF HEARING IMPAIRMENT

- > CONDUCTIVE
- > SENSORINEURL
- > MIXED

SLIDE # 3

DEGREE

MILD : 27-40 dB

MODERATE: 41-55 dB

MODERATELY

SEVERE : 56-70 dB

SEVERE : 71-90 dB

PROFOUND : 91+dB

DEGREE	EFFECT	REMEDIAL MEASURES
MILD 27-40dB	Will have difficulty with faint or distant speech	-> Favourable seating -> Speech reading -> Language and -> Vocabulary instruction -> Speech therapy
MODERATE 41-55dB	Difficulty in understanding conversational speech beyond a distance of 3 to 5ft.	-> Hearing Aid -> Auditory Training -> Speech Reading -> Favourable seating
MODERATELY SEVERE 56-70 dB	Conversation must be loud to be understood. Defective speech & limited vocabulary. Difficulty in group and classroom activities.	-> All services provided for students with mild or moderate loss. -> Specific assistance from the resource teacher.
SEVERE 71-90dB	May not be able to hear beyond and distance of 1 or 2 ft. will have difficulty with consonants.	-> Will require all the services as a hearing impaired student with less severe losses and many techniques used by deaf students.
PROFOUND 91+dB	Will not rely on hearing as the primary learning channel.	-> Intensive service from a resource teacher. -> Emphasis on speech and language. -> Auditory training -> May attend regular classes on a part-time basis

SLIDE * 4**EFFECTS OF HEARING IMPAIRMENT MOTOR DEVELOPMENT**

- * ORAL COMMUNICATION DEVELOPMENT
- * SOCIAL DEVELOPMENT
- * -> Indicates that the hearing impairment has an affect on the development.

SLIDE * 5**EFFECT OF HEARING IMPAIRMENT ON ARTICULATION:**

ARTICULATION -> mispronunciation of part of the word or the entire word.

SUBSTITUTIONS : Eg "wove" for "love" 'tite' for 'kite'

OMISSIONS : eg 'ouse' for 'house' 'pa' for 'pass'

DISTORTIONS : the sound is unidentified as any other should of that language.

SLIDE # : 6**EDUCATIONAL IMPLICATIONS OF ARTICULATIONS ERRORS:**

- * Difficulty in understanding the child's speech
- * Phonic training will be effected
- * Social interactions will be effected

SLIDE #7

EFFECT OF HEARING IMPAIRMENT ON VOICE

VOICE PROBLEMS

PITCH : is the perception of pitch by the individual
Hearing impaired -> very high pitched voice.

INTENSITY : is the volume of the voice.

Hearing impaired -> very loud or very soft voice.

QUALITY : refers to how the voice sounds.

- Hoarseness and breathiness
- Nasal quality
- Flat voice.

SLIDE * 8

EFFECT OF HEARING IMPAIRMENT ON LANGUAGE DEVELOPMENT

"LANGUAGE" -> GRAMMAR AND HEARING CONVEYED

- * The language skills of a hearing impaired child develop at a very slow rate i.e. A DELAYED LANGUAGE IS SIGNIFICANT.

SLIDE #9

EDUCATIONAL IMPLICATIONS OF DELAYED LANGUAGE

- * Delays in reading, writing and spelling
- * Difficulties in understanding classroom discussions
- * Difficulties in subjects like languages, science and social studies.

SLIDE #10

EFFECT OF HEARING IMPAIRMENT ON SOCIAL DEVELOPMENT

- * Hearing Impairment -> Adverse Effects on Social Interactions.

VARIOUS DESCRIPTIONS OF A HEARING IMPAIRED CHILD:

- > Lacking Self Confidence
- > Fearful
- > Depressed
- > Anxious
- > Passive
- > Tend to be more Aggressive

SLIDE #11

EDUCATIONAL IMPLICATIONS AS A RESULT OF POOR SOCIAL SKILLS

- * Unable to cope with academic difficulties
- * Inappropriate behaviours
- * Tend to get overlooked by teachers
- * Inadequate peer relationships.

SLIDE #12

PREVENTION IS BETTER THAN CURE

SLIDE #13**CAUSE OF HEARING LOSS**

PRENATAL	PERINATAL	POST NATAL
* Genetic abnormalities	* Prolonged labour	* Infections Diseases
* Consanguinity	* Induced labour	* Oral-Nasal Infections
* Infections	* Anoxia and cyanosis	* Accidents & Trauma
* Drugs	* Instrumental delivery .	* Toxic drugs
* Improper development of brain or other related structures	* Prematurity followed by Jaundice	* Exposure to loud noises
* Exposure to x-rays		

SLIDE #14

TEACHERS MAY PREVENT A HEARING LOSS FROM OCCURRING BY-

I. Educating the children on ear care and the importance of hearing.

CAUTION THEM AGAINST-

- * Playing in dirty water
- * Putting any object into the ear
- * Cleaning their ears with any object
- * Hitting anybody on the ears
- * Listening to very loud music on Walkmans.

II. Avoiding Punishments Like Slapping

III. Being Informed enough to pick up any indications of a hearing impairment.

SLIDE #15

IDENTIFICATION OF A HEARING LOSS

BEHAVIOURAL INDICATIONS:

- > Lack of attention
- > Difficulty in following directions
- > Turning of the head
- > Requests for frequent repetitions
- > Disparity between expected and actual achievement
- > Better performance in small groups
- > Dependence on classmates for instructions
- > Shy or withdrawn Behaviours.

SLIDE #16

IDENTIFICATION OF A HEARING LOSS

MEDICAL INDICATIONS

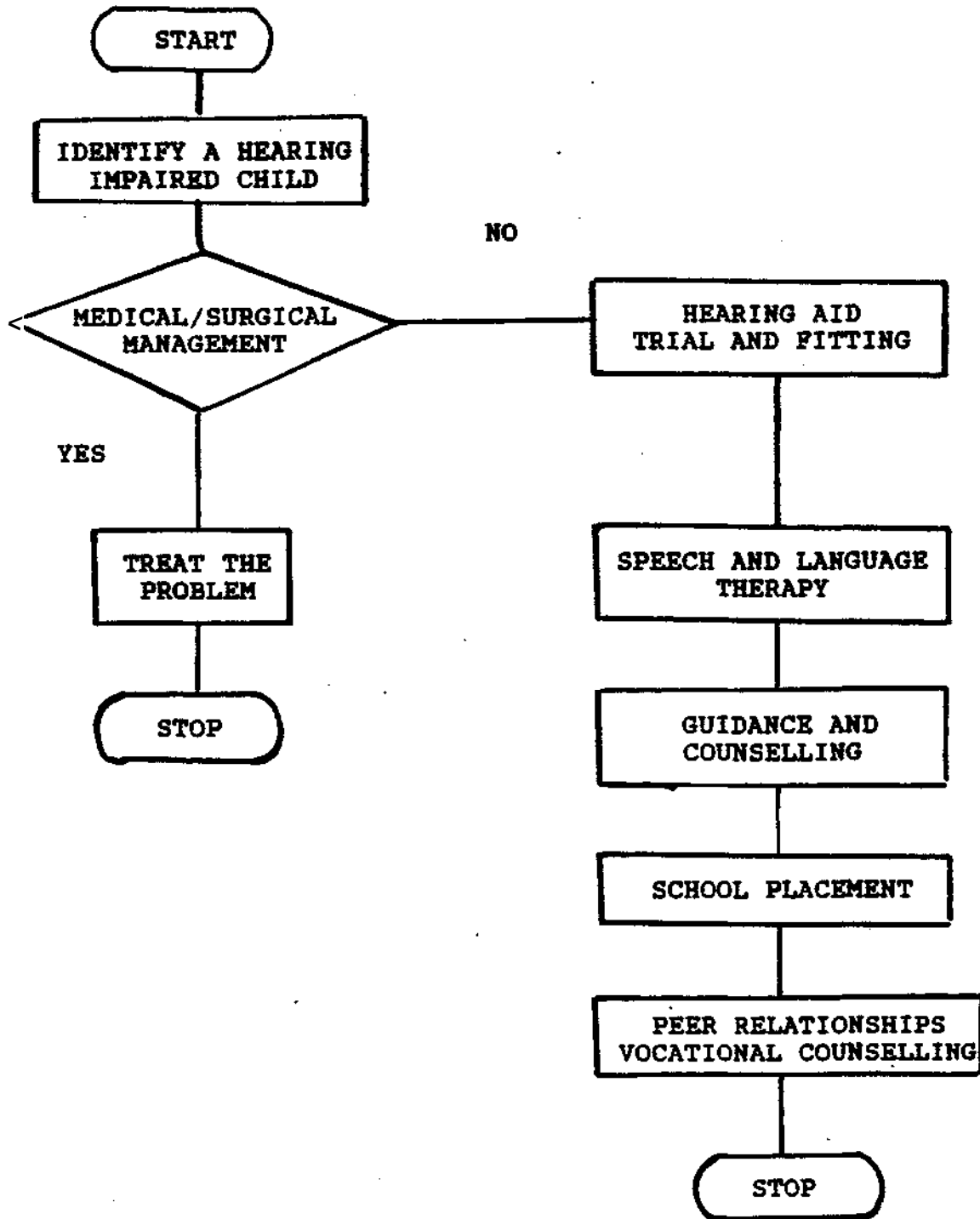
- > Frequent earaches
- > Ear discharge
- > Frequent colds and sore throats

SLIDE #17

MANAGEMENT OF THE HEARING IMPAIRED STUDENT

SLIDE #18

* MANAGEMENT OF A HEARING IMPAIRED INDIVIDUAL NEEDS TO BE WHOLISTIC



SLIDE #19

* THE "**HEARING AID**" is an electronic device that 'aids' hearing

* A Personal loudspeaker

* Continuous use of a hearing aid will not improve the child's hearing.

i.e. ,

It is not a cure to hearing impairment.

USE OF A HEARING AID:

* A hearing aid must be **used** throughout the day or night except while sleeping or bathing, or if the child is out in the rain.

SLIDE #20

ADVANTAGES OF BINAURAL AMPLIFICATION

* Better localization of the sound

* Better interpretation of speech

* Lesser effort for comfortable listening

* Better sound quality

SLIDE #21

THE HEARING AID - IS PRESCRIBED BY AN AUDIOLOGIST
THE HEARING AID - IS SELECTED BASED ON

- Degree of hearing loss
- Type of hearing loss
- Ability to discriminate speech
- Ability to tolerate loud sounds
- Age of the case
- Life style of the case
- Financial constraints

* "SCHEME OF ASSISTANCE TO THE DISABLED PERSONS FOR
PURCHASE/FITTING OF AIDS/APPLIANCES" (Ministry of Welfare,
Govt. of India.)

THE HEARING AID -

- * Is a delicate instrument that requires careful handling.
- * Should not be thrown on the ground
- * Should not be kept on extremely hot/cold surfaces or on any
electronic devices.
- * Should not be put in water.

SLIDE #22

OPTIMIZING AUDITORY RECEPTION

-> Modifications in the classroom acoustics in order to
accommodate a hearing impaired student.

SLIDE #23

- * The teacher's speech should be above the noise
- * The hearing impaired listeners perform poorer than normal listeners under similar noise levels.
- * The hearing impaired need the signal to be 10 to 30 dB higher than the noise.

FACTORS CONTRIBUTING TO ADVERSE
LISTENING/UNDERSTANDING OF SPEECH

- > Noise*
- > Reverberation*
- > Degree and type of hearing loss
- > Age of the Child
- > Linguistic Abilities of the Child

SLIDE #24

NOISE -> UNWANTED SOUND

SOURCES OF NOISE

- * External Noise
- * Internal Noise
- * Classroom Noise.

SLIDE #25**REDUCTION OF EXTERNAL NOISE**

- > Architectural Designs and Constructional Techniques
- > Site Selection
- > Quality of construction
- > Solid walls
- > Landscapping

REDUCTION OF INTERNAL NOISE:

- > Increase the distance between the teaching area and the noise source.
- > Interpose non-teaching areas between the source of noise and teaching area.
- > Avoid long, straight corridors
- > Select a class at the end of the corridor
- > Partitions between classes should be made of bricks extending upto the roof.

REDUCTION OF CLASSROOM NOISE:

- > Cover desk legs and chairs with rubber bushes
- > Use quieter air circulation systems
- > Control noise created by talking
- > Use stoppers on doors and windows

SLIDE #26

- * REVERBERATION -> Persistence of sound within an enclosed space.
- * Reverberation that persists for a longer duration in a room will interfere with the speech being heard clearly.

SLIDE #27

REDUCTION OF REVERBERATION

- * Cover hard reflective surfaces with sound absorbing materials.
- * Nieraoller (1980) -
 - a) Make the ceiling and front wall reflective
 - b) Cover the floor with carpets
 - c) Cover the rear wall with an acoustical absorbent (eg. cork)
 - d) Treat the side walls with patches of absorbent materials.
- * Other suggestions -
 - a) Strategic placement of cork bulletin boards.
 - b) Position mobile bulletin boards at angles to the walls
 - c) Attach empty egg cartons to the walls.
 - d) Opposite parallel surfaces of a room should be treated
 - e) Tilting blackboards at an angle of six-degree
 - f) Thick heavy curtains and bamboo screens.
- * Use of certain special devices such as FM hearing aids.

SLIDE #28

ENHANCING THE VISUAL RECEPTION

-> Modifications of the regular teaching strategies

SLIDE #29

- * Visual Reception -> Child's ability to make use of the visually available information in order to understand a message
- * These visually available information includes:
 - 1) The lip movements of the speaker
 - 2) The facial expressions
 - 3) The context emphasized through
 - a) Key words b) Pictures c) Models.
 - 4) The reaction of others.
- * Facilitating Better Visual Reception
 - Ensure the class is well lighted
 - Light should fall on the teacher's face
 - Preferential seating
 - The teacher's pronunciation
 - Gain the student's attention
 - Remain stationary while talking
 - Avoid a unusual hairstyles, excessive jewellery, beards.

SLIDE #30

THE SPEECH THERAPIST

DEALS WITH THE SPEECH AND
LANGUAGE PROBLEMS OF THE HEARING IMPAIRED CHILD

SLIDE #31*** HOW CAN THE SPEECH THERAPIST HELP TEACHERS ?**

- > Helps with information on how to develop good communicative skills in a hearing impaired child.
- > Deals with the child's communication problems, making it easier for you to handle this child in the regular classroom.
- > Helps you to constantly monitor and identify any student with speech and hearing problems.

*** HOW CAN THE TEACHERS HELP THE SPEECH THERAPIST ?**

- > The class room efforts should be complementary to the specialized efforts provided in therapy.
- > Teachers could help the students with mild speech problems after consultation with a speech therapist.
- > Any change in the child's status should be brought to the notice of the speech therapist.
- > Providing appropriate referrals.

SLIDE #32**THE PARENT - TEACHER INTERACTION**

- * Parents may need professional help to decide the best for the child.

- * Professionals need the parents help to best understand the child.

SLIDE #33

* HOW CAN TEACHERS HELP THE PARENTS ?

-> Organize meetings between the parents of the different handicapped children in the school

-> Keep the parents informed about the class schedule.

-> Keep the parents informed of the child's performance, both within and outside the class.

* GOOD RAPPORT MUST BE BUILT WITH THE PARENTS

* THERE MUST BE GOOD CO-ORDINATION BETWEEN WHAT IS EXPECTED OF THE CHILD AT SCHOOL AND AT HOME.

SLIDE #34

HELPING THE CHILD ADJUST IN A REGULAR CLASSROOM

- * SOCIAL SKILLS -> Learned behaviours which enables a child to respond appropriately to children and adults at home and away from home.

SLIDE #35

*** HELPING THE HEARING CHILD -**

- Help the child in learning the rules of a game
- Plan group activities and include the hearing impaired child in them.
- Reinforce any spontaneous interaction among the children.
- Encourage the children to share.

*** HELPING THE PEERS -**

- Inform the students about the hearing impaired child before his/her arrival.
- Explain the nature of a hearing impairments the hearing aid and other specific needs of the child.
- Let the children handle the hearing aid under your supervision.
- Clear any misconceptions regarding a hearing impairment.
- Instruct the children to use speech while communicating with the hearing impaired student.
- Encourage the children in their attempts to interact with the impaired child.

SLIDE #36

* SUGGESTIONS FOR HELPING THE IMPAIRED CHILD

- > Using a "listening helper" or a "buddy"
 - : This peer may sit next to the impaired child and assist him/her in various activities of school.
 - : This assistance must be provided only when needed.
- > Facilitating desirable speech habits.
 - : Encourage the student to participate in oral discussions.
 - : Talk to the student about his/her speech problems.
 - : Praise and encourage the student.
 - : Provide a relaxed language environment
 - : Encourage older children to use the dictionary to aid in pronunciation.
- > Discussing new materials or assignments ahead of class time.
- > Using Audiovisual Equipment.

SLIDE #37

SUPPORT SERVICES FOR THE HEARING IMPAIRED

- * The Centrally Sponsored Scheme of Integrated Education of the Disabled Children (IEDC) was proposed.
 - > To provide educational opportunities in regular schools
 - > To facilitate their retention in the school system.
 - > To place children from special schools into regular schools.

SLIDE #38

The scope of the Integrated Education of the Disabled Children Scheme:

- > Pre-school training for the disabled children
- > Counselling for the parents
- > Special training for the hearing handicapped children.
- > Training in home management of these children.

SLIDE #39

ACCORDING TO THE PERSONS WITH DISABILITY ACT (1995):
"Hearing Impairment" means a loss of 60 dB or more in the better ear in the conversational range of frequencies. This implies an impairment less than 50% in the better ear.

SLIDE #40

ACCORDING TO THE PERSONS WITH DISABILITY ACT (1995):

CHAPTER V: EDUCATION——>

- * Ensure free education
- * Promote integration
- * Impart non-formal education in rural areas.
- * Free book3 and equipment
- * Adequate number of teachers training institutions.
- * Grant of scholarship
- * Restructuring the curriculum for benefit of students with hearing impairment.

SLIDE #41

- * The Intregrated Eductaion of the Disabled Children Scheme is proposed to provide educational facilities to mildly and moderately hearing impaired and also to the severe and profound hearing impaired children following a period of pre-school training which is also undertaken by the scheme.

SLIDE #42

- * FACILITIES FOR THE DISABLED (IEDC Scheme)
 - a) Books and Stationery allowance of Rs. 400/- p.a.
 - b) Uniform allowance of Rs. 200/- p.a.
 - c) Transport allowance of Rs. 50/- p.a.
 - d) Actual cost of Rs. 2000/- per student for a period of 5 years.
- * The teachers are required to have the same qualification and pay scale as the teachers for the normal schools.
- * Following a period of prescribed training they are given a special pay of Rs.150/- per month in Urban Areas & Rs.200/- per month in Rural Areas.

SLIDE #43

- * A resource room is provided under the scheme for a cluster of schools implementing the scheme of integrated education.
- * The average cost towards the resource room would reach Rs.50,000/- by the end of the 8th plan.
- * Equipments in a Resource Room
 1. Sound discrimination Toys
 2. Group hearing aids
 3. Individual hearing aids
 5. Speech trainer with all accessories.
 6. Models of speech and hearing mechanisms.
 7. Slides, charts on defects/deformities of speech and hearing impairments.
 8. Charts/slides on speech articulation/felt cut outs-.
 9. Speech correction exercises available at speech and hearing centers.
 10. Mirror for speech correction.

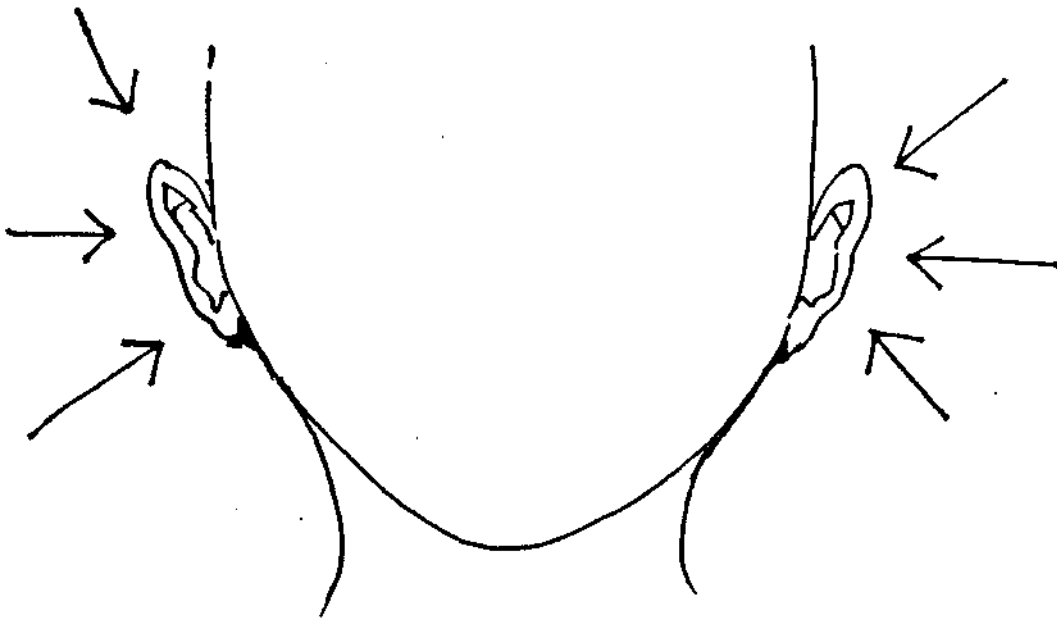
SLIDE #44

DO'S AND DONT'S IN MANAGING A HEARING IMPAIRED STUDENT

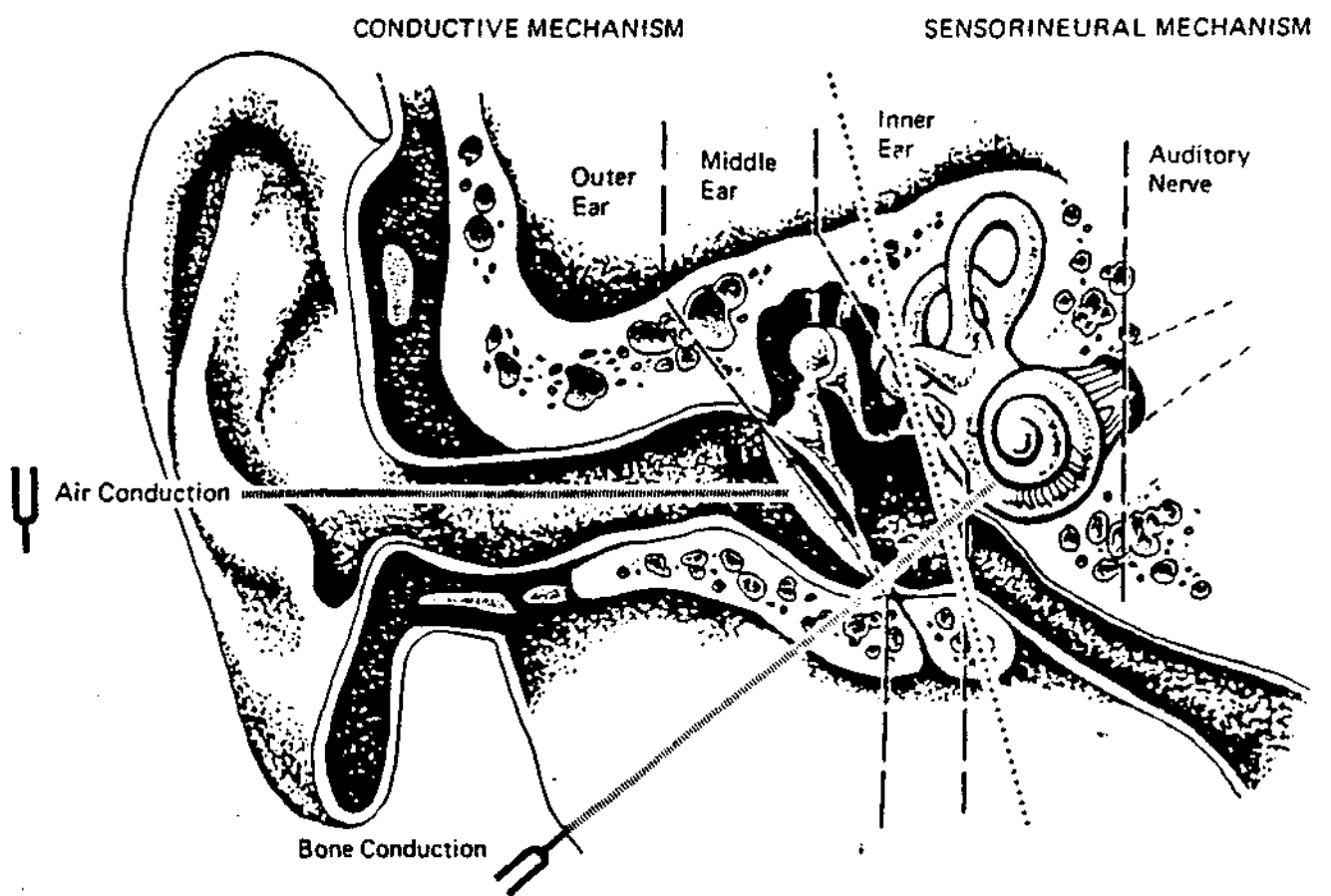
DO DONT

- | | |
|---|--|
| -> Make sure the child has his/her hearing aid on. | -> Overlook the need for the hearing aid |
| -> Check whether the aid is working. | -> Try to talk above the background noise. |
| -> Maintain a low level of background noise. | -> Talk while facing the black board. |
| -> Obtain the child's attention | -> Talk with your back to the window/any other light source |
| -> Make sure adequate light falls on your face. | -> Work independently of the parents/therapist's suggestions |
| -> Seat the child so that he can observe the teachers as well as his classmates | -> Exaggerate your lip movements or place under stress. |
| -> Help all the students accept and adjust to the hearing impaired child | |
| -> Maintain a good rapport with the parents and therapist | |
| -> Be patient and encouraging | |
| -> Speak slowly and clearly. | |

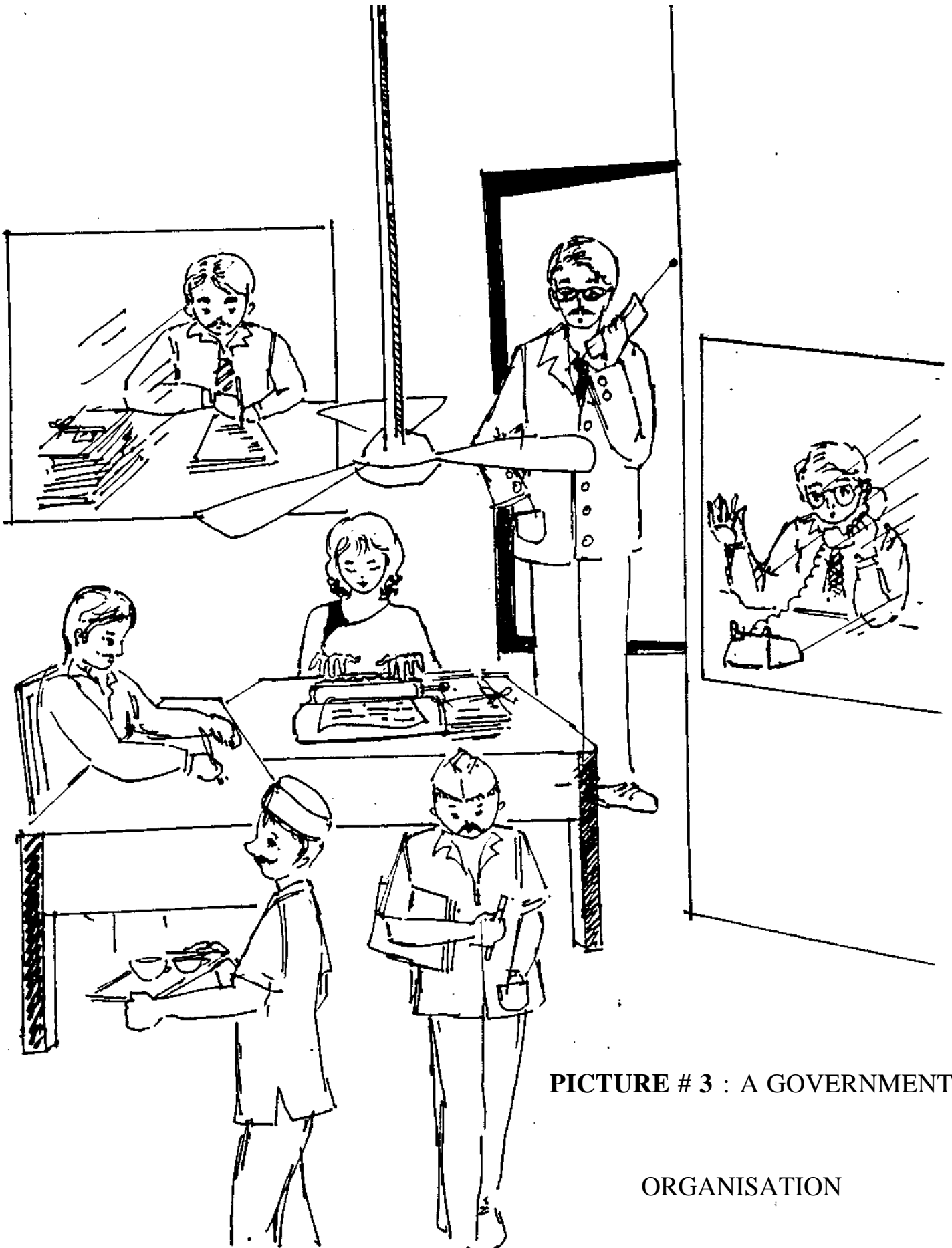
APPENDIX - II



PICTURE # 1: FOR THE LAYMAN, THE EAR IS THAT PART THAT PROJECTS FROM EITHER SIDE OF THE FACE.....



PICTURE # 2 : THE HEARING MECHANISM



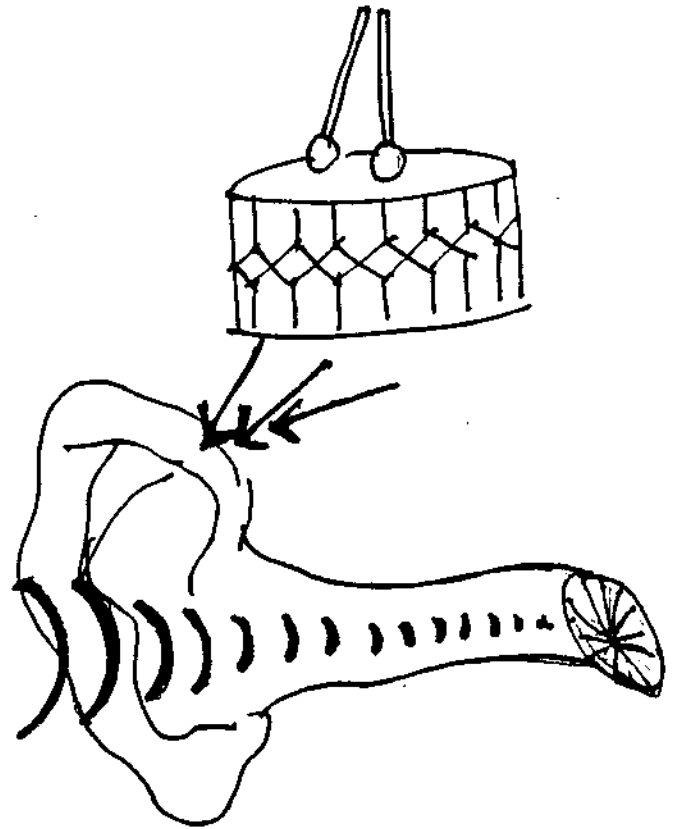
PICTURE # 3 : A GOVERNMENT

ORGANISATION

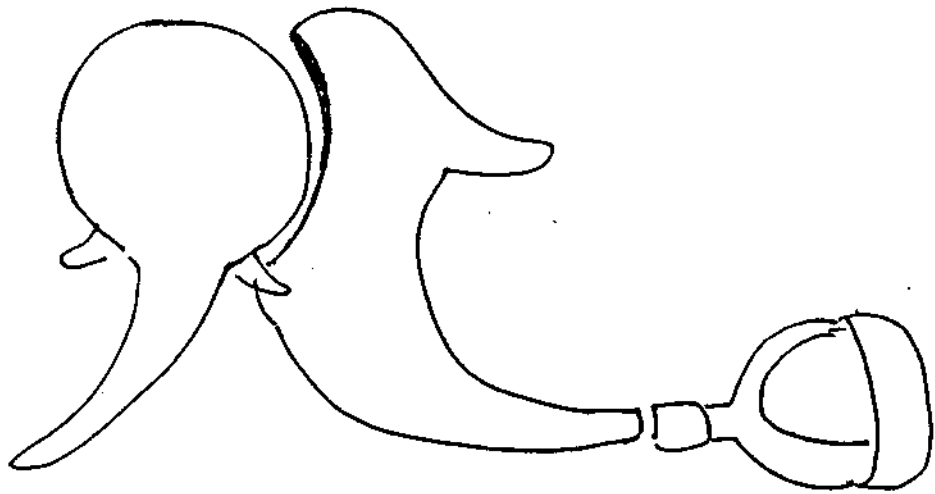
PICTURE # 4 :



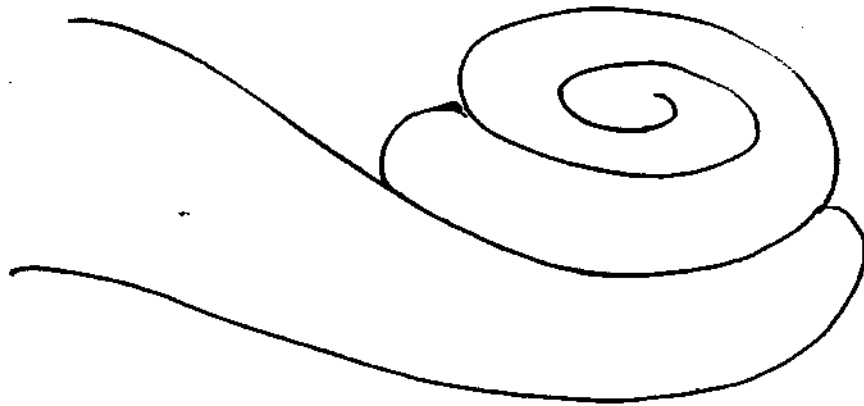
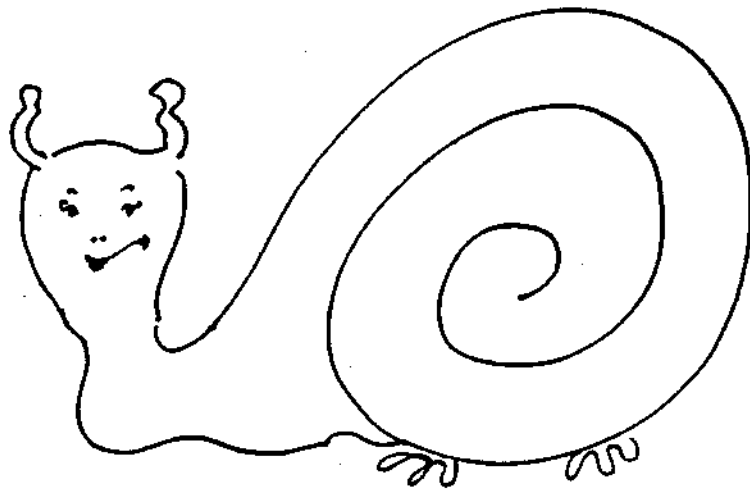
**FUNCTION OF A CLASS IV
WORKER**



**FUNCTIONS OF THE
EXTERNAL EAR**



PICTURE # 5 : THE MIDDLE EAR BONES

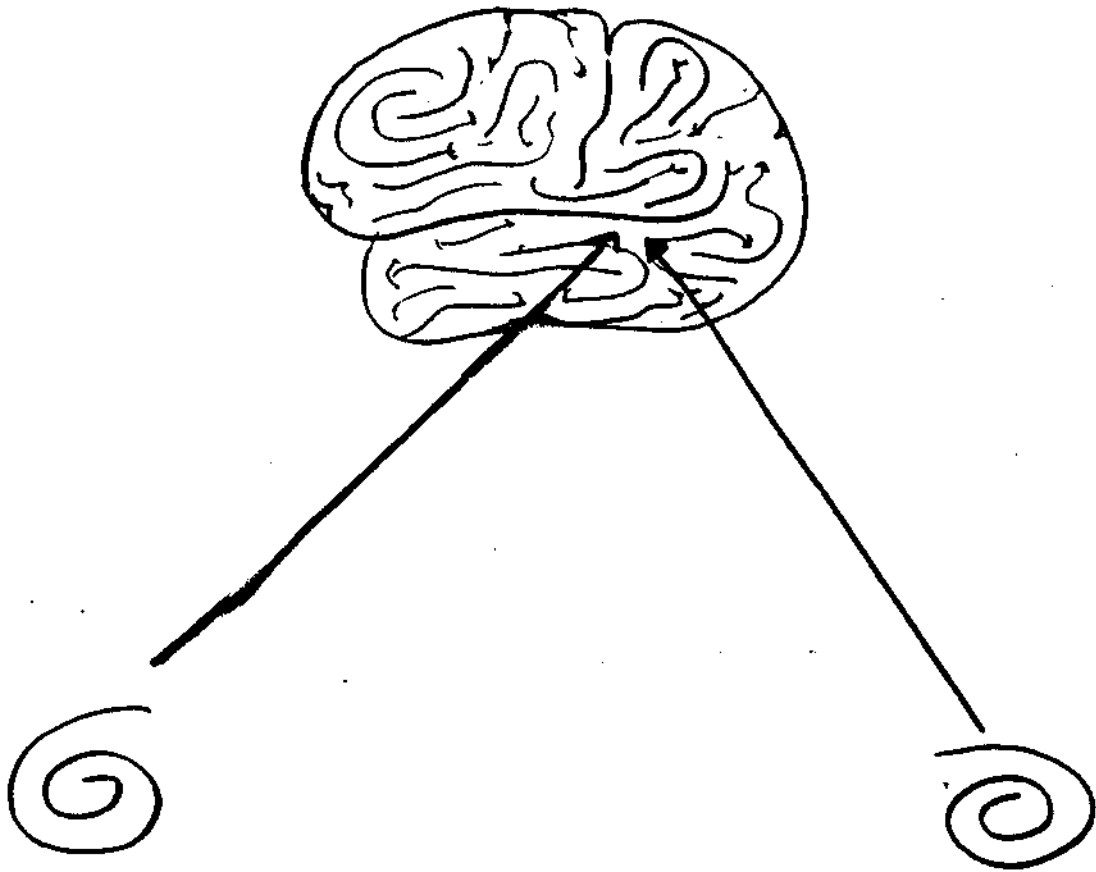


PICTURE # 6 : THE SNAIL-SHAPED COCHLEA

PICTURE#7:

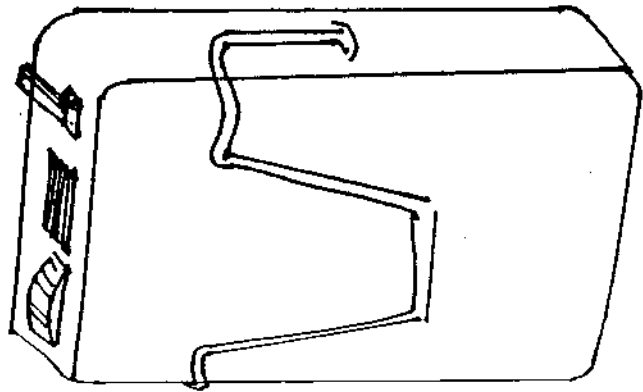


THE CLASS / OFFICER

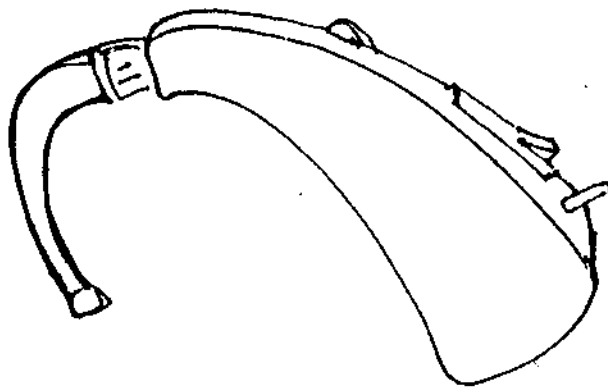


**THE AUDITORY CENTRE IN THE
BRAIN**

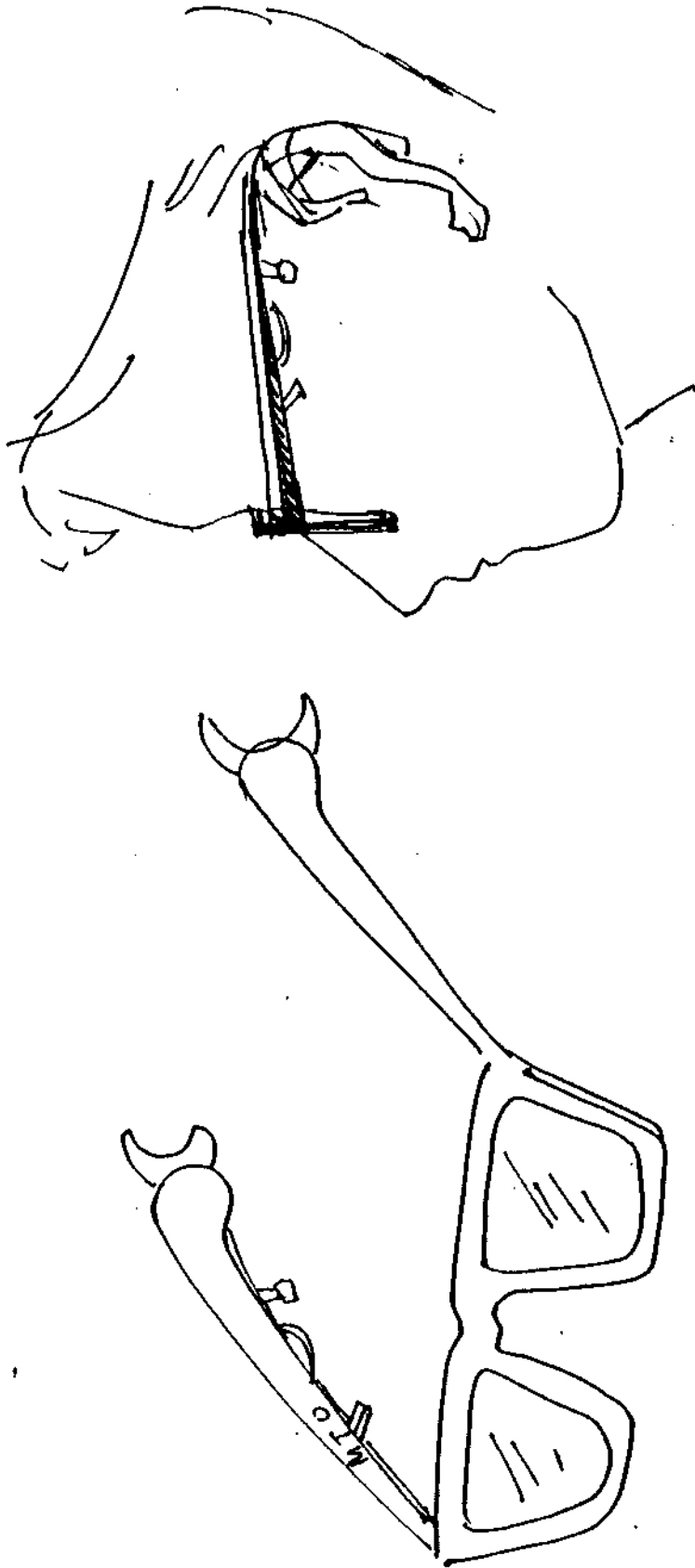
PICTURE # 8 : A BODY LEVEL HEARING AID



PICTURE # 9 : BEHIND-THE-EAR HEARING AID

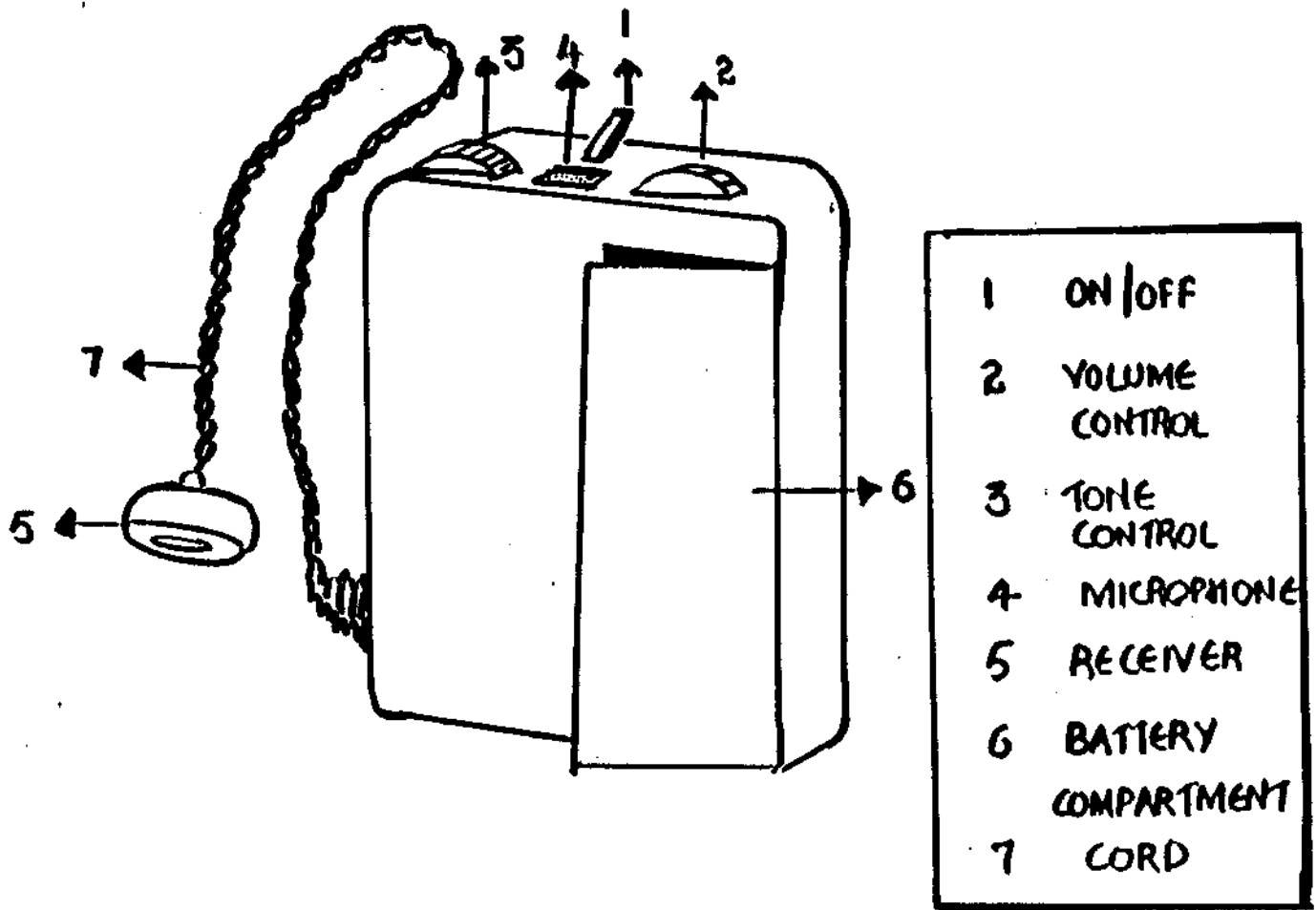


PICTURE # 10 : A SPECTACLE AID



PICTURE # 11 : IN-THE-EAR AIDS





PICTURE # 12 : PARTS OF A HEARING AID

PICTURE # 13 :



MONOAURAL



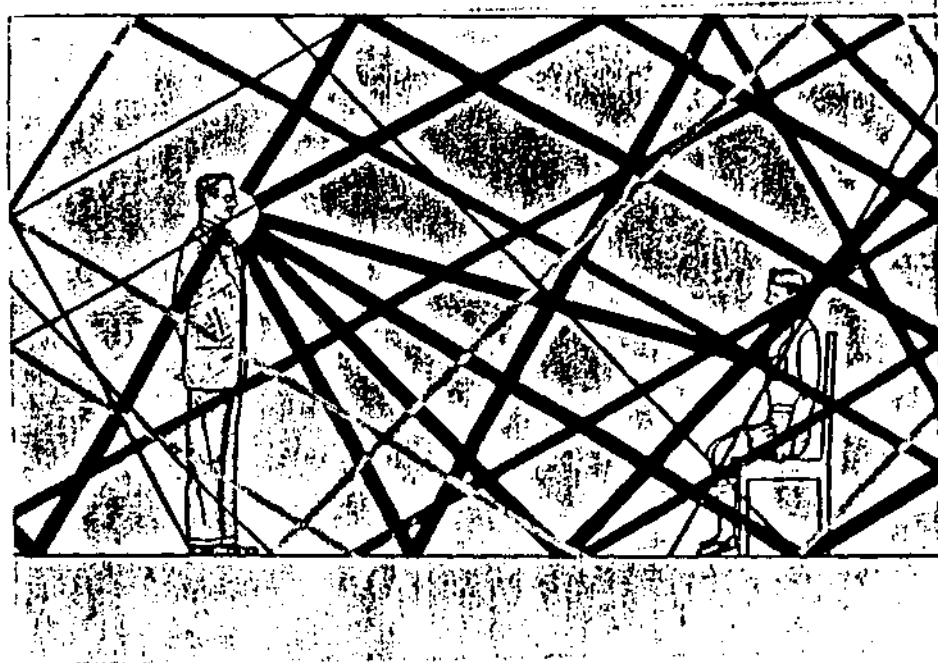
BINAURAL



PSEUDO BINAURAL.

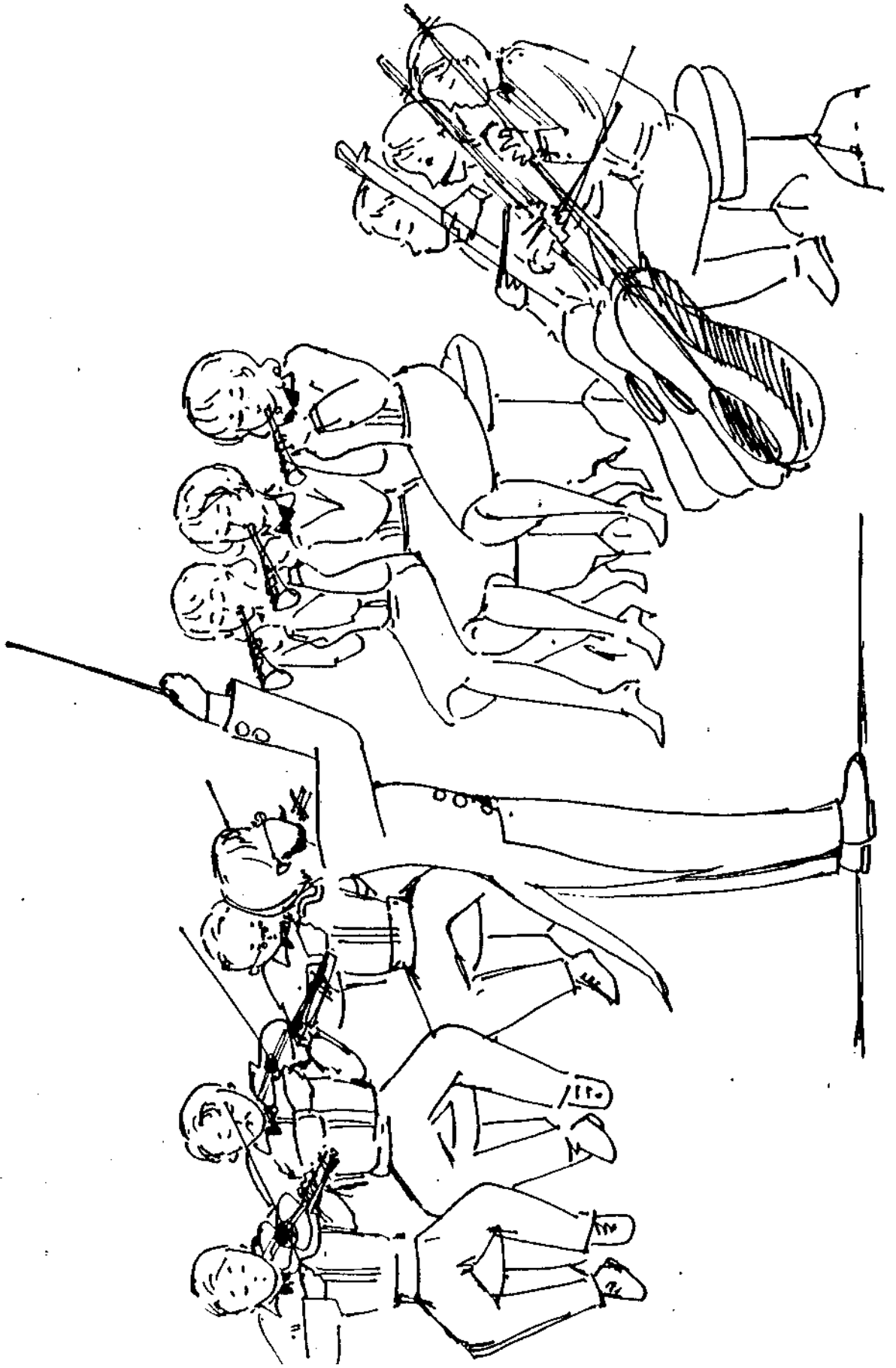


PICTURE # 14 : EAR MOULD



PICTURE # 15 : SOUND REFLECTION IN A ROOM

PICTURE # 16 : A MUSICAL CONCERT



PICTURE # 17: THE SPEECH THERAPIST AS A
CO-ORDINATOR

