FOUNDATION COURSE ON EDUCATION OF CHILDREN WITH DISABILITIES (FC - SEDE)

Development of Adaptive Skills, Assistive Devices and Special Therapies for Children with Disabilities

BLOCK

4

MADHYA PRADESH BHOJ (OPEN) UNIVERSITY
AND
REHABILITATION COUNCIL OF INDIA

MPBOU (FC-SEDE) PROGRAMME

FOUNDATION COURSE ON EDUCATION OF CHILDREN WITH DISABILITIES

BLOCK : 4

DEVELOPMENT OF ADAPTIVE SKILLS, ASSISTIVE DEVICES AND SPECIAL THERAPIES FOR CHILDREN WITH DISABILITIES

EVALUATE

A PROGRAMME OF COLLABORATION OF

MADHYA PRADESH BHOJ (OPEN) UNIVERSITY

AND

REHABILITATION COUNCIL OF INDIA

Reprint
March, 2008, Chaitra, 1930
January, 2007
Publication No.: MPBOU - (FC-SEDE) - 4
Third Edition
Reprint - 2009, 3000

MPBOU (FC – SEDE) Programme:

Course Code	:	FC-SEDE
Name of the Course	:	Foundation Course on Education of Children with Disabilities
Block – 4	:	**Development of Adaptive Skills, Assistive Devices and Special Therapies for Children with Disabilities**

Course Team:

Writers	Unit 1	:	Dr.Mrs. Prabha (R.A.) Ghate
	Unit 2	:	*Adapted from B.Ed. SE-DE Programme Practical Mannual in VI Unit-1 written by* Dr. M.N.G. Mani & M. Manivannan
	Unit 3	:	Dr. Vijaylaxmi Myredi (Adapted/Adopted form Towanas Independent Series 1990, NIMH, Hydrabad)
	Unit 4	:	Dr. H.C.Goel
Compilation and Editing		:	*Prof. G. Guru*
In-house Processing In-charge		:	Dr.S.K Prasad, Senior Programme Officer, RCI
			Miss Madhavi Sharma, Programme Officer, RCI
			Dr. Manju Rana, Asst. Director, DME., MPBOU
Technical Assistance		:	Shri Manoj Sharma, MPBOU
Cover design		:	*Shri Manoj Sharma, MPBOU*

Further information on the Madhya Pradesh Bhoj (Open) University Special Education courses may be obtained from the University's office of the Department of Multimedia Education at Campus ITI Gas Rahat Building, Govindpura, Bhopal-462023 Ph. : 0755-2681428 (DME), 2576555, 4272018 Fax : 0755-2550606
E-mail : dmempbou@yahoo.co.in
website : http://www.bhojvirtualuniversity.com

FOUNDATION COURSE ON EDUCATION OF CHILDREN WITH DISABILITIES

BLOCK

4

DEVELOPMENT OF ADAPTIVE SKILLS, ASSISTIVE DEVICES AND SPECIAL THERAPIES FOR CHILDREN WITH DISABILITIES

BLOCK – 4 : DEVELOPMENT OF ADAPTIVE SKILLS, ASSISTIVE DEVICES AND SPECIAL THERAPIES FOR CHILDREN WITH DISABILITIES

INTRODUCTION

The teacher in a normal school where children with disability are also enrolled is expected to acquire adequate skills for catering to the specific learning needs of disabled children. The teacher should develop competency to be able to develop in them adaptive skills and know about assistive devices which are to be used by the disabled children. Besides it is imperative that they should develop competency to teach daily living skills to the children with disability. They should be aware of special therapies available for some categories of disabled children.

This Block deals with development of adaptive skills, assistive devices and special therapies for children with hearing impairment, visual impairment, mental retardation and locomotor impairment and cerebral palsy.

OBJECTIVE

After going through this block the teacher trainee will be able to

- develop adapted skills in the children with disabilities:
- be familiar with the assistive devices for various categories of disabilities and their use:
- be acquainted with the need for using special appliances:
- impart daily living skills to the children with disabilities.

UNIT – 1 : DEVELOPMENT OF ADAPTIVE SKILLS, ASSISTIVE DEVICES AND SPECIAL THERAPIES FOR CHILDREN WITH HEARING IMPAIRMENT

STRUCTURE

1.1 INTRODUCTION

Most normally hearing children acquire spoken language skills during their first few years of life, effortlessly and without formal instructions. All they require is the chance to interact regularly with people who already use spoken language. But some children have hearing impairment – a difficulty to hear, detect and interpret sounds. The natural process of acquisition of language and speech is therefore impeded or prevented. Unless this problem is resolved, the long-term consequences are severe and wide-ranging.

In this unit we will look at the various techniques and technologies that can be used effectively for the training and development of HI children.

1.2 OBJECTIVES

After studying this Unit, you will be able to :

- understand the process of communication and the various communication skills;
- gain knowledge about how hearing ability is assessed;
- know about the amplification devices used with H.I. children;
- understand the process of development of language in children;
- list out numerical skills to be developed in H.I. children;
- know the main factors involved in use of auditory training and teaching of speech for the H.I.

1.3 INTRODUCTION TO VARIOUS COMMUNICATION SKILLS (NON VERBAL, VERBAL, MANUAL/BODY LANGUAGE)

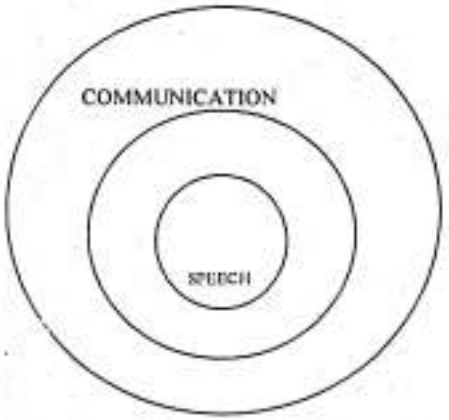
1.3.1 Communication

Communication means exchange or transfer of information, ideas, feelings, opinions etc. achieved in many different ways such as by mere touch, raising of eyebrows, signs, use of drawings, speech, written language, etc. In ordinary everyday dealings we use any one of these or a combination of these for exchanging messages, and we are not even aware of these as being different means of communicating. Therefore, for many people, the terms communication, language and speech are one and the same thing. However, it is important particularly for teachers and parents of the deaf children to bear in mind that although not all communication is linguistic, language, by far, is the most powerful medium of communication, and their efforts must be geared to helping their HI child to move on gradually from use of signs and gestures to words and then sentences.

Many of us have perhaps faced the difficulties in communication while visiting places where the language used is not known to us. We experience same difficulties in trying to communicate with a hearing handicapped person who does not speak or understand any verbal language. In such situations, we resort to the use of physical guidance, gestures, signing, drawings, miming, pointing, etc. to convey intended messages. Thus all of these are different ways of communication used by us.

The use of verbal language (oral/written communication) is one way of communicating which is specific to human beings.

*Then speech has always been the **primary** medium of use of language for communication. (Then came writing. But the oral language/ speech is the base of writing which is nothing but an effort to capture oral language that is sound and meanings on paper.) Thus graphically these can be viewed as :*



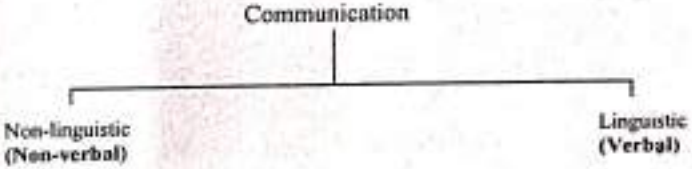
It can be seen from this figure that the word communication is most general of all these terms and language and speech come within it.

1.3.2 Animal Communication

Human beings as well as animals, communicate amongst themselves. e.g. ants, bees and primates (mainly apes and monkeys) establish contact in certain ways; dogs express their pleasure, anger, fear, through movements of the tail, barking, eye-gaze etc. But the level of this communication is primitive. Moreover it is habitual, specific to the situation, and is initiated by internal or external physical cues. Also, these are only a few limited sounds or other types of signals - these are **not symbolic**.

1.3.3 Human Communication

Communication in human beings can be classified mainly in two ways;



- **Non-verbal (Non-linguistic) Communication**

In communication, lot of information is conveyed by non-verbal means, such as gestures, which involve not only hand movements but also facial expressions and body movements and postures. A person's clenched fist, bared teeth, frowns, stamping feet in tantrums, voice intonation, all help in revealing the mood of the person. Mime, dance, drawing, painting, sculpture, are yet other ways of communicating ideas and information. However, exclusive use of such means not only will be difficult and cumbersome but also, not truly efficient and effective. As has been stated earlier, only the system of language can be truly effective for exchange of ideas and information of any kind. *However, an example of well-developed manual (body language) communication systems is the Sign Languages of the Deaf. The deaf amongst themselves can communicate almost any thing and everything to each other, but within their sphere of knowledge of course.*

- **Verbal (linguistic) Communication**

Learning and using language is solely a human activity. Listening-speaking and reading-writing are the two most common modalities used for language communication in the hearing society. It is this ability to communicate using language that differentiates humans from other known animals. Several attempts have been made in the past to teach the higher primates language (in the verbal mode), but all of these have met with failures. This inability in higher primates to learn language has been attributed to the structural differences between them and the humans in the peripheral sensory area (hearing) and the central nervous system (brain). In human beings, the sense of hearing and the brain facilitate the job of processing the incoming speech and help in acquisition of language.

In addition, man, with his more flexible vocal apparatus (organs of speech), has developed his cries (as against specific cries of animals) into a very efficient system of verbal communication i.e. language. By means of this, man can attain such complex social coordination as that of a moving army or can communicate to his fellows a theory of universe. In addition, the human language system has the potential to create new meanings such as **'space ship'**, or **'mouse'** and **'byte'** in a computer system. Research has shown that some animals (apes) after much training, have acquired some modified form of language; but these are only a very limited number of messages produced in non-vocal modality. Moreover, none of these has the complexity and versatility of even a 4-year-old human child's language. Also, human language allows us to talk about an infinite number of topics. As far as we know, animal communication refers only to the 'here and now', and neither bees nor primates, nor any other species other than man, can discuss abstract concepts like kinship, justice, democracy, peace, etc.

The modes of verbal communication generally used by hearing people are listening, speaking, reading and writing. But a system using manual code representing spoken languages can also be considered as a mode of linguistic communication, e.g. Signed English. This is widely used in Western countries to represent English language word by word through signs including word parts such as – ing, -ed, -ly, -s, -es, etc. Such a system is also used in India for Indian languages such as Signed Hindi, Signed Tamil, Signed Marathi, and Signed English also. This means that a person speaks and understands a spoken Hindi, reads Hindi script and /or signs and understands Signed Hindi - one language and three modality of use. The latter will also include the body language such as natural gestures, facial expressions, body postures, etc.

1.3.4 Sign Language

Sign language is a form of manual communication, which is used in every community of deaf persons. It is a visual-gestural language, which, for a long time, has been used by the deaf population for interpersonal communication. (Stokoe) 1960, 1980). It is a language like any other language, i.e. a language that has evolved naturally through the need of human to communicate with each other. It is as complicated and richly structured as any other human language, and not a shortened and ungrammatical form of spoken language. It has its own vocabulary, morphology and syntax. Sign languages will differ from country to country, and also within a country to some extent. Deaf persons learn it through associations with other deaf persons who use it.

1.3.5 Modes / Means of Communication Through Verbal language

There are two more dimensions to language usage that a teacher of the deaf must understand very clearly. These are :

- Modes of using language as distinct from the language code itself, e.g. the language code is stored in our brain, and this is used through modalities like oral- aural, reading-writing, signing words and letters,
- Modes of using language as distinct from the methods of education such as conversation method, play way method, demonstration method, lecture method, project method, etc.

Thus though these three factors – language code, modes of using the code, and methods of teaching - are inextricably linked, while teaching the deaf children, the teacher will have to bear these differences in mind and plan her teaching accordingly to suit the deaf children's varying needs. It is also important to note that any combination of all these three factors cab be used for teaching.

The main approaches to verbal communication can generally be divided into two parts. **Oralism** and **Manualism**. These are only the modalities through which communication using human language code is carried out. These are not language itself. Some are specially developed for facilitating and enhancing use of language with the deaf.

a) Oral Approaches/Oralism (listening + lip/speech reading)

The main focus of this type of approach is to teach the child to **use his residual hearing and to speech read.** The earlier the child is fitted with a good hearing aid the better. It is through these **two avenues** that the child learns language. **Speech reading** is trying to read / guess spoken messages from the speaker's lips and the general context. I t is challenging because only 30 - 40 % of the sounds of a language are visible on the lips and many of these are homophonous and look like something else. Take for example the words 'pat, bat and mat' or maybe, 'baby and pay me' or mummy and poppy'. In order to speech read well a person has to guess what is being said based on the situation and context. This in itself presupposes an **excellent grasp of the target language.** Many prelingually deaf who are diagnosed late simply do not have the required language skills. Most deaf individuals do some amount of speech reading but only some have a truly good knack for this skill. Since the goal in oral approach is for the H.I. individual to understand speech and communicate through speech, intensive speech therapy is an integral and necessary component in the training process. The immediate benefit of this method is the ability to communicate with the hearing world at least to some extent.

Use of **reading and writing and in some fingerspelling** is often coupled with oral approaches for children above 4-5 years of age.

- **Finger Spelling / Manual Alphabet**

It is using hand shapes to represent sounds (phonemes) or alphabet (letters) of speech. It can be said that instead of writing on paper one is writing in the air with hand shapes for letters. One should know the words and their spellings to be able to use finger spelling. Many deaf children and adults in India, even with very little knowledge of any particular language, have been using the two handed BSL (English) finger spelling for the names and other important words. The two handed American finger spelling is used in some schools mostly in big cities.

- **Indian Manual Alphabet (IMA)**

There are finger configurations used for some 50 speech sounds (vowels and consonants) and letters in Indo-Aryan and Dravidian languages. These hand shapes representing these sounds /letters (as they are almost entirely phonetic) are called finger spelling and the system is termed as Indian Manual Alphabet. Again it must be remembered that one must know the words and their spellings to use finger spelling. It is like writing in the air instead of the paper and can be used any time easily. It is easy to do finger-spelling than to reading and understanding it.

b) Acoupedic / Unisensory / Auditory-verbal Approach :

This comprises use of one sense / hearing alone with suitable hearing aids. It is recommended that the child's residual hearing should be exploited to the maximum from infancy and, speech reading as far as possible should be specifically discouraged.

c) Manual Approaches

At the other end of the spectrum is the manual approach, introduced by a French priest, Roche-Ambriose Sicecard in the early1800s. He advocated the use of sign language or manual communication to teach deaf children.

Due to inadequacies of a purely oral – aural approach or purely manual approach in the education of deaf children arose the philosophy of total communication.

d) Total Communication Approach

Total communication, a term coined by Roy Holcomb in 1967, is essence a philosophy / approach, not a method: one that accepts the child and his handicap and strives to meet the individual on his terms.

The total communication approach uses every form of input available to present **vocabulary, complete sentences and grammatical concepts** to deaf children. It involves oral skills, signing, finger spelling, cueing, auditory training, reading, writing and any other form of communication which stimulates a child to develop conceptual thinking, acquire language and encourages him to express thoughts in **correct language order.**

It is thus clear that total communication has all the elements of oralism. This sign per word system adequately supports the fragments of speech that are heard or seen on the lips by a deaf child.

Total communication has seen a tremendous growth in acceptance among educators and parents in UK, USA, China, Singapore, Australia, Scandinavia, Germany and France.

This philosophy represents a departure from the previous approach of trying to fit one method to all children. All aspects are used simultaneously depending on the need of the child. It is an attempt to provide the deaf child with a **clear, unambiguous, complete language input,** Lip reading

and **aided listening** are **supplemented** with signs, finger spelling, cues, mime where necessary thereby combining these elements to the extent possible to **provide a complete input.**

- **Indian Sign System (ISS-TC) - Total Communication**

It is an approach/philosophy that mainly involves simultaneous use of amplified speech and signs for each and every word in a sentence. It is not sign language but many signs are borrowed from the Indian Sign Language. E.g. it is like we speak Hindi, we write Hindi, and/or we sign Hindi – three modalities but use of one language only.

It is a system of signs/manual codes developed and used for vocabulary and grammatical inflections in Indian languages. It is mandatory in the use of this system to speak simultaneously with the use of signs. The written pattern also can be shown when and where necessary and possible.

Many of the signs (for noun, verbs and adjectives) in **ISS** are an adaptation from ISL excluding grammatical markers. (Markers are rarely if ever used in sign languages.)

In **ISS-TC**, while signs for the content words could remain the same across languages, there would be some differences in signing the function words and some grammatical elements of each language.

It is important to mention again at this juncture that **signed systems differ from sign language.**

Sign language is the natural language of the deaf community much like any other language with its own particular syntax.

Signed systems on the other hand, be they for English, Gujarati, Hindi, French, Chinese, Marathi or any other language, **are used to teach the language of the environment.**

The main idea is not to teach signs, but language through the use of signs, supported by speech reading and aided listening.

However, one should remember a few important points in this connection. Firstly, each child is a precious gift, an individual in his/her own right with his/her own strengths and weaknesses. Each child has a learning style unique to himself. Secondly, something that works wonderfully with one child may be a total failure with another. It is therefore important to **keep one's mind and options open.**

1.3.6 Ultimate Goal of an Education Program for the Hearing Impaired

The ultimate goal of an education program for the hearing impaired should be good communication, social skills and the development of an educational background that will allow the child to become independent and achieve his total potential.

It has already been discussed that the main problem faced by hearing impaired persons is effective communication. Communication through verbal language is still more difficult for them. All deaf children who are otherwise normal/able have the brain potential (innate /genetic ability) to learn language; but inability to hear prevents the verbal input to the brain, which is absolutely essential for the acquisition of language.

1.4 HEARING ASSESSMENT AND AMPLIFICATION DEVICES

1.4.1 How We Hear

Language acquisition requires access to the speech and language of self and others. Normal hearing provides access to the spoken language through the medium of sound. Let us now look at how we hear sound.

Our ears are fixed on either side of our head – the parts of the ear that we can see. This is the external or the outer ear. However, the most important parts of the ear are located inside the head. (Please see the figure given in Block 2 Unit 2. item-2.5.4.1.) The sound waves which are mechanical vibrations, travel from the outer ear through the ear canal beyond the eardrum to the middle ear; and from there these are conducted to the inner ear. At this stage, the mechanical vibrations are converted into electrical impulses in the part of the inner ear, known as cochlea. These impulses then travel through the auditory nerve to the auditory areas of the brain, which perceive them as sound.

Defect in or damage to any of these parts will result in hearing impairment of varying degrees and types, which will, **in turn, create innumerable problems for the child/person.**

1.4.2 Assessment of Hearing

The first step in the rehabilitation of a born or prelingually hearing impaired person is to get its hearing tested, to determine the degree and the type of hearing loss (Please refer to the previous Unit on hearing difficulty). In the case of the persons having sensory-neural loss, medical intervention is not possible. Therefore the next step should be to provide a suitable hearing aid as early in childhood, as possible. This also must be followed by counseling and guidance to the parents-caretakers for training of the child for getting good results.

We have already looked at the diagram of the ear, the main parts of the ear and types of deafness. To understand hearing tests and hearing aids, it is necessary to know something about sound and how it is measured.

1.4.2.1 What Is Sound ?

Sound is a form of energy that is produced due to the vibration of the surrounding air or other medium such as gaseous, liquid or solid. Sound is that which is or may be HEARD.

Physical Properties of Sound

The physical properties of sound important to us are its **Frequency** (oscillations per second of a particle of the medium which carries sound), and **Intensity** or amplitude of vibrations.

Psychological Attributes

Sounds fall in the range of very high to very low frequencies such as shrill or bass sound, and/or very high to very low intensity such as very loud to very soft sound. Thus, when we hear a sound, we perceive/feel it as having certain qualities or characteristics. These are called the **psychological attributes** of the physical properties of the sound. The important ones to us are **pitch** and **loudness**..

Pitch is the psychological attribute of frequency. The high or low frequency sounds are perceived as high or low-pitched sounds; e.g. voices of children or sound of a metallic bell or a whistle are high-pitched sounds. Sound of a drum or a buffalo, or a normal adult male voice are low-pitched sounds.

Loudness is the psychological attribute of intensity. Higher the intensity louder will be the sound; e.g. sound of airplanes crackers shouting are loud sounds, and whispers breeze are soft sounds.

1.4.2.2 Measurement of Sound - Decibel Scale & HERTZ Scale

In everyday life, we use different types of units to measure different things; e.g. we use kilometers and meters to measure distance, liter and milliliter to measure volume of liquids, kilograms and grams to

measure weight, and so on. Similarly, **decibel** is a unit used to measure intensity or loudness of sound, and **HERTZ** to measure frequency or pitch of sound.

Loudness or softness of sound is measured by using a decibel scale. Thus :

- A person who can hear sounds as soft as 0 to 20 dB loudness is said to have **normal hearing**;
- A person who cannot normally hear sound below the level of 41 dB is said to have **mild hearing loss;**
- A person who cannot normally hear sound below the level of 56 dB is said to have **moderate hearing loss**;
- A person who cannot normally hear sound below the level of 71 dB is said to have **moderately severe hearing loss;**
- A person who cannot normally hear sound below the level of 91 dB is said to have **profound hearing loss**. (Please see the figure given in Block 2 Unit 2. item-2.5.4.1)

A person may have profound sensory-neural hearing loss for high frequency sounds (4000 to about 6000 HERTZ) when he cannot hear these above 80/90 dB loudness level. In such cases it will be difficult for him/her to discriminate sounds, acquire language and speech and comprehend speech in normal circumstances even with the best of the hearing aids..

1.4.2.3 Loudness level of commonly known/heard sounds

- Conversational voice is at loudness level of about 60-db which covers the frequency range 250 to 4000 Hz;
- Barking of a dog is at loudness level of about 80-db generally of frequency level of 500 Hz;
- Sound of a truck roaring by our side is at loudness level of about 110-db and frequency level of about 150 Hz,
- Sound of an air plane at take off is at loudness level of about 120-db and frequency level of about 4 KHz i.e. 4000 Hz, or a band played near us will be at loudness level of about 110-db and frequency level about 1 KHz i.e. 1000 Hz.
- Loudness level above 130-db is painful for human ears;

1.4.3 Use of Amplification Devices

One of the ways to help a hearing impaired child is to provide him with a suitable hearing aid. However, it must be remembered that the children will not start hearing and understanding speech immediately. He will require lot of auditory training and exposure to spoken language from early childhood.

The function of a hearing aid is to amplify sounds to a degree and in a manner that will enable a hearing impaired person to utilize his or her residual hearing in an effective way. A hearing aid must be cosmetically acceptable to be effective.

Perhaps, the **first "amplification system"** to be used was the placing of a person's **hand behind the ear.** This provided approximately 15 dB amplification. This amplification appeared to be just sufficient for a person with mild hearing loss to get the desired clarity of speech.

Mechanical hearing aids such as **horns and speaking tubes**, which were held at the ear-canal entrance of the affected person, were in use as early as the seventeenth century.

Mechanical hearing-aids were followed by **Carbon hearing-aids**, which came in use at the beginning of the last century. These were based on the principles of the telephone.

1938, **Vacuum-Tube Hearing-Aids** appeared and offered much greater amplification possibilities, a wider frequency response and lower harmonic distortion.

Today's hearing aids are based on the invention of the **transistor by Bell Telephone Laboratories**. Transistors were introduced into hearing aids in the 1950's. This development made possible much smaller sized aids, requiring less battery consumption. It also permitted a flexibility of design, which had never been possible before.

1.4.3.1 Hearing Aid Electronics

Hearing aids are available in different shapes and sizes. However, the basic electronics of all the aids is the same. Hearing aids are made up of the following parts:

a) **Microphone :** This picks up the sound energy and converts it into electrical energy.

b) **Amplifier :** This increases the strength of the electrical signal. A battery provides power to the amplifier. The battery used in a hearing-aid will depend upon the type and size of the hearing-aid.

c) **Receiver (earphone) :** This converts the electrical energy back into sound energy.

d) **Telecoil :** Telecoil is an optional feature in a hearing aid and when it is activated it converts the magnetic vibrations (related to telephone signals) into electrical signals, which are then fed to the amplifier. This enables a person to hear on telephone.

1.4.3.2 How does a hearing aid function with these components?

The microphone or telecoil of the hearing aid picks up the sound signals, and converts them into electrical signals. This low-energy electrical signal is fed to the amplifier, which converts it into a powerful electrical signal. This reaches the receiver, where the electrical signal is converted back into sound, and this now enters the ear of the hearing aid user. This in a simple way, is how a hearing aid works.

1.4.3.3 Types of Hearing–Aid Fittings

The following are the various hearing-aid fittings available.

- **Monaural :**

If the hearing aid is used only in one ear, the fitting is termed as monaural fitting.

- **Binaural or real binaural :**

If two hearing aids are used, [i.e. a separate aid for each ear] the fitting is termed as binaural or real binaural. Such a fitting provides several advantages, such as improved localization of sounds sources, better discrimination of speech in the presence of noise, and improved quality of sound. Binaural aids are recommended frequently for young children with severe or profound impairments. However, a binaural fitting almost doubles the expenditure, and it may not be possible for some to afford these.

- **Pseudo-binaural fitting :**

This type of fitting is possible only with pocket-model aids. Using one pocket-model aid with a V or Y-shaped cord and two receivers, sounds can be received in both ears simultaneously. Such fitting is called pseudo-binaural fitting.

1.4.3.4 Types of Individual Hearing Aids

A wide range of different types of hearing aids is available for the users. They are designed in a variety of shapes Assistant Director (Academics) sizes.

- **Body worn hearing aid (pocket-model) :** Body worn instruments are either worn in a pocket or with special harness or clipped to the clothing. This aid consists of a box, a receiver and a cord. The electronic circuit and components are inside the box.

The parts of the typical pocket-model aid are shown below:

1. On & Off switch	2. Microphone	3. Volume control
4. Tone control	5. Battery compartment	6. Clip
7. Cord	8. Receiver	

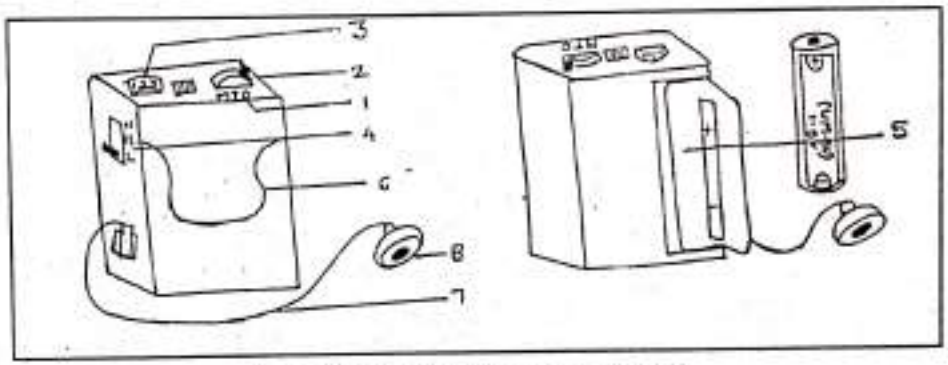


Diagram showing parts of a typical pocket model aid.

- **Advantages of body worn hearing aids**

These aids are robust, high power and relatively cheaper, as compared to other aids. In our country, this is definitely a positive point while selecting an aid. It also has an advantage for profoundly deaf children, as it is a mean for them to hear their own voices. The use of pencil size battery in this instrument makes it cost effective.

- **Disadvantages of body worn hearing aids**

The main disadvantage of this type of hearing aid is the size and weight of the hearing aid. As the hearing aid is seen easily, it has negative cosmetic value. The placement of the hearing aid on the person's chest makes it susceptible to 'body-baffle', which leads to relative emphasis on low frequency sounds. This occurs due to the absorption of high frequency energy by clothing and body tissues, while low frequency energy is reflected. The placement of the microphone on the chest also makes it more vulnerable to damage from spilt food, dribble and vomit, in case of children. A body worn hearing aid to not help is sound localization or identification of the source of sound.

1.4.3.5 Post-aural hearing aids

These are also referred to as "Behind-The-Ear" [BTE] aids. The body of this instrument is born behind the ear. A thin acoustic tube or a plastic hooks, which fits over the ear, connects the body of the aid to the receiver. The receiver is attached to the ear-mould or the ear-tip, which fits into the ear canal.

Children as well as adults can wear a BTE hearing instrument comfortably. Various sizes are available such as mini, midi and large, to fit all ears. Button-type batteries having size 13 or 675 are used for BTE hearing aids. Using BTE aids can compensate a wide variety of hearing losses. These even help those with severe and profound degree of hearing loss.

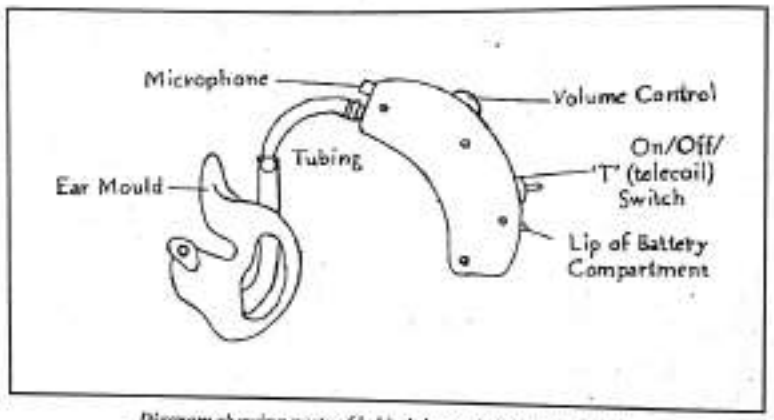


Diagram showing parts of behind the ear hearing instrument.

1.4.3.6 In-the-ear hearing instrument (ITE) :

These aids consist of a hard plastic shell, which contain all the electronic components. These aids sit in the ear canal and conch.

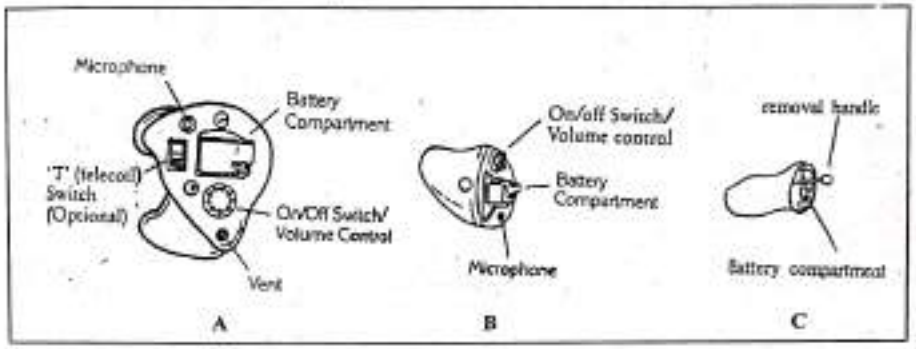


Diagram showing types and parts of in-the-ear hearing aids a) Concha b) ITC c) CIC.

1.4.3.7 Spectacle hearing aid :

Here, the hearing aid is incorporated into the frame of the spectacles. They may be provided monaurally or binaurally. In cases of young children, this type is not used due to the need to replace the frame as the child grows.

1.4.3.8 Programmable hearing aids :

Programmable hearing instruments are far more advanced then the conventional types. These type of hearing instrument incorporate integrated circuits with a memory chip that can store necessary information or data.

1.4.3.9 Digital hearing aids :

Digital hearing aids use state-of-the-art technology.

In essence, the digital hearing aid is a wearable computer. It eliminates the need for conventional components such as transistors, capacitors and resistors instead it has a microchip. This microchip identifies speech and noise. Every signal entering into the hearing and is analysed and enhanced only if it is speech and suppressed if it is noise. This technique solves the problem of background noise and feedback and presents very clear speech. It provides a solution to the various problems faced by hearing aid users. All the functions of this aid are programmed by software. Digital hearing aid can be fitted to all types of hearing losses.

1.4.3.10 Cochlear implant :

Cochlea is severely damaged in severe to profound hearing loss. Therefore, there is a breakdown in the conversion of mechanical sound energy into neural signals. Cochlear implant is a technology in which the device is inserted in the cochlea by surgery. This bypasses the defective sensory mechanism and directly simulates the auditory nerve and restores hearing in varying degrees depending upon the condition of the cochlea and the age of the patient and the training received after the implant. However, there are certain prerequisite tests that must be conducted to decide whether the child / person will

benefit from the implant or not. Also, the cost of the implant and the surgery is very high (about Rs. 8/10 lakhs.) and post-surgery care and training for language and speech development in case of prelingually deaf children is very important. Children and adults who have become deaf after learning language well are likely to benefit a lot from the cochlear implant.

1.4.3.11 Auditory / speech trainer

This can be looked upon as a large size hearing aid, which can be used for an individual student. It can be used for different types of hearing losses.

1.4.4 Ear Moulds

Ear mould is a very important part of the hearing aid. It is made of some special plastic. It is fitted in the outer ear cavity and conducts the amplified sound from the hearing aid receiver to the ear canal. It is important to keep the ear mould always clean from wax and other dirt.

1.4.5 Hearing Aid Care

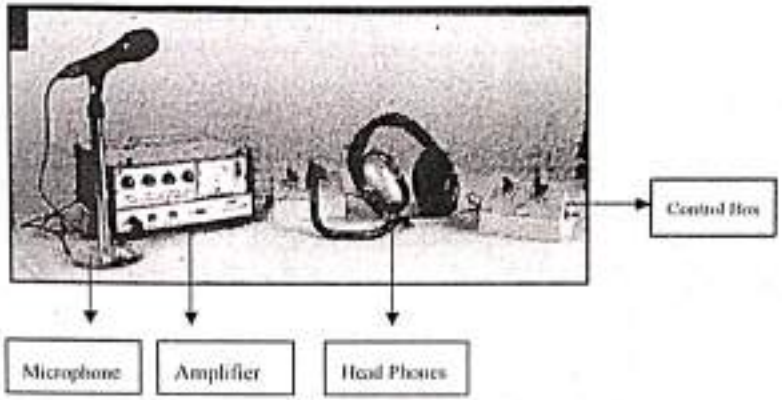
The parents and the children must be told how to take proper care of the hearing aid. As given below.

- Keep it in cool dry cool place.
- Do not expose it to high temperature,
- Handle it carefully at all times.
- Protect it from water and other liquids.
- Switch it off before removing it from the ear,
- Use appropriate batteries.
- Remove the batteries if the hearing aid is not going to be used for a long time.
- Make a proper pocket in the dress for safe keeping of the hearing aid.
- Always check that the battery and the cord are in good condition.
- Get the hearing aid serviced regularly.

1.4.6 Group Hearing Aids

These are used in classrooms in Special Schools for the Deaf children or in resource rooms in the integrated educational set-up. By use of these, the teacher's voice can be heard simultaneously by the whole class. The system consists of teacher's microphone, amplifier and a few sets of head phones for the students.

This system requires constant maintenance.



1.5 DEVELOPMENT OF LANGUAGE

1.5.1 What Is Language ?

Language has been defined by P. Harriet (1970) as the term denoting **'the psychological processes which regulate speech.'** Language is a mental phenomenon, a body of knowledge about the speech sounds (vowels, consonants), meanings and syntax, which resides in the mind (brain) of the users. This knowledge can be put to use of course, but the speech or writing that results is merely a representation of language. It is not the language itself. The term 'a language' is used to refer to all systems of speaking, writing or signing common to a group of people. Thus 'Gujarati' is thought of as ' a language spoken by Gujarati people' or 'American Sign Language' as ' a language used by the deaf community in USA.'

All children have a genetic push (innate ability) to acquire language (Chomsky, 1965). Human children acquire / learn language without any conscious effort. However, studies indicate that, though children have the brain potential for verbal learning, it will occur only if suitable conditions are present in the child's environment. As children grow they get exposure to a variety of experiences. The accompanying language interaction, related to these shared by the adults and the child, helps the growth of vocabulary and comprehension. It is important to note that comprehension always comes before meaningful expressions. In the initial stages, since the child does not yet speak, it is the mother or the caretaker herself who plays a double role by asking questions and providing answers or commenting on the events. This makes the child aware of the role of language in everyday dealings. Soon he realizes that his own vocalizations are an efficient tool to to draw adult's attention and to satisfy his needs. People around him always encourage his attempts at speech. Thus it can be said that children usually learn their first language through abundant experience of its reception and production, and in situations that are meaningful to them. By age 3, they acquire the knowledge and use of grammar of the language too quite effortlessly as they communicate.

1.5.2 Language is learned through communication. Children acquire language comfortably and easily in a social setting and in an unconscious manner. Nobody teaches them particularly.

According to this it is important to preschool teachers of deaf children to provide a variety of experiences that are accompanied by appropriate language input. Communication is the key to language learning and this should be related to activities, which are real and meaningful to children and provide opportunities for them to communicate with the teacher with whom they are familiar. Activities, which are planed specifically, for encouraging communication, will also help to provide new knowledge and language about the environment and how to talk about the new information.

There is one important point that has to be borne in mind by the teachers and parents of the deaf children, - AT all times, any activity, any experience of the child, any lesson, has to be considered as an opportunity to provide language, and the event has to be accompanied or immediately followed by language usage – oral, and/or written, and/or **signs for all words used <u>simultaneously</u> with speech**. The language should be appropriate to his level of language ability.

1.5.3 Development of language and reading and writing skills.

Knowledge of language is necessary for any person to learn to read. When we teach hearing impaired children to read they are only matching the sounds of speech that they hear and produce to match with the letters that they see on paper, this is called 'Phonic Approach'. In the 'Whole Word Approach', teacher presents whole word to the child on a flash card e.g. ('ball' or 'catch') which he learns as a pattern of the word and then it is broken into separate sounds, if necessary. It is profitable to use both the approaches side by side for teaching reading. When the hearing child tackles reading, he already has mastery in oral language and a wide range of concepts. This enables him to understand the ideas behind the words he reads. But a hearing impaired child approaches reading with very little vocabulary and concepts and hardly has any facility with oral languages. For this purpose the teacher must provide lots of direct experience and immediate spoken and written expression to match his understanding.

The exercises given below will help in the development of both language and reading skills.

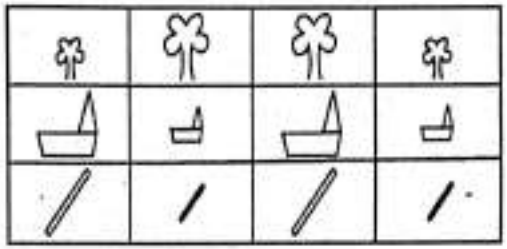
I. Nursery Stage (age range 3-6)

Hearing impaired children usually come to nursery grade without any understanding of language, and unless the comprehension and use of language are developed, reading can not be initiated effectively.

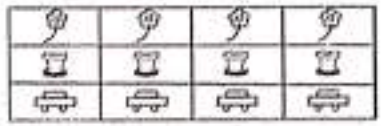
The activities that can be taken to develop these skills are :

1. Tick the same shapes on the given card.

2. Tick the same size objects on the given card.



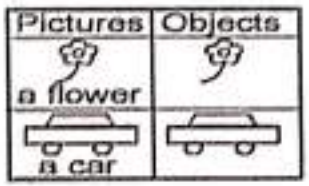
3. Tick the picture which has the same colour as the first one. (Four pictures in a Card)



4. Find the missing parts.

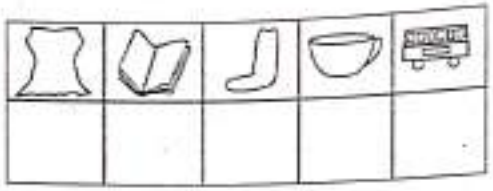
5. **Matching objects to objects** – Two similar objects such as balls, balloons, cars, kites could be matched. These objects should be taken from child's every day experiences and from conversations done in the class.

6. Matching objects to pictures.



7. Matching picture to picture.

(The teacher should make flash-cards of the same pictures for matching)



8. Classification

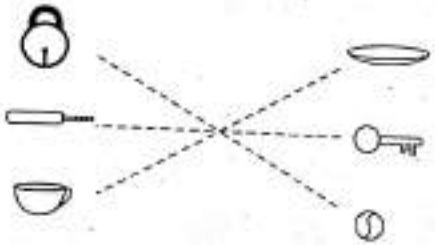
Children should classify and paste pictures in their scrapbooks of animals, bird, flowers, toys, etc., under proper headings.

top	kite	apple	balloon

dog	cat	horse	crow	cow

9. Matching parts to whole.

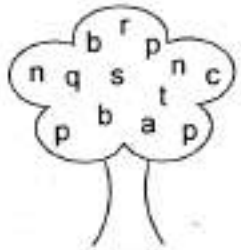
10. Matching things that go together.



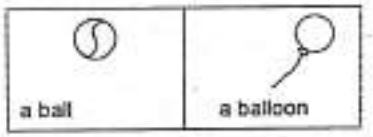
11. Matching similar picture as in the first column.

m	w	n	p	m
S	S	S	C	S

12. Circle the letter 'p'.



13. Match the picture + word to word.



A ball | A balloon

14. Match picture to word.

15. Match and tick the same word, which are the same as the first one.

bed	ded	✓bed	edd	ded	✓bed
no	on	mo	✓no	om	✓no

All the above exercises prepare the child to detect the difference between words that look essentially alike and then lead him step by step to reading of words and later on to sentences.

II. Pre-Primary & Primary Level

Reading at this stage will involve daily conversation, their graphic presentation and the text prepared by the teacher on this. For example:

- A child points to the new shoes of another child.
- The teacher says, "Yes, Ram is wearing new shoes".
- Another child tries to say, "Red"; and the teacher says,
  "Ram's shoes are Red".

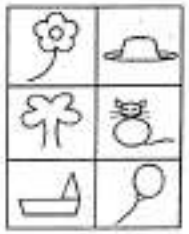
Then this is written as conversation on the board. Thus such graphic presentation of the conversation helps the child to look at the whole form of sentence and then in phrases and thought units (the underlined words). Such written conversation on different topics helps to introduce new words and sentence constructions to the children because these are things which they have experienced and understood. Repetition of such vocabulary and sentence construction helps the child to learn the use of language and understand it. These should be accompanied by use of questions related to the all every day class activities.

Language and Reading Exercises -

Reading exercises at this level could be graded in difficulty level through the exercises given below:

1. Simple word to picture matching.

Cross the right picture on the card



a cup | a ball

a hat | a boat

a balloon | a cat

a tree

a pencil

2. Colour the balls

blue green yellow brown red

3. Draw a circle round the right picture

a clock				
a book				
a fan				
a dog				

4. Match the words that go together.

cup	carrot
shoes	brush
comb	butter
bread	saucer
rabbit	socks

5. Cross the word that does not belong.

cat	dog	horse	lion	lamb
frock	shirt	pin	tie	pants
nose	ring	eyes	arms	fingers
apple	potato	banana	mango	grapes
mother	brother	driver	sister	father

6. Join the words that mean the same.

Speak	gift
Small	large
Present	sad
Big	tiny
Sorry	talk

7. Join the words that are opposite.

Heavy	new
old	cold
Big	start
Hot	small
Finish	light

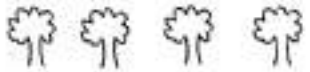
8. Use the correct word (verb)

(laughed, ate, drank, climbed, cried)

- Raju _____ breakfast before going to school.

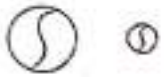
- Mohan _____ water as he was thirsty.
- A cat _____ a tree.
- A baby _____ because he wanted milk.
- Children _____ at the funny clowns in the circus.

9. Colour / draw.



(a) Colour two trees green.

(b) Colour one balloon red, two green and the fourth blue.



10 Read and act.

- Take off your right shoe.
- Hop round the room
- Walk like an old man
- Answer the telephone
- Bring two cups in a tray
- Put on your raincoat, open an umbrella and go out.

11. This exercise requires a child to understand the whole sentence / complete instruction.

12. Based on the story or event, put the sentences in correct order.

13. Read and say what will happen next.

Nitin came to the class at 9.30 a.m. in the morning. He put his bag near his desk and went to the blackboard to write the date. He saw a ten-rupee note on the teacher's table. He _____.

14. Read and say what is wrong in the story.

Uncle was going to Nagpur by plane at 11 p.m. Mother, father and Komal went to see him off. They got ready, had their dinner and got into the car. They could drive easily to the railway station, as there were not many cars on the road.

Functional Reading and consolidation of related language

Before the hearing impaired children make a transition from informal to formal reading of primary standard, they are bombarded with the written form during the functional reading programme. All the activities done in the class are accompanied by written language. E.g. stories, directed activities, field trips to stores, the zoo, the police and fire station, the bazaar, the railway and bus stations, the post office etc. Projects on cleanliness, family, food, games, weather, etc., all have written information along with them either on the blackboard or on the newsprint or in teacher made books. As the children have experiential background of these activities, little by little many of the words involved become sight word, which the children can identify and interpret. The teacher guides them to read the accompanying information by using contextual clues.

The following activities give the vocabulary and concepts, which would emerge out of field trips and projects, which the children would learn to understand and read.

Field trips / Projects

1. A field trip to general stores to buy a few articles can reinforce words such as to buy and tell, to pay, shopkeeper, money, shelves, pretty things, etc. The concepts involved would be little, a lot, many, few, some, not enough, cheap and expensive.
2. Post Office – Vocabulary involved would be – letter, post card, envelop, stamps, address, post box, air mail, etc. Concepts to be introduced would be how a letter travels, far, near, local, foreign, time, distance, etc.

As the children and the teacher actively participate in the oral exchange of language during field trips and projects, the written language is understood and enjoyed in conjunction with these activities. Thus reading becomes extensive and satisfying.

Conversation can follow a field trip or vice versa and the text could be visualized on the blackboard and then written in the children's notebook. Follow up of these activities could be done through

looking at and reading books about similar experiences and by experience records books wherein the experiences are written and pictures drawn.

Stories

Stories are a form of functional reading always enjoyed by the children. The words, expressions and structures of sentences, initially should be within their capacity to tackle and should be interesting and appropriate to the age and the particular stage of the children. A story as an approach to language teaching is being done regularly at the nursery and pre-primary stage using picture sequences and books.

Reading of stories by the children without pictorial clues must also be done in the class as a group activities :

- The teacher reads the story with appropriate rhythm and intonation and the children follow her.
- Once again the children read the story in their mind and try to answer the questions put by the teacher in their notebooks or on the blackboard. This enables the teacher to get some idea of their general grasp of the story.
- Then a guided reading session can follow with the teacher interpreting new concepts with examples and even with simple dramatization.

Directed activities

These are planned by the teacher according to the age and maturity level of the children. The language is selected according to the language level of the children. For example, the aim of the lesson will be to introduce and consolidate the names of the things found generally in the house. At the nursery and pre-primary level, the children know and are familiar with these things but they do not have the words / language for these. In the methodology, the teacher may ask the children to draw the outline of the house or provide such sketches of the house to each child. She will draw a big sketch of the house on the board and ask the children what they will have in the house. The children may come up with signs for things like chair, fan, light, bed, table, glass, tap, etc., which the teacher will draw on the board in the house. She may deliberately draw the light on the floor and some children may point out that the light should go on the wall. This provides an opportunity to teach the word/ phrase 'on the wall'. In addition to the spoken word, depending upon the level of the children, she may choose to present the written word also to the children. Thus, in this lesson, her lesson objectives are to give the spoken and written pattern of the things in the house.

The other directed activities that the teacher may perform could be on topics such as making a paper boat or a kite, drawing and coloring different objects, preparing lemon sharbat in the class, etc.

Recreational Reading

Children should be exposed to the rich array of attractive books, so that during their free time they may browse in the reading corner. Sometimes they may just look through the colorful pictures of a book or

may read it right with or without asking the teacher for help. But the teacher must keep readily available a variety of reading books. Where necessary she will have to spend time with child to explain the new words and concepts that the child may come across while reading. With these reading experiences the children will be ready for reading of primary standard.

Functional Reading

The children should be presented with different types of material for reading. They should be exposed to newspaper items, information given in the text books of different subjects of their syllabus, stories, workbooks and rapid readers.

The story units at this level become longer than at the previous stage so that the children learn to read in cumulative thought units. They should be able to follow a story sequentially as the events unfold. A battery of tests, checking their comprehension of the main idea, the sequence of events, vocabulary and inferences should accompany the stories.

These activities should be followed by different types of exercises such as suggest what should be good title for the story, answering the simple questions, arranging sentences in proper sequences, etc.

III. Reading at Secondary Level

Reading at Secondary level is not considered as a subject within the curriculum for the deaf children. But it is the primary tool whereby children can gather information. The deaf who have received some education are more dependants on getting information and communicating with others through the written word.

The text books used in regular schools are actually written for children who are already fluent with oral language. They know to use all type of sentence and questions and also know to follow and give instructions in verbal language. Many deaf children who are permitted to secondary level i.e. 7th or 8th class may not have full grasp of syntax and vocabulary of language, therefore, it may become necessary to re-write lessons for deaf children in very simple language. However, the knowledge content will have to be retained to the extent possible.

To learn to think with language takes gradual nurturing, beginning with simple operations upon concrete and familiar content and ending with formal (thinking in mind) operations on abstract content. It is important to keep in mind that academic growth takes place through language, but the language growth is through content, hence the importance of textbooks in education.

1.6 DEVELOPMENT OF NUMERICAL SKILLS AND ARITHMETIC

Given below is a list of topics that can be used to give language and interesting information to children. Each topic can be presented in a manner to suit the language and maturity level of the child.

Units In Content Areas

SCIENCE

- Ourselves – our body The self
  - Parts of our body
  - Our sense organs
  - Care of our body
  - Growth of our body
- Foods we eat
- Clothes we wear
- Animals – wild
  - farm and pet
  - water
  - insects
  - birds
- Plants
- Weather and Seasons
- Water
- Air
- The earth
- The sky and the Universe
- Machines, Force and Matter
- Transport
- Living and Non-living Things

SOCIAL STUDIES

- The family and social relationships
- Our environment
  - home
  - school
  - neighbourhood, i.e. park, market, hospital, station, etc.
- Our emotions
- Our country
- Our world
- Recreation or games and entertainment
- Our helpers
- Our festivals

Each of this topic can provide opportunities through play to teach number concepts and values of numbers to children, for example : counting fingers on the child's and your own hands and toes; counting beads, balls, etc., asking questions such as – How many grapes chocolates ? How many legs does the doggy have ? How many pockets to your shirt ? How many flowers ? How many w heels for the car? etc

The maths concepts given below should be taught progressively to the children at the primary level. Once these are well understood and consolidated, the same curriculum for math as is followed at the regular schools can be used with the HI children. How ever it is very important to give ample practice with simple word problems to these children.

Math Concepts :

- Shape and Form
- Number
- Size, length, area
- Weight, volume
- Time
- Classification and Categorization of Sets

- Comparatives
- Spatial Relations
- Beginnings of Addition and Subtraction

1.7 AUDITORY TRAINING & SPEECH THERAPY

Most hearing impaired children have some residual hearing ability which can be optimally utilised to develop their language and speech skillswith the help of suitable hearing aids and developing listening skills.

The auditory and speech skills to be developed are described below :

1.7.1 Auditory Skills

- Auditory Reception – ability to receive sound input
- Auditory Localization – ability to recognize direction where sound originates
- Auditory Discrimination – ability to note similarities and differences between sounds, words, however subtle, using the auditory mode alone
- Auditory Analysing – ability to perceive the order in which sound comes
- Auditory – Vocal Association – ability to relate concepts presented orally and react to them vocally
- Auditory Sequential Memory and Recall – ability to recall and retain auditory stimuli presented, in correct sequential order
- Auditory Synthesizing – ability to synthesize separate parts of a word and pronounce it using only auditory clues
- Auditory Closure – ability to identify objects from an incomplete presentation
- Auditory Rhythm and Sequencing – ability to perceive and imitate auditory rhythms and sequences
- Auditory – Visual Integration – ability to integrate auditory and visual stimuli

1.7.1.1 Listening Skills To Be Developed : Sound Awareness

In order to become aware of sound, the following listening skills need to be developed

- Detection of arrange of meaningful sounds across the speech spectrumin stimulus-response activities.

A whole range of vehicles, animals and birds provide endless joyful listening opportunities for the hearing-impaired toddlers. Educators and parents need to remember to speak in a melodious voice so that the / bh^b bh^b bh^b bh^b / of the boat is as interesting to listen to as the /brr..../ of a scooter. Speech must act as the signal for an event. Hence it is crucial to use speech stimulus as a cue to the actual object. For example: a child listening to the /trbruk trbruk/of a horse must indicate; (however subtly)

that he has heard the auditory cue, and will later try to imitate the sound presented, before the related toy is brought into his field of vision and he is allowed to play with it.

Games such as these pre-suppose that the child has learnt turn-taking for which a third person (parents are the ideal partners) is needed to be used as a model; for the one making the sound cannot be the one to respond.

- Detection of a range of sounds, across the speech spectrum at an increased distance

Once the hearing impaired baby has begun to respond to a set of speech stimuli, the same should be given at an increased distance from the child. This distance should be monitored and evaluated every week. e.g. when playing with a cow, a lion and a monkey in which an eighteen month old baby moves the related animal in response to its appropriate call from a distance of 1 foot, the distance may be increased to 1 ½ feet and the same game repeated.

- Production of sound in stimulus response activities

The little, new listener must be encouraged to play inter active games in which speech triggers fun. E.g. the aeroplane lights up only when/after the child says a-a-a or the swinging monkey jumps only when the hearing impaired child says "up, down". The child needs to be encouraged to vocalize before the toy moves/lights up or before he has his turn.

Parents need to be convinced of the need to adopt **listening as an on-going mode of inter-acting** with their hearing-impaired babies throughout all their waking hours and to consistently and immediately reward his vocalizations. e.g. Every time parents need to call attention to their baby they must call out to him by name, watching his reaction until they come into his field of vision. They need to make a note of the distance at which their baby hears his name being called, each week.

Through the day, parents need to be given plenty of ideas on how to use listening when playing with, feeding and bathing their babies and on how to sing their babies to sleep.

They must be trained to speak in a well-inflected voice so as to make listening interesting for their baby. Infants raised in this stimulating auditory environment will eventually became good listeners and grow up to develop early, clear speech.

1.7.1.2 Listening Skills To Be Developed : Sentence Level

As the young hearing-impaired child develops better and better sound awareness, he should be introduced to sequentially graded discrimination at the sentence level. Some of these listening tasks as recommended by Dr. Sylvia Romanik are discussed below:

- **Identifying familiar stereotypic phrases or sentences :**

  The young hearing impaired listener will at first use context to help himself understand simple instructions such as "Wave goodbye" or "wash your hands" but will soon understand, repeat and carry out instructions even if they are out of context.

- **Recalling two, three, four or more critical elements in a message:**

  In order to encourage the young listener it is advisable to begin with closed sets with known, limited options and build to open sets.

For example; "Put your blue pants in the bucket." Later these commands may become more complex.

For example: When cooking, the mother could instruct her child accordingly " Take the tomatoes out of the fridge and wash them"

- **Answering questions about a picture, a book, a set of pictures or objects:**

  The choice of picture can be coordinated with the topic of heart-to-heart conversation. Questions asked about the picture in the book may be simple to begin with, with large clear illustrations (e.g. Show me a ---- for a two year old or "show me the big small ---- "or "show me a red flower" for a two and a half years old. Eventually these questions develop into open-ended questions for example "what is this picture about" As the young listener's listening and comprehension skills improve, the question command must become more and more complex. For example " show me ---- and---- " and then later "Give me the ------ but not the------ "

1.7.1.5 Listening Skills To Be Developed : Discourse Level

Dr. Sylvia Romanik recommends that discourse level listening skills be dovetailed appropriately with the sentence level skills, rather than be developed in isolation. Some of these skills as outlined by Dr. Romanik are given below.

Identifying nursery rhymes

The beginning listener should be given a closed set option eventually moving on to complete the rhyme, having heard the first line. Eventually, he should be able to correct "mistakes" made (deliberately) by the educator. Some early action rhymes that provoke an enthusiastic response are given below.

a) Round and round the garden like a teddy bear

   One step, two steps, tickly over there.

b) Open, shut them, open shut them

   Give a little clap

   Open, shut them, open shut them

   Lap, them in your lap

c) Roly-poly roly-poly

   Up, up, up

   Roly-poly roly-poly

   Down, down, down

   (Repeat with in, in, in / out, out, out)

- **Story re-telling:**

  Early stories are best rooted in each individual child's first- hand experience. Short stories based on a topic of heart-to- heart conversation (e.g. Papa repairs Fatima's cycle as given below) or events of the child's every day routine (e.g. Waking up and getting ready) provide the core for several interesting stories.

Some examples are given below, related illustrations being given in the appendix.

1. Uh, oh ! What a big snake.

   Mummy, I'm scared.

   Come on (name of child), let's run. (Picture in the Appendix at end of the unit.)

2. Oh my God ! Fatima's cycle broke.

   Papa, please repair my cycle.

   Thank you papa.

3. Pss ..... Pss !

   Chop, chop. The lady cut my hair. (Picture in the Appendix at end of the unit.)

   Wow ! That looks so cute! "

(The teacher may draw illustrations to accompany her stories. As far as possible, she should show the child or person wearing a hearing aid with a wire if necessary.)

The listening programme grows with the child so that he eventually extends his vocabulary and linguistic fluency, auditorily, rather than having to be specifically taught each word or concept. Cognition must be incorporated into all listening games and activities (For example: Games such as Peek a boo and simple hide -n-seek help develop "object-permanence") so that hearing impaired children grow into alert, thinking adults.

1.7.2 Development of Speech and Speech Reading

Speech is the primary and most common mode/modality/channel/code of language expression. Any manifestation of language by means of speech is a result of a highly complicated series of events. In the first place, the formulation of the thought/concept will take place at the linguistic level i.e. in the brain; this first stage may therefore be said to be psychological. The nervous system then transmits this message to the speech center, again in the brain. The massage then, from there, goes to the so-called organs of speech, which produce a particular appropriate pattern of sound. This second important stage may thus be said articulatory or physiological – which is the motor aspect of speech. Then it is transmitted to the listener who receives it and decodes it; thus communication has taken place.

The growth and development of speech requires –

- Firstly that there should be full functional activity of the peripheral and central processes by which the child hears and imitates sounds accurately, and
- Secondly that he should gradually learn to associate these sounds with objects and with meaning. This requires that his general intelligence and mental development should be such that he is able to recognize, associate, recollect and reproduce the sounds of speech with or without meaning.

1.8 UNIT SUMMARY

To summarize, it can be said that no single method, no one mode of communication and, no one strategy or use of amplifications devices solely can bring satisfactory development of language and speech in a deaf child. It is the optimum combination of these as per the needs of the child,

in addition to the extra amount of time and intelligent efforts that one puts in to achieve complete and meaningful language input and abundance of linguistic interaction with the child. that would make a difference. It will be very unfair, to the child and the philosophies/approaches and the methods, to try to fit all hearing impaired children into one slot.

The main concern of the teacher of the Deaf is to help a deaf child to acquire the language of the society so that he can get educated and function in the society as independently as possible.

1.9 CHECK YOUR PROGRESS

- State the difference between verbal and non-verbal communication.
- What is Total Communication ?
- Define sound and describe how it is heard.
- How should one take proper care of a hearing aid ?
- Compare the development of language between hearing and hearing impaired children.
- State the importance of auditory training.

1.10 ASSIGNMENT

1. What kind of assistive devices you may need in your school to enable you to meet the specific needs of the children with Hearing Impairment while teaching in your school? Prepare an analytical and convincing report.

1.11 POINTS FOR DISCUSSION AND CLARIFICATION

After going through the Unit you may like to have further discussion on some points and clarification on other. Note down those points below:

1.11.1 Points for Discussion

1.11.2 Points for Clarification

1.12 REFERENCES/FURTHER READINGS

1. Lyons, J. (1970). 'New Horizons in Linguistics'. Penguin.
2. Elgin, S.H. (1979). 'What is Linguistics ?' (2nd Edition). Prentice Hall
3. Ronald Wardhaugh, Introduction to Linguistics, (New York.McGraw Hill Book Co.)
4. David Ingram, First Language Acquisition, (Cambridge: Cambridge Uni. Press, 1969)
5. Frank ,Smith, Reading without Nonsense, (New York : Teachers' College Press, 1985)
6. Akmajian,A., Demers,R.A. & Harnish,R.M. (1984) Linguistics: An
7. Introduction to Language and Communication. (2nd edition) M.I.T. Press.
8. Fromkin,V. and Rodman,R. (1993) An Introduction to Language.(5th edition) Harcourt Brace Jovanovich College Publishers.
9. Yule. G. (1985) The Study of Language. Cambridge Uni. Press
10. SESH-01, 02 & 03 series of publication of B.Ed. SE-DE programme, MPBOU, Bhopal

UNIT – 2 : DEVELOPMENT OF ADAPTIVE SKILLS, ASSISTIVE DEVICES FOR CHILDREN WITH VISUAL IMPAIRMENT

STRUCTURE

1.1 INTRODUCTION

The teacher of visually impaired children is expected to acquire adequate skills for teaching visually impaired children. The skills must be in the areas of plus curricular activities such as braille reading and writing, use of special aids and appliances, orientation and mobility, daily living skills etc. Considerable amount of time should be provided to the teachers in these areas. During the training they are expected to work with visually impaired children and also have simulated experiences such as blindfold experiences for orientation and mobility, using abacus etc. This unit provides guidelines regarding the teaching of plus curricular skills to the visually impaired children.

1.2 OBJECTIVES

After going through this Unit the trainee will be able to:

- demonstrate the methods of teaching braille reading;
- describe the methods of teaching braille writing to visually impaired children,
- narrate the need for using special appliances;
- list orientation and mobility skills to be taught to visually impaired children,
- enumerate the daily living skills to be taught to visually impaired children.

2.3 BRAILLE READING

For a lay person, braille reading is a miracle but professionals agree that it is possible through systematic learning. Research indicates that fingertips possess special nerve endings which enable touch-reading. The area covered by light pressure of the fingertips on the paper gives the necessary information to the child to discriminate between the different configurations of braille letters. The area of braille cell is 6 mm x 3.6 m.m. Braille learning requires some prerequisite skills called 'braille mechanism'. By braille mechanism we mean the efficient movement of the hands and fingers over the braille line. Children who do not develop better braille mechanism tend to develop the habit of scrubbing which contributes to slow reading. For developing a proper braille mechanism graded tactual discrimination activities have to be performed by the child.

The braille dots configuration for English alphabets are as follows:

Dot	1	o o	Dot 4
	2	o o	5
	3	o o	6

The configuration of dots for different alphabets are as follows :

A	B	C	D	E	F
o .	o .	o o	o o	o .	o o
. .	o .	. .	. o	. o	o .
. .	. .	. .	. .	. .	. .

G	H	I	J	K	L	M	N
o o	o .	. o	. o	o .	o .	o o	o o
o o	o o	o .	o o	. .	o .	. .	. o
. .	. .	. .	. .	o .	o .	o .	o .

O	P	Q	R	S	T
o .	o o	o o	o o	. o	. o
. o	o .	o o	o o	o .	o o
o .	o .	o .	o .	o .	o .

U	V	W	X	Y	Z
o .	o .	o .	o o	o o	o .
. .	o .	. .	. .	. o	. o
o o	o o	o .	o o	o o	o o

The *Bharathi Braille* or *Braille in Regional Language* are based on *English Braille*. The contracted letters in English braille are sometimes used as single letters in the regional language as most of the regional languages have more letters than the 26 letters of English. (The Regional language braille would be taught in the respective study centres).

2.3.1 Hand Position

Jayarose (1984) identified more than 65 positions followed by visually disabled children for braille reading. Though visually disabled children stick to their own techniques later, it is necessary that braille should be taught in a systematic manner. Using both the forefingers for braille reading is universally recommended for a beginner. Lightness of touch is stressed and the scrubbing of dots (up and downward movements of reading fingers) should be discouraged. While the right hand moves through the braille line, the left hand should follow from left to right. When the right hand reaches the end of the line, the left hand should retrace the line, which was just read and identify the beginning of the next line. Then the right hand which is at the right corner of the previous line will be brought to the

position of the left hand in a diagonal manner and the process continues. When the visually disabled individual follows some unconventional methods of braille reading later in life, the adopted style need not be discouraged as long as it helps effective reading.

2.3.2 Teaching of Braille Reading

Learning a skill and teaching the same are two facets of efficiency. It is needless to say that a visually disabled child should be exposed to different textures and a certain level of tactual discrimination abilities should be developed before introducing braille reading. Exercises in the tactual discrimination skills develop the fine motor coordination of the fingers of the child. Akkamadevi (1984) states that tactile tolerance needs to be developed among visually disabled children for their effective braille reading. She indicates that the tactile skills develop only by practice.

2.3.3 Activities for Improving Braille Reading

a) In a school, whether it is integrated or residential, reading readiness activities may be provided to the child before the introduction of braille reading.

b) Finger manipulation and manual dexterity skills are of crucial importance for developing the braille mechanism of the child.

c) For a beginner, a lot of teacher-made braille text materials should be used rather than the actual braille text books. The first grader needs modification and editing in these materials.

d) In the primary level material, simple embossed diagrams should appear in the text, which could stimulate the child's interest to read the braille material.

Reading ability has been acknowledged to be the most critical factor in the educational progress of visually disabled children. Apart from the physical readiness of the child, the emotional and psychological readiness also contributes to success in reading. Due to the slow process of braille reading and the fatigue caused by it, some visually disabled children with poor motor abilities tend to overlook the tactile reading and rely upon audio instruction. While special cases may be allowed to do this, braille reading is deemed essential for every educated blind individual. Nigam (1983) found an average reading speed of 43 words (English) per minute in the case of visually disabled children whereas it was 113 words per minute in the case of sighted children.

2.4 READING PRACTICE IDEAS FOR A BEGINNER

When the child is through with the reading readiness activities, actual reading practice may be given in the following logical sequence.

2.4.1 Developing simple stories

The simple whole word story shows the principle of word arrangement in an easy-to-read activity. New word reminder, word differences and full phrases or sentences have to be stressed in reading. For example, the teacher may be planning to teach the words 'ball', 'smile' and 'roll' (new vocabulary). Assume that the child had been oriented to the words 'baby', 'see' and 'the' (old vocabulary) in the previous class.

By mixing the old and new vocabularies, give hint to the child about the first line of the story. Let him develop the story now. Whenever he has some difficulties, assistance may be given by the teacher.

baby	see	the	(old vocabulary)
ball	smile	roll	(new vocabulary)

1. See baby
2.
3.
4. See baby smile
5.
6.
7. Roll the ball
8.
9.
10. Baby roll the ball
11.
12.
13. See baby roll the ball and smile

2.4.2 Matching

Another helpful experience which uses past readiness is matching of whole words, presented in lists or columns:

Instructions : In each line, which word is not the same? Draw a circle around it :

baby	roll	baby
smile	ball	smile
see	the	see
roll	roll	ball

Another activity might be finding his name from other names in a list. Give only one other or, at the most, two other alternatives. Be certain that they are considerably different in beginning tactual form and/or length to help child chose correctly.

2.4.3 Ordering

Another activity of value combines reading, selecting a response and matching a given order or sequence. Use a few simple phrases or sentences in the beginning. The child is given a completed "story" to read, and next, matching "strips" with full sentences. The sentence strips can then be aligned, or matched in sequence with the original.

2.4.4 Multiple choice

(Choosing a correct form from among several alternatives)

This varies from earlier matching activities as there is no "correct" form against which the child can compare his chosen answer. It is his first "multiple choice" experience.

For a visually disabled child, it is a help to set forth the possible answers first. Then follow the choices with the question which is best answered, or best completed with one of the responses already read.

Examples: 1. Mother I also
I like.....

2. See Pencil the
Put down the.....

2.4.5 Relating

A most useful activity in which the child is asked to draw a line between one choice on the left column and a related person or idea or thing from the right column.

work	baby
keep house	mother
play	father

The important idea within all of these suggested activities is vocabulary reinforcement through use of interesting, varied materials and formats. Manipulation of materials, use of standard elementary level reading activities common to both seeing and visually disabled children, and independence in study are the essential ingredients.

2.4.6. Experience Stories

As a means of presenting short sentences of high interest with limited, teacher controlled vocabulary, some teachers like to develop "experience stories" together with an individual child.

The child tells briefly of an experience and the teacher modifies vocabulary (according to level of ability) and brailles the story. The child can then read something he knows about and which he has "written". The child will have a very good feeling about what he is trying to read.

2.4.7 Flash Cards

A flash card is a device for increasing rapid recognition of recall of certain facts of ideas. It is most commonly found in arithmetic classes where classmates, with or without a teacher present, can theoretically give each other good learning, which is too often over-used. But there are some facts which can be learned through rote experiences which will still be helpful in the future because they evoke such automatic responses.

If tactual flash cards are to be used between seeing and visually disabled classmates, between two visually disabled children, or by a teacher with a child, they should be showed according to the following recommendations :

1. Present flash cards rapidly – leave stimulus exposed for no more than 4 or 5 seconds.

2. Prepare the cards in braille and ink print. Edit both right side up and up-side down so that the teacher or a seeing child can sit opposite or along side the blind child and they can work flash cards in comfort. Also put ink print form on reverse side of card for maximum variety of usage.

3. Clip corners

2.4.8 Modifying regular materials

Perhaps the most difficult task for teachers of blind children is to learn to think tactually, rather than visually, material that is attractively arranged for seeing children is often very confusing for the braille reader if duplicated exactly.

Example for seeing children:

Mark up "X" on all the animals on this page

Cow Sister
Plate Dog
Chicken Desk
Clock Mother
Rabbit
Horse House
Father Pillow
Chair Cat
Table Shoe

For blind children change the direction and arrangement as follows:

Draw a line under the animals on this page.

Dog	Desk	Mother	Horse	Rabbit	Sister
Chair	Table	Children	Clock	Father	House
Cow	Plate	Pillow	Cat	Shoe	

There are equal spaces between the words in each line but no attempt is made to keep the words in columns. You can also make real columns to vary the braille patterns, as:

Rabbit	House	Table
Cow	Sister	Father
Desk	Dog	Pillow
Mother	Dish	Cat
Clock	Horse	Shoe

The following questions should be asked when preparing supplementary braille materials:

How much reading experience has the child had?

For readiness material, triple space, or even doubled space can be used at the beginning. Later the spacing can be reduced even further.

What is the object of the lesson?

Don't crowd the braille page on teacher-made study materials. Paper is less costly than confusion.

Is the material well arranged?

If the child is spending more time on following directions than he is on learning to read, adjustments in the material may be necessary.

2.5 BRAILLE WRITING

Special appliances are used by the child to write braille. A braille slate is commonly used by the children in developing countries. Those children who can afford a mechanical braille writer can use it but due to its cost, all children cannot be benefited by this equipment. While the impressions of braille dots will be downward in the slate and stylus, the impressions in the mechanical braille writer are upward. Braille writing through the slate and stylus is typical. While writing, the child has to punch the dots from the right to the left side of the slate. After this, the child should reverse the paper and read it from left to right. Even though this looks strange, visually disabled children using braille are tuned to this system.

2.5.1 Skills necessary for Writing with Slate and Stylus

Like every activity, prerequisite skills are of paramount importance for using slate and stylus effectively. The six dots 1,2,3,4,5 and 6 are punched in the respective cells of the braille slate. It is important to make sure that children understand what is meant by a cell or cells of the braille slate. In order to write braille effectively, the child should possess the following skills:

1. Flexibility of fingers
2. Fine mother coordination and control of muscles.
3. Competency to read familiar braille words

Readiness training should be given to strengthen the above skills.

2.5.2 When to start Braille Writing?

While dealing with this aspect, one should be clear about the type of device used for introducing braille reading. Writing with the mechanical braille writer is easier than with the slate and stylus. Writing in braille slate and stylus needs enormous muscle control. Since establishing the hand position in slate and stylus is very important and every child finds this process very difficult in the early days, the introduction of this skill may be at the second year of a child's schooling. In holding the stylus, the forefinger should be squarely placed over the top of the stylus resting of the area between the knuckle and first joint of the forefinger with the rest of the finger over the edge and pointed down the stylus shaft. The slate should rest on a firm surface at a lower left to upper right angle. This whole mechanism would be difficult for the child during the first year. Moreover, the child must be able to know what he writes on the slate. Therefore, he should be familiar with the dots configuration of the

words which are written. Unless the child has the ability to read braille words, he cannot check what he writes. Due to these important factors, braille writing is usually taught to the child after braille reading.

2.5.3 Techniques in Writing Braille

Before the starting of writing of braille words, the child must be asked by the teacher to punch the dots of the upper cell (1,2,4 and 5) and then those of the lower cell (2,3,5 and 6). This training could be continued with the punching of particular dots and the combination of two or more dots.

In teaching braille writing, the easiest formation should be taught first. For example, the letter 'a', which is represented by dot 1, can be started. Similarly, the letters b,c,g,k,l,m,p,u,v,x could be given for practice. For developing the speed in writing, the left hand should always identify the braille cell while the right hand punches the letter in the previous cell. The stylus and the left hand should be placed on the consecutive cells. By this the left hand is assisting the right hand to identify the correct dot in the braille cell. While writing, the stylus should be held vertically. Tilting the stylus may make holes in the braille paper which may be avoided to make the braille writing work neat.

2.6 ABACUS

The Cranmer abacus used in India is an American adaptation of the Japanese Soroban Abacus. It is a pocket size calculating device which utilises the movements of beads to do basic operations plus more advanced processes of arithmetic calculations. The operational procedures, with example, for basic mathematical operations are as follows :

In addition, the higher value digits are always added first. The units column digits will come as last.

A. Example : 37 + 36

a) Set the number 37 in the extreme right of the abacus. In setting and clearing beads, we must be very careful in moving hands. That is, set the number 3 of the 37 in the tens column with the right hand and set the number 7 of the 37 in the units column with the same hand after setting number 3. Left hand rests on the 3 in the tens column while the right hand is on the unit column.

b) We are going to add 36 with 37. That is, we have to add 3 in the tens column and 6 in the units column.

c) Since there is no 3 to add in tens column in the lower abacus, we can add 5.

d) Instead of adding 3, we have added 5.

e) Subtract the excess 2 in the tens column.

f) Next, we have to add 6 in the units column. There is no 6 to add in the units column. Only two beads are remaining in the lower abacus.

g) Therefore, we shall go to the tens column. That is, set a bead in the tens column. It means you have added 10 instead of 6. Therefore, subtract the complement 4 from the units column.

h) Since there is no 4 to clear in the units column, clear 5 of the upper abacus and add 1 bead in the units column in the lower abacus.

i) Count the number of the abacus. The answer is 73.

B. Example : 378 – 179

a) Set the number 378 in the extreme right. That is, set number 3 of the 278 in the hundreds column, 7 in the tens column and 8 in the units column.

b) In the given example, we have to subtract 1 in the hundreds column, 7 in the tens column and 9 in the units column.

c) Clear one bead in the hundreds column. You have 2 beads left now.

d) Clear 7 in the tens column (left hand follows the right and rests on 2 in the hundreds column). You have no beads left now in the tens column.

e) Move both hands to the right to clear 9 in the units column. It is not possible because you have only 8 in the units column.

f) Move your hands to clear one bead in the tens column. Incidentally there is no bead left in the tens column. This is typical, Isn't it? Now move your heads to left. Clear one bead in the hundreds column. This means you have cleared 100 instead of clearing 9.

g) What is the complement number of 9 with respect to 100? It is 91. This number must be added to compensate the excess. That is, add 9 beads in the tens column and one bead in the units column. In the tens column, there is no bead. So your addition results as 0+9=9. In the units column, you have the value 8 and to this value, 1 bead is added making it 9. Thus you get the answer 199.

C. Example : 38 x 29

a) Set the multiplier 38 in the extreme left.

b) Count the digits of the two numbers (multiplier and multiplicand) and add one for the abacus. Totally, we have 5 digits. Therefore, set the multiplicand 29 in the last but 5th column in the right side of the abacus.

c) Keep the right hand on 9 of the 29, the left hand on 3 of the 38 and multiply. $3 \times 9 = 27$.

d) Set the number 27 in the immediate right of the multiplicand. Now multiply 9 of the multiplicand and 8 of the multiplier. The value is $9 \times 8 = 72$. Please note this number should be added with where you have left in the multiplication of the previous digit 3 of the multiplicand.

e) Set the number 7 of the 72 in the tens column. You have already number 7 in the tens column. Therefore, there is no 7 to add in that tens column. Therefore, set one more bead in the hundreds column, and clear 3 beads in the tens column. Set the number 2 of 72 in the units column. Since the first step is over, clear the number 9 of the 29.

f) Multiply the number 2 of the multiplicand with the multiplier 38, i.e., 2×3 is 6. Treat this as 06. Skip one column for zero and set the number 6 in the hundreds column.

g) Multiply $2 \times 18 = 16$. Set the number 1 in the hundreds column. But there is no bead to add in the hundreds column. So, set one bead in the thousands column and clear nine beads in the hundreds column. Now we have to add 6 in the tens column. We have no place there. So, add one bead in the hundreds column and clear 4 beads in the tens column.

h) Clear the multiplicand and the multiplier. Now you have 1 in the thousands column, 1 in the hundreds column, 0 in the tens column and 2 in the units column. The answer is 1102.

2.7 ORIENTATIONS AND MOBILITY: UNASSISTED TRAVEL

There are visually disabled individuals who are extremely capable of moving independently without any physical assistance in a known environment. Such individuals have a complete control over things in the environment and their judgement about the distance, direction, etc., of these objects and the relation to self is simply outstanding. Visually disabled children are trained by teachers and mobility instructors to have safe, secure, and graceful mobility skills. Persons with these three abilities are able to move unassisted in known environment. Though this is commendable, the visually disabled individual must be encouraged to use a mobility device as it provides independence even in an unknown environment. The skills also differ between visually disabled person from birth and the one who has acquired blindness later in life.

2.8 USE OF LONG-CANE AND SIGHTED GUIDE TECHNIQUE

2.8.1 Sighted Guide Travel

We also come across visually disabled individuals who prefer to travel with the help of a sighted companion. Specific sighted guide techniques are necessary both for the guide and for the visually disabled individual. This technique has both merits and limitations. The visually disabled individual can feel safe and walk gracefully in the company of the sighted guide. On the other hand, if the sighted guide is the only helper in travel, the visually disabled individual will be developing dependence which is not conducive for his overall development. Some important sighted guide techniques are listed as follows :

1. *Hand grip of the visually disabled person is a basic sighted guide technique. The grip should be just above the elbow.*
2. *In guiding a visually disabled person, the right-left combination of the guide and the client is important. The visually disabled person should use his right hand for holding the left hand of the sighted guide or the left hand to hold right hand of the guide.*
3. *While walking, the visually disabled person should always be one step behind the sighted person for safety measures and graceful walking.*
4. *Switch side techniques are helpful for protecting the visually disabled person from obstacles in front.*
5. *In turning around techniques, the visually disabled person should turn from where he stands whereas the sighted person ought to make a round to guide the visually disabled person. This avoids unnecessary exposure of the visually disabled person and keeps himself at the back of the sighted or both of them making sideways steps.*
6. *Walking in narrow space is a technique with which the visually disabled person keeps himself at the back of the sighted or both of them making sideways steps.*
7. *In guiding visually disabled person on stairways, the sighted person should always be one step ahead of a visually disabled person. The visually disabled person can be asked to follow the rails (if any) of the stairways for safety.*
8. *Buttering ram technique which means guiding the visually disabled person by making him place the hands on the shoulders of the sighted person and move in very crowded places.*
9. *Hines break : Accepting or refusing aid. This technique will enable the visually disabled person to gracefully accept or avoid assistance, depending on his needs or desire.*
10. *Guiding in doorways without getting bumps.*

2.8.2 Long Cane techniques

The long cane which is popularly known as the 'white cane' is widely used by visually disabled individuals. The cane can help in finding surfaces of different textures, stairs, etc. Visually disabled person should use certain clues and landmarks while using long cane for his independent travel. A list of long cane techniques is given as follows :

a) *using cane while walking with a sighted person*
b) *walking on a shore line*
c) *trailing with cane*
d) *diagonal technique*
e) *touch technique*
f) *touch and drag technique*
g) *touch and slide technique*
h) *three-point tap technique for walking*
i) *using cane on stairways*
j) *exploration of immediate environment with cane*
k) *side stepping using the cane*
l) *road crossing: safety crossing*
m) *getting into a bus, car, train, and bullock cart with the long cane*
n) *rural training: using kerbs while walking, drawing water from well, etc.*
o) *doorways – getting in and getting out.*
p) *Direction talking: squaring off.*
q) *Using landmarks and clues for mobility.*

Teaching of long cane techniques should be assisted by the efficient use of tactile maps. Following map reading techniques should also be developed in the visually disabled individual.

a) *palm reading of directions, mental mapping*
b) *clock concept for independent travel*
c) *using a tactile map of the environment*
d) *knowledge about tactile symbols*

2.9 DAILY LIVING SKILLS

2.9.1 What are daily living skills?

Daily living skills may be treated as basic survival skills. These are the abilities which enable the visually disabled child to carry on his daily routine without assistance or with minimum assistance. Development of these abilities instills confidence in the child for his mainstreaming with non-disabled children.

2.9.2 Does the loss of sight retard skills in daily living?

It is often misunderstood that loss of sight means darkness and incapacity in life. Research studies strongly indicate that it is not true. Daily living skills develop in an individual only by practice and therefore, adequate practice should be given to the child.

2.9.3 What is to be done for developing this area?

In daily life, the individual comes across a wide range of events. Combing the hair may be a minor activity compared to preparation of a complete meal but both are important in their own ways. How to teach such activities to the unseeing person is a vital and formidable task. Alternative strategies have to be worked out if the usual techniques fail. Besides the strategies and instructional procedures, criteria for performance assessment are also needed. Therefore, diagnosis of areas, development of strategies, and evaluation of performance of daily living skills are equally important.

The daily living skills are listed as follows :

1. *Eating*
   - a. identification of food items in the container;
   - b. holding food;
   - c. eating with fingers-the coordination of fingers;
   - d. eating with spoon-hand-mouth coordination;
   - e. proper posture;
   - f. manners and customs;
   - g. cleaning the plate.
2. *Using Toilets*
   - a. appropriate locations;
   - b. positioning;
   - c. cleaning toilet before and after use;
   - d. personal cleanliness;
   - e. using a common toilet.
3. *Dressing*
   - a. unbuttoning;
   - b. unzipping;
   - c. folding;
   - d. putting away in designated places;
   - e. buttoning;
   - f. zipping;
   - g. tying;
   - h. locating and putting on;

   - i. identifying dirty clothes;
   - j. identifying the washed dresses;
   - k. wearing shoes (if any).
4. *Body Hygiene: Cleanliness*
   - a. drawing water;
   - b. washing hands and face;
   - c. cleaning teeth-use of hands and brush;
   - d. nail cutting.
5. *Body Hygiene: Personal Grooming*
   - a. combing hair;
   - b. proper use of cosmetic (if any);
   - c. personal hygiene.
6. *Taking Bath*
   - a. drawing water;
   - b. applying soap;
   - c. appropriate use of soap, towel, etc.,
   - d. proper washing;
   - e. total bath;
   - f. locating and identification of clothes;
   - g. using toilet powder (if needed).
7. *Washing Clothes*
   - a. procedures in washing (washing collar first, sleeves next, then the body, etc.);
   - b. applying soap;
   - c. washing and rinsing the clothes;
   - d. drying the washed clothes.
8. *Handling Money*
   - a. identification of coins;
   - b. identification of rupee notes;
   - c. counting ability;
   - d. tendering correct change;
   - e. using a purse (if any).

Shopping

a. expressing the need for materials;
b. giving money;
c. checking the quality and quantity of the material bought;
d. getting and checking the correct change.

10. *Proper Use of Electrical Appliances*

a. switch on/off the electrical appliances;
b. using an iron box;
c. tuning the radio;
d. using a cassette recorder;
e. using a fan;
f. familiarity with the television;
g. using the kitchen appliances, if available (mixie, refrigerator, etc.)

11. *Shaving*

a. fixing the blade in the razor;
b. applying soap on the face;
c. clean shaving;
d. avoiding cuts on the face while shaving;
e. using after-shave lotion, if any.

12. *Food Preparation*

a. selection of items;
b. cutting and proper mixing;
c. using appropriate heat;
d. handling cooking equipments and vessels;
e. serving;
f. clean-up.

13. *Cleaning a Place*

a. using the broomstick;
b. total and near cleaning;
c. using a dustbin.

14. *Using Medicines*

a. identification of appropriate tablets;
b. taking correct doses;
c. placing the medicine container properly.

2.9.4 What may be the training strategies?

There are no special daily living skills for visually disabled students. Whatever skills are expected of a sighted person, the same are also expected of a visually disabled person. Therefore, keeping sighted children as reference helps in finding better strategies for teaching daily living skills to visually disabled children. The six-stage strategy in teaching daily living skills may be as follows:

a) *observation of the daily living skills exhibited by sighted children at various grade levels.*

b) *diagnosing the difficulties faced by visually disabled children in acquiring those skills in a natural manner;*

c) *designing pre-requisite skills after necessary diagnosis of difficulties encountered by visually disabled children;*

d) *teaching those readiness skills which lead to the learning of daily living skills;*

e) *preparing evaluation criteria to measure the level of acquisition of daily living skills; and*

f) *evaluating the performance of the child in daily living and suggesting appropriate remedial measures.*

2.10 SUGGESTIONS FOR IMPROVING DAILY LIVING SKILLS

Since a classroom is not the natural setting for teaching daily living skills, the teacher can use the environment to provide a wide range of daily living skills in addition to skills taught in classrooms. Some of the salient suggestions are as follows :

a) *The teaching of daily living skills may occur in the natural setting with situational approaches. Simulating conditions created for the teaching of the daily living skills may not be fruitful. A teacher teaching the concept of washing may take the child to the running tap and teach, instead of giving oral explanation about washing.*

b) *The area of daily living skills should not be treated as a special subject. It should form an integral part of all subject. The skills should be taught along with those subjects as and when opportunities arise.*

c) *Visually disabled children should be allowed to interact with sighted counterparts for acquiring skills in an informal way.*

d) *For girls, daily living skills should be taught together with household activities.*

e) *Orientation should be given to the parents of visually disabled children so that they can teach them the basic skills such as eating, dressing, use of toilet, etc., in the early age of the child when he is at home.*

Daily living skills in an individual are vital ingredients for his proper social development. The skills should be in accordance with the norms of any society. The absence of sight in the visually disabled person imposes a restriction on acquiring information of the world in a natural way. This area needs to be strengthened in the overall curriculum of visually disabled children in schools and in rehabilitation programmes. Teaching these skills to visually disabled children may be difficult but not impossible.

In short, braille, orientation and mobility and other plus curricular skills are vital for visually disabled children. Mastery in plus curricular skills help the child in the process of effective social integration and rehabilitation.

2.11 CHECK YOUR PROGRESS

1) The pre-requisite skills necessary for braille reading are called as
   a) Plus curricular activities
   b) Braille mechanism
   c) Readiness material
   d) Verbalism

2) At the primary level the following occurs often
   a) Braille material is presented without any change.
   b) Visually impaired child will be expected to read a lot of braille books.
   c) Modification and editing in the tactile materials take place.
   d) Child will be taught to use brailler.

3) Tilting the stylus while writing may cause the following:
   a) Excellent braille dots.
   b) May make holes in the braille paper.
   c) Increases the braille writing speed.
   d) None of the above.

4) In using abacus
   a) Higher value digits are always added first.
   b) Multiplication is started first.
   c) Numbers can be placed in any column.
   d) None of the above.

5) The technique useful for protecting the visually impaired person from obstacles is called
   a) Turning around technique
   b) Hines break
   c) Diagonal technique
   d) Switch side technique

6) Teaching of daily living skill will be more effective when
   a) Teaching is done in the natural setting
   b) Through simulating conditions
   c) Through verbal explanations
   d) Through models

2.12 ASSIGNMENT/ACTIVITY

1) Prepare a set of reading readiness materials for teaching braille to visually impaired children.
2) Create five problems in abacus multiplications and develop self-instructional materials for solving the same.
3) Visit a school for the blind and record the writing speed of children studying in various grades.
4) Provide blindfold training to a fellow teacher trainee in using orientation and mobility technique and record the experiences.
5) Select five simple daily living skills and develop instructional procedures for teaching those skills.

2.13 POINTS FOR DISCUSSION / CLARIFICATION

After going through the Unit you may like to have further discussion on some points and clarification on other. Note down these points below :

2.13.1 Points for Discussion

_____

_____

_____

_____

_____

_____

_____

2.13.2 Points for Clarification

_____

_____

_____

_____

_____

2.14 REFERENCE

1. Akkamadevi, B. (1984). "A study of the tactile discrimination ability of visually handicapped children and sighted children of standards I to V." Unpublished M.Ed. dissertation, Coimbatore: Sri Ramakrishna Mission Vidyalaya College of Education.

2. Barraga, N.C., Visual handicaps and learning. Belmont, CA: Wadasworth Publishing Co., Inc., Inc., 1976.

3. Cratty, B.J., Movement and spatial awareness in blind children and youth. Springfield, IL: Charles C. Thomas, 1971.

4. Jangira, J.K. Mukhopadhyay, M., Mani M.N.G., & Roychoudary. Source book for Teaching of Visually disabled children. New Delhi: NCERT, 1988.

5. Jayarose, S. (1984). "Investigation of techniques to be used inintroducing braille reading and writing." Unpublished M.Ed. dissertation. Coimbatore: Sri Ramakrishna Mission Vidyalaya College of Education.

6. Lowenfeld, B., (Ed.) The Visually Handicapped Child in School, New York: John Day, 1973.

7. Mani, M.N.G., Techniques of teaching blind children. New Delhi: Sterling Publishers, 1992.

8. Mani, M.N.G., Amazing Abacus. Coimbatore: Sri Ramakrishna Mission Vidyalaya College of Education.

9. Nigam, R.P. (1983). "A comparative study of the reading speed and writing speed, and comprehension of visually handicapped and sighted students in English language." Unpublished M.Ed. dissertation. Coimbatore: Sri Ramakrishna Mission Vidyalaya College of education.

10. SESV-01, 02 & 03 series and practical manual SEPV-01, 02 & 03 of B.Ed. SE-DE programme, MPBOU, Bhopal.

UNIT – 3 : DEVELOPMENT OF ADAPTIVE SKILLS, ASSISTIVE DEVICE AND SPECIAL THERAPIES FOR CHILDREN WITH MENTAL RETARDATION

STRUCTURE

3.1 INTRODUCTION

In this unit, you will study the special education process carried out in educational programmes for children with mental retardation. It involves assessment, selection of goals and objectives, methods and material required for teaching and evaluation of teaching plans. You as a community based rehabilitation worker will be following the

Same process while planning educational programme for children with mental retardation. In this unit procedures to train daily living skills are explained in the previous unit You can also evolve new methods of training to suit individual child learning needs apart from what have been explained in the Unit-I.

3.2 OBJECTIVES

After studying this unit, you should be able to

- understand the meaning of assessment and the purpose of assessment.
- develop individualized education programme plan.
- select appropriate evaluation methods and formats for evaluating and recording the performance of a student.

- provide training in daily living skill to MR child;
- develop in MR child functional academic skills - literacy and numeracy;
- appreciate the importance of multi-sensory material;
- develop competency in Classroom Management.

3.3 ASSESSMENT AND PROGRAMME PLANNING

3.3.1 Assessment

To say a child is retarded or not we need to do assessment. Assessment involves collecting information from parents/family members, directly testing the child and observing the child in various situations. After collecting the information, we analyze the information to make decisions. The analysis of information helps in making the following decisions.

- To know whether the child is retarded or not?
- If the child is retarded, what type of interventions are required?
- Where can they go for intervention?
- If the child is not retarded, where should they go for further guidance.

3.3.1.1 Definition

Assessment refers to the process of gathering and analyzing information in order to make instructional, administrative and or guidance decisions about or for an individual (Wallace, Larsen and Elksnin, 1992)

The definition emphasizes

- Gathering and analyzing information
- Making decisions using information

Case-1

Parents brought their 8 years old daughter to X organization with following complaints. The girl is not able to

- walk on her own
- doesn't speak, doesn't understand
- needs to be fed, to be taken care of during toileting and to be bathed and dressed.

Firstly assessment of the case is done collecting the relevant information. On assessment it was found that the girl has severe mental retardation and she needs training in walking, eating, toileting and dressing, and understanding simple instructions and communicating to others. She was referred to a special school for admission as she can get regular training apart from training at home by parents/family members.

Case-2

Parents brought a 10 years old boy studying in 4th class to X organization with the following complaints.

- The boy has poor memory, failing in mathematics, English and science
- Doesn't study on his own.

On assessment it was found that the boy is not retarded. However, to identify the specific problem, detailed psychological and educational assessments were done. The psychological assessment indicated that the boy has average intelligence and the educational assessment revealed that the boy has problems in spelling and lack of understanding of basic mathematical operations. Based on this information the boy was referred to a school providing supportive education.

3.3.1.2 What are the Purposes of Assessment?

Assessment always is conducted with a specific purpose. For example: We have planned to go to a specific place for excursion. Before we go we find out about the transportation, lodging and boarding facilities available, the time required and the expenditure involved. The purpose of collecting this information is to decide the no. of days, money required, the place of stay, etc. Let us take another example. We go to a restaurant for lunch. Suppose we had only Rs 200/- with us. Before ordering the items we look at the prices in the menu and assess our purse which items we can order. Another example, when we want to buy rice or pulses we asses the quality and rates by going to 3–4 shops to decide from which shop you would like to buy. These examples are discussed to tell you that we carryout assessment with a specific purpose. Similarly assessment of children / persons is done for various purposes - Screening and identification, Diagnosis and referral, Programme planning and evaluation.

(a) Screening and Identification

The children/adults are screened to identify whether they have any problems which require further assessment. For example screening of primary school children was conducted to find out the status of health. During screening, the doctor may identify some children who require further/detailed checkup for diagnosing the problem. Similarly there are screening schedules which are used to identify children whose development is delayed when compared to other children of the same age. Screening schedules are generally used in surveys to identify children who have problems. The following are some of the screening schedules.

Screening Schedule No. I (Below 3 years)

(Note: For details refer to Block-3)

Sl. NO.	ITEM	Normal age range	Milestone delay if not achieved by:
1	Responds to name/voice	1-3 months	4th month
2	Smiles at others	1–4 months	6th month

3	Holds head steady	2-6 months	6th month
4	Sits without support	5-10 months	12th month
5	Stands without support	9-14 months	18th month
6	Walks well	10-20 months	20th month
7	Talks in 2-3 word sentences	16-30 months	3rd year
8	Eats/drinks by self	2-3 years	4th year
9	Tells his name	2-3 years	4th year
10	Has toilet control	3-4 years	4th year
11	Avoids simple hazards Other Factors	3-4 years	4th year
12	Has fits	Yes	No
13	Has Physical disability	Yes	No

If the child is found to be delayed in any one of the items giver from 1-11 and if the child has fits or physical disability, suspect mental retardation.

Screening Schedule No. II (3 to 6 years)

Observe the following:

1. Compared with other children, did the child have any serious delay in sitting, standing, or walking? Yes No
2. Does the child appear to have difficulty in hearing? Yes No
3. Does the child have difficulty in seeing? Yes No
4. When you tell the child to do something, does he seem to have problems in understanding what you are saying? Yes No
5. Does the child have weakness and/or stiffness in the limbs and/or difficulty In walking or moving his arms? Yes No
6. Does the child sometimes have fits, become regid, or lose consciousness? Yes No
7. Does the child have difficulty in learning to do things like other children of his age? Yes No
8. Is the child not able to speak at all? (cannot make himself understood in words/ Say any recognizable words) Yes No

9. Is the child's speech in any way different from normal (not clear enough to be Understood by people other than his immediate family?) Yes No
10. Compared to other children of his age, does the child appear in any way Backward, dull or slow? Yes No

If any of the above items is answered 'Yes', suspect mental retardation.

❖ Adapted from the International Pilot study of severe childhood disability - Final report - Screening for severe mental retardation in developing countries.

Screening Schedule No. III (7 years & Above)

1. Compared with other children, did the child have any serious delay in sitting, standing or walking? Yes No
2. Can the child not do things for himself like eating, dressing, bathing and grooming? Yes No
3. Does the child have difficulty in understanding when you say "do this or that"? Yes No
4. Is the child's speech not unclear? Yes No
5. Does the child have difficulty in expressing without being asked what the child has seen/heard? Yes No
6. Does the child have weakness and/or stiffness in the limbs and/or difficulty in walking or moving his arms? Yes No
7. Does the child sometimes have fits, become rigid or loss consciousness? Yes No
8. Compared to other children of his age, does the child appear in any way backward, dull or slow? Yes No

If any one of the above items is answered 'Yes' suspect mental retardation.

Note: In the screening schedules No.II and No.III, there are a number of questions which are over inclusive i.e. those with hearing handicap or physical handicap or epilepsy alone without mental retardation can be spotted. These two screening schedules ensure prompt identification of every single mentally retarded child. Do not worry if the questions sometimes identify persons with handicaps other than mental retardation. Such persons can be assessed later. Our chief concern is identification of mentally retarded children.

(b) Diagnosis and Referral

Through screening we have found some children have problems. The next step is to find out the reasons for those problems and to make a diagnosis. This requires a detailed assessment which includes case history taking, psychological assessment and educational assessment and medical examination.

Based on the information appropriate management plan is drawn and referrals are made if necessary.

3.3.2 Programme Planning

Once the child is diagnosed as having mental retardation, intervention programs are to be planned to meet individual child's needs, for which assessment of the current level performance of the child is required.

Example: The current level functioning of a 7 years old boy as follows.

The boy can walk and run. He, eats by himself but spills a lot of food around the place. Needs assistance in wearing clothes and bathing. Manages by himself during toileting. Understands and follows simple instructions. Speaks a few words (Amma, Akka, Annam). Identifies common vegetables, fruits and furniture. Identifies major body parts. Identifies red and yellow colour. Counts and gives objects up to 2. Holds pencil and scribbles.

Intervention

Training in
- Eating, dressing and bathing
- Naming colours, common objects (vegetables, fruits, furniture, clothes)
- Counting objects up to 10
- Reading and writing numerals up to 10
- Reading and writing his name.
- Speaking in phrases
- Understanding and following two step instructions.

3.3.3 Individualized Education Programme (IEP)

You have already learnt that children with mental retardation have less ability to understand, learn and retain learned skills when compared to non-retarded children. In addition, great variations in abilities are also found among them due to the severity of retardation. Due to this, children needs vary form one another. For example there are two children with mental retardation who are mildly retarded. Among them one child's right side limbs are affected. Because of this she is not able to use right hand as effectively as left hand in doing activities and right leg while walking. This child requires physical therapy apart from the educational programme. Therefore, there is a need to develop an educational programme for each child. This plan is called Individualized Education Programme (IEP). It is also called as Individualized Programme Planning (IPP) or Individualized Training Programme (ITP).

(a) What should we write in IEP?

IEP is a document written for each student, which includes annual goals, short term objectives and a detailed plan (methods, material, evaluation procedure) for each short term objective.

Annual goals

Before planning the programme what do you do? You do assessment. Why do you do assessment? To find out the current level performance of the child i.e. to know what the child is able to do. This information is essential for you to select the appropriate content (goals) for teaching. Now, looking at the assessment information you have to focus your attention on selecting the content (goals) on priority (most needed). These goals what you will be selecting are for an academic year (what you except him

to learn over a period of one academic year). However, you need to keep in mind the level of retardation while selecting the goals and objectives.

Short term objectives

This is again the content (part of annual goal) which you select for a short period of time. The short period could vary from one month to three months or number of sessions.

Example-1:

Annual Goal:

- Wears pant and shirt by him self.

Short term objectives:

- Removes pants including unzipping.
- Wears pants including zipping.
- Removes shirt including unbuttoning.
- Wears shirt including buttoning.

Example-2:

Annual goal:

- Wears pants and shirt by himself.

Short term objective:

- Unzips pants.
- Unzips pants and removes.
- Wears pants.
- Zips pant.
- Unbuttons shirt.
- Unbuttons and removes shirt.
- Wears shirt.
- Buttons shirt.

In example-2, the short term objectives are further divided when compared to the first example. It has been explained earlier that you need to keep in mind the child's ability to learn and the associated conditions if any the child has along with mental retardation, while selecting the goals and objectives for teaching.

Incase you find buttoning is a complex activity for a child as the child has no fine finger co-ordination you may opt for adaptations (Velcro in place of buttons) so that the child can still dress himself without depending on somebody.

Example 3:

Annual goal

- Writing numerals from 1 to 20.

Short term objectives

- Writing numbers from 1 to5
- Writing numbers from 1 to 10
- Writing numbers from 1 to 15
- Writing numbers from 1 to 20

Translating the short term objectives into teaching plans

Now you have to write a detailed teaching plan for each short term objective. The contents of each plan as follows.

TASK: Specify the task which you want to teach (unzipping pants)

CURRENT LEVEL PERFORMANCE: State the performance of the student against the task selected for teaching. (Eg. Holds the zip but needs support in pulling the zip)

OBJECTIVE: Under this you need to state what the student learns (content) what the student does with the content (behaviour) how well the student does it (criteria) under what circumstances the student does it (condition) and after what period of teaching the student will achieve the task (duration).

- Rajan will be able to unzip his pants (content and behaviour) when required (condition) by himself (criteria) after 15 sessions of teaching.
- When required (condition), Rajan will be able to unzip his pants (content and behaviour) to 80% of accuracy (criteria) after 3 months of training (duration).
- After 3 months of training (duration) Rajan will be able to unzip his pants (content and behaviour) by himself without anybody's help (criteria) when required (condition).

You can write the objective in any of the way you want as mentioned above but you must see that all components are mentioned in the specific objective. You can also use the following statements to indicate condition and criteria depending on the task and the excellence you want the child to achieve.

TASK	CONDITION	CRITERIA
Name numerals from 1 to 10 when not asked sequentially	When asked Rajan to name numerals by pointing not sequentially on a worksheet from 1-10	Names all numerals correctly or names 8 out of 10 numerals correctly or Names 4 out of 5 times all numerals correctly

Runs 50 meters dash	When Sameera hear whistle /sees flag down/hears three	Takes 5 minutes to complete 50 meter dash.
Making sandwich	When asked or when required	5 sandwiches in 10minutes

The criteria can be mentioned in terms of number of correct responses, number of times the correct responses are expected, the time taken etc.

MATERIAL : State the learning material required for teaching the required task

PROCEDURE: Write in detail how you are going to teach the task using the selected material. Also state what type of reinforcer you are going to use and the settings (classroom, playground, home, etc) in which the training will take place.

EVALUATION: Lastly mention when and how you are going to evaluate (duration and the formats to be used).

Remember the following points while developing IEP.

- Depending on the nature and needs of each child, involve all the professionals while selecting the goals and objectives for the child. It is very essential as there is need to integrate the intervention programme given by the other professionals (therapists, psychologists, social worker) in teaching tasks/skills to children with mental retardation.
- Invite and encourage parents/family member's to participate in IEP meeting. This would help them to understand their child's abilities and inabilities and would help them to understand and appreciate their child's efforts in learning. In addition, their participation will also facilitate professionals in selecting appropriate goals and objectives that will promote independent functioning of a child in different environments.

3.3.4 Evaluation

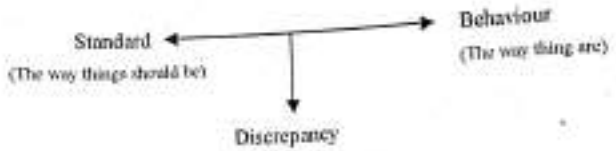
(a) What is evaluation?

Evaluation is comparing the performance of a student to a set criteria. For example, a trainer sets an objective such as "Wears shirt by him self (without anybody's help)" for a student. She plans a programme to teach the student to wear shirt. She teaches, but how does she know that the student has learned? She tests him. How? She tells him to wear a shirt. If the student wears his shirt on his own with out trainers support she would say that he has learned the task. If she still requires her support she would say that he has not completely learned the task. How she was able to make such statements? What she did is that she compared the student's performance to the set criteria (by himself). Through this comparison she came to know whether student has learned the task completely or not. If not what is the discrepancy, that is how close or how far is the student from the set criteria. Another example to quote. "Writing 3 words without any spelling mistakes". The trainer tests the students after teaching. The performance of student (A) and student (B) is given below.

A) wrote all three words with out mistakes - achieved the criteria.

B) wrote two words correctly - not achieved the criteria, because he is yet to learn to write one more word. The discrepancy here is one word.

Howell and Morehead (1987) states that evaluation is a thoughtful process involving the comparison of the way things are to the way they should be.



Standard The way things should be	Behaviour The way things are	Discrepancy
(A) Writing three words correctly with out spelling mistakes	Wrote all three words with out any spelling mistakes	No discrepancy
(B) Writing three words correctly with out spelling mistakes	Wrote two words correctly with out spelling mistakes	One word yet to learn

(b) Is there any difference between assessment and evaluation?

Yes there is. The difference is that, we assess the child to find out how much or how far the child is able to perform the activities so that we can select the activities in which the child needs training. Evaluation is done after training to know how much the student has learned through your teaching. It helps you to decide whether to take next activity for teaching or the student still requires training. If the student still requires training, you need to check where could you have gone wrong? Is it in selecting the methods and material or content? Or is it because of child's health related or family related problems, that could have affected regular and consistent training.

(c) Types of evaluation

Two types of evaluation procedures are in use in educational evaluation formative and summative.

Formative evaluation

Formative evaluation is done during the intervention programme actually being conducted. For example a trainer is teaching a student to eat food. The trainer evaluates the performance of the student periodically (after every session/every week) to see how the student is progressing towards the target behaviour (eating food by himself). The feed back (performance) helps her in realizing the positive or negative aspects of her teaching. It helps her to decide whether to continue the planned programme or is there any need to bring changes in the planned programme.

Summative evaluation

Summative evaluation is a long term, final evaluation conducted after completion of a specific task/unit teaching. Refer to the example under formative evaluation. The student took 12 sessions to learn the task of eating food by him self. The performance recorded under 12th session here will become the summative evaluation. Task analysis checklists, assessment checklists, IEP format are used in recording formative and summative evaluation data.

(d) Report writing and record keeping

Report writing and record keeping are integral part of educational programmes. Systematic documentation of information regarding, performance of a student and maintenance of individual records are essential when we are talking about children with mental retardation. As educational needs of each child is different from one another, documenting and maintenance of individual records are important to report the student's progress.

While writing the reports we need to report the performance of the student so objectively that it facilitates in selecting the clear cut goals and objectives and also a parent/family member/other professionals can understand clearly what the child was able to do before intervention and what the child has learned as a result of intervention. Generally the words such as knows, good, nicely, welldone, do not specify the behaviour which is observable and measurable.

Example:

Student (A)	Student (B)
• Knows colours	• Identifies red, yellow and blue colours **Or** • Names red, yellow and blue colours.
• Speaks well	• Speaks in sentences. • Answers simple questions relating to himself and family. • Narrates incidents which involve 4-5 sentences with prompts.

Record keeping

Various types of recording formats are used to record/document the performance of a student. Case records, IEP formats, task analysis checklist, assessment checklist, graphs, anecdotal records, work sheets are all various formats used in special educational programs for children with mental retardation.

3.4 DAILY LIVING SKILLS

Training In Daily Living Skills

One of the objectives of special education is to train children to look after their personal needs (eating, drinking, toileting, brushing, bathing, dressing and grooming) when required in different environments (in the family, school, neighbourhood and community). For example, we eat and drink at home, some times in hotels, marriages, parties, cafeterias, bus station, railway station etc. The skills required for individuals in each environment will vary and we need to teach all those skills to children with mental retardation. Many a times parents/family members may not take children with mental retardation to functions/hotels/outside places due to the lack of appropriate eating skills or other daily living skills. Therefore, the training programmes should focus on training of all skills required for children to

participate along with the family members in various activities that prevents families from socia isolation.

The children need to look after personal needs (daily living activities) everyday. Hence, training in thee activities can occur everyday. If children lack skills in performing a specific daily living activity, the training in that activity should occur at the appropriate time of its happening. For example, brushing of teeth. We brush our teeth every morning after getting up. So, the child can be trained brushing teeth during that time. In school programmes, the teacher can teach after lunch.

The following are some of the general points we should remember while planning and teaching daily living activities.

- Analyze each task. See that you keep in mind the severity of mental retardation while analyzing the task (Ref. Task analysis).
- Assess the student using task analysis checklist to find out the current level performance of the student against each sub-task.
- Provide appropriate assistance (prompts) and fading procedures (see prompting and fading).
- Use teaching material appropriate to the task.
- Follow reinforcement procedures. Remember to reinforce (see Reinforcement) the child even when he makes an attempt in the initial stage (acquisition) of learning.
- Remember to include in your planning the activities that helps in maintains and generalization of learned activities.
- Record the performance of the student periodically (See Evaluation task analysis).
- Make adaptations in the material if required for a child to do the activity by himself.
- Teaching of daily living activities should take place during the time it is usually done.

Eating and drinking

Points to remember

- Give opportunity to children to understand that we eat food when we feel hungry and we drink water when we feel thirsty.
- Provide opportunity to children to eat different types of breakfast and snacks items which are commonly prepared at home and available outside as eating of different items need different skills (using fingers, spoon, fork).
- Children should be taken to eating places to expose them to different types of eating environments. Also allow children to decide what they want to eat and order the items.
- Folding napkins, towels, aprons or table cloth can be taught to children at home and in the training centre.
- Arrangement for eating (on the floor, dining table) serving food, washing plates, glasses, spoons and other utensils after eating.

The following are some of the specific related points to remember while teaching

Drinking

- Use a cup/glass with handles on both sides if the child has difficulty in holding the glass.
- Take one fourth of water in the glass in the initial stages of teaching and later increase the water level.
- Use a variety of drinks (fruit juice, soup, buttermilk) in addition to water. Select the drinks of child's choice. It motivates him to drink.
- Give a small jug/bottle with less water in the beginning of teaching to pour water into the glass for drinking.

Eating

- Begin teaching independent eating with non-sticky food items like poori/ chapatti/dosa/bread.
- You can roll chapatti/poori/dosa (half a sandwich) and make child to hold and bite a bit at a time to eat.
- Make chapatti/poori/dosa into small pieces. Help child to pick up each piece and eat along with a side dish (curry/chutney/sambar).
- Sometimes it is noticed that children with mental retardation have difficulty in taking proper proportion of food (chapatti, poori, dosa) along with side dish. They need training in these too.
- In case the child has difficulty in mixing and taking proper amount of food to eat, mix the food, make small balls and place in the plate for eating.
- Some children have a habit of continuously placing the food in mouth without munching and swallowing the food first placed in mouth. Tell child to munch and swallow the first morsel of food.
- If a child has a habit of pushing/throwing the plate or the child impatient, keep only one ball at a time or a very little food in the plate.
- If the child has difficulty in eating using fingers, teach her to eat with a spoon. Thicken the handle of the spoon by rapping a cloth or with a wooden handle in case the child is not able to use fingers but uses palm to hold the spoon.
- Name the items when child is eating the food or when you are serving the food.
- Tell parents (a) to serve food a little, (b) to name items while serving, and to give opportunity to their son or daughter to ask for food when he/she is hungry or when he/she wants more food and also which item he/she wants.
- Eating activity also involves washing and wiping hands, washing plate, tiffin box, etc. These activities should also be taught to students as part of training in eating skills.

Toileting

Teaching of toileting skills should happen at appropriate time in training centers and at home.

Points to remember

- Generally parents/family members take their children at regular intervals or timings of the da to toilet for urination and passing of stools if children have no toilet control. When you a training the child for toilet control (urination), record how many time sand at what interval th child is passing urine for about a week. Calculate the average time. Take the child to the toile at regular intervals to pass urine.
- Say "I am taking you to the toilet to pass urine or stools" or make it short "toilet to pass urine o stools". Also use gestures (showing the little finger, pointing panty) along with the words so that the child can use them to indicate his toilet needs as many of them can not express verbally See that you say and use gestures every time you take him to the toilet so that he understand the meaning of words and gestures.
- Praise her when she passes urine/stools in the toilet and does not soil her clothes. In the beginning of the training the child may not pass urine/stool in the toilet when you take him bu does after you bring him out of the toilet. Make him to clean the place completely by himself o assist him partly in cleaning the place and show unhappiness on your face and tell him hou unhappy you are (not scolding).
- Teaching privacy is an important step in teaching toileting skills. Always remember to teach the student to close the toilet door while he uses the toilet. When you are teaching him to remove pants to use the toilet or wear pants after using toilet, see that you teach him with door closed.
- Make an effort to teach him to unfasten. In case, it is beyond the students capacity to learn, use adaptations such as elastic velcro in place of buttons/hooks.
- Some children refuse/hesitate to use the toilet with the fear of falling. You can fix the handles on either side of the walls in the toilet so that the child can hold the handles and sit without fear.
- Washing after defecation, pouring water/flushing toilet, washing hands after toileting are part of toileting skills and to be taught to the students.
- Train independent use of left hand for cleaning after toileting when adult pours water. When he perfects that train in pouring water by himself using right hand. If he can not do both together adapt by attaching hosepipe for use by right hand.

Source : Towards Independent Series (1990) - Toileting Skills

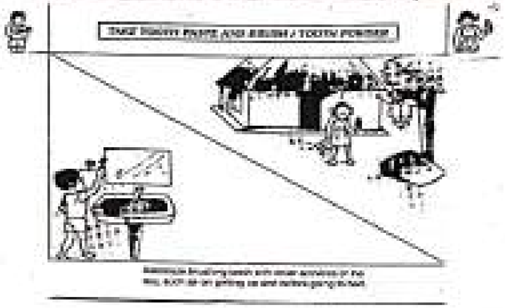
Brushing

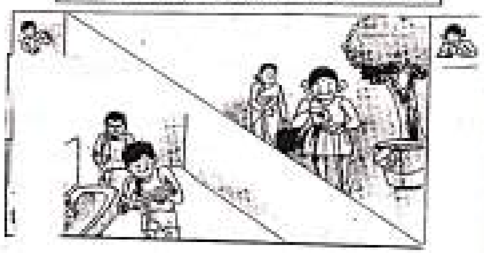
This activity can be taught after lunch in training centers and in the morning and after dinner at home.

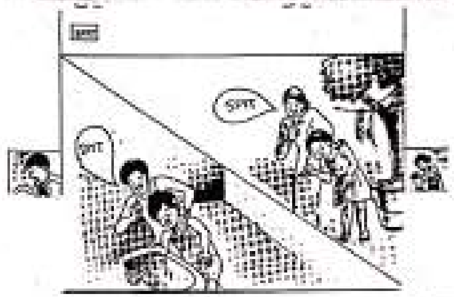
- Some families use tooth powder and use finger to brush teeth and some families use tooth brush and tooth powder/paste to brush teeth. In addition, some families may have sink and tap facility and some may have borewell/well in their homes. Before training, find out what they use at home for brushing teeth and the physical facilities available.
- Thicken the brush handle with cloth/plaster/fix a wood handle for holding in case there is a need for good gripping.
- Use mirror as far as possible (standing in front of the mirror) while training children in brushing.
- Stand behind the child while teaching.
- Initially children may eat the paste. A little paste swallowed does not harm children. Gradually train to spit.
- Give a small mug or glass of water for gargling after brushing teeth.
- Teach children to identify their brush, and paste. Teach squeezing the paste from the tube as the last step as it needs fine motor coordination. Waste of paste should be avoided.
- Children should also be taught to brush their teeth without reminder as it is expected of any non-retarded child above the age of 6 years.
- Give opportunity to children to select and buy the brush and paste form a shop.

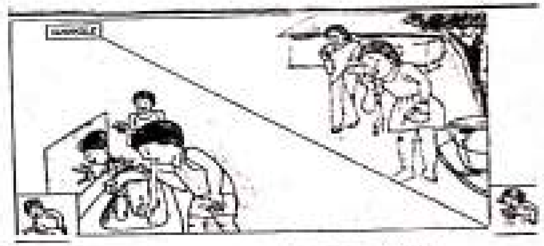
STEP-BY-STEP TRAINING IS THE KEY TO SUCCESS

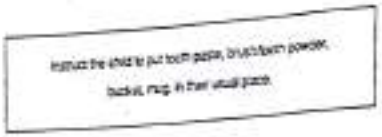
Training Procedures

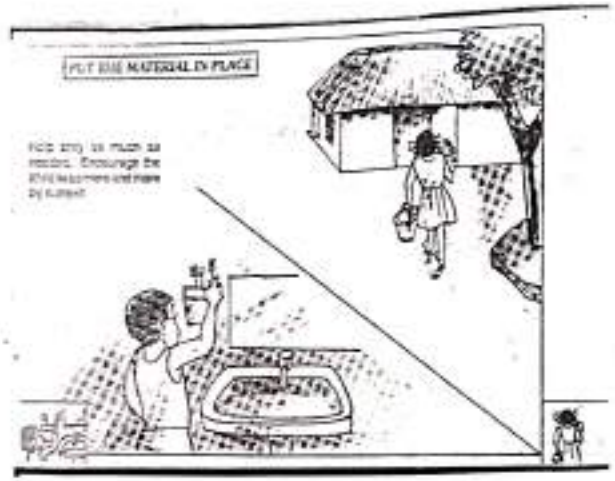












Source : Towards Independent Series (1990) - Brushing Skills

Bathing skills

Teaching of bathing skills is generally done at home by parents/family members as it may not be possible for teachers to teach bathing skills in day care centers. Inform parents/family members on the following points:

- It is always important to see that children select and take their clothes and towel to the bathroom before they take bath. This activity will help in identifying their own clothes and naming of the clothes.
- Children should be allowed to mix cold water and hot water to check the required temperature.
- Privacy needs to be maintained while training in taking bath and wearing clothes.

- Initially sponge can be used for applying soap on the body to avoid more usage of soap or slipping of soap from hands.
- Use a napkin or small towel fixed to rings at the two edges for cleaning the back for those children who have difficulty in reaching the back with hands.

GUIDELINES FOR TRAINING

- Divide bathing activity into small steps

- Chew the child's attention to water play when you bathe him

- Starting with what the child can do, help him to do more until he can bathe himself without help

Try the ideas suggested in the following pages, to make bathing at each step easier.

MAKE SURE THAT LEARNING ACQUIRED IS WITHIN REACH

Train the child to [illegible]
Dress and clothes are [illegible]

Have a bilingual attitude [illegible]
so that the child can hang the learned skill [illegible]

Bathing time is a good time to help the child learn many skills !

Gently turn by face of the mother and check if the temperature is right/cold to him

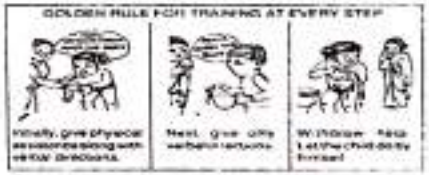
POUR WATER OVER THE BODY

- Use mug that has a handle, it will be easier to hold and balance

- Let him follow the posture (stance) that is convenient to him

Use play time as an opportunity to learn bathing skills by encouraging the child to bathe himself.

GOLDEN RULE FOR TRAINING AT EVERY STEP



APPLY SOAP

Train the child to rub soap between palms and back of hands to form lather and apply it over the body, in this order:

- trunk
- arms, hands, fingers
- legs, feet, toes
- back portions of the body, rubbing with right hand on left upper side of the back and left hand on right upper side of the back
- ears, neck, face

Emphasise on keeping a mug of water touching the leg, before the child closes his eyes to apply soap on the face.

RINSE

- [illegible]
- Then, pour 4-5 mugs of water over the body and rub all over, without applying soap.
- Pour water again to rinse thoroughly.

Children enjoy playing with water. Don't worry if the child uses too much of water and soap initially. The important thing for him is to learn to enjoy the activities leading to personal cleanliness.

[illegible]

DRY

- Use towel or a ... the child can hold and rub with ease.
- Having his name or ... on the towel will encourage him to use it and will also give him a sense of pride, that it is his. It will also help him to identify his name and his belongings.

Appreciate the child for his attempts and successes at every step.

WASHING HAIR

Training procedure

1. Let the child sit (stool with the back turn forward)

   If the child has long hair, help her to bring the hair in the front.

Best position of the neck will make washing easier by preventing shampoo from getting into the eyes and over the rest of the body.

2. Take a small quantity of shampoo in the hand

   Use extract of shikakai/reetanala instead of shampoo, if it is available

3. Apply it over the scalp and the rest of the hair

4. Wash and rinse

5. Do a second wash and a very thorough rinse

6. Help her to wind a towel around the head if she has long hair

Remember to keep the child's hair eyes closed throughout washing of the hair

Remember to appreciate the child's successes.

Source : Towards Independent Series (1990) - Bathing Skills

Dressing skills

Dressing activities include removing and wearing clothes including unzipping/zipping, unbuttoning, buttoning, unhooking and hooking and tying lace/ribbon.

Points to remember:

- Use stool/chair/box (size depending on the height of children) to sit while teaching children to remove or wear pants. For example the child removes pants upto knee level and sits on the stool, or box. He can remove the pants easily without having to balance on one foot. Often children with mental retardation have problems in balancing on one foot and may fall. In case of children with cerebral palsy with mental retardation, this method of teaching is very useful.
- First teach removing of clothes after unfastening (by trainer) and then wearing of clothes.
- Use large buttons on shirts while teaching unbuttoning and buttoning of clothes.
- Teach fastening of buttons, zips, hooks directly on self after wearing clothes rather than teaching using frames. If needed, give physical prompt by standing behind the child and extending hands.
- Use stickers/labels already on shirts, banians or pants for teaching identification of correct and wrong side of clothes.

- Use adaptations such as Velcro/elastic bands if children have difficulty in buttoning, zipping/tying.
- Inform parents to allow their children to select their clothes for themselves to wear during various occasions and when they take them for shopping to buy clothes.

Wearing clothes

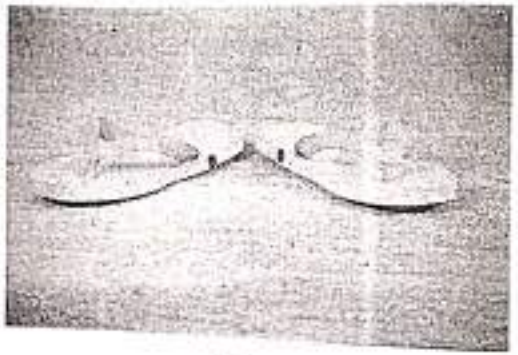
Source: Towards Independent Series (1990) - Dressing Skills

Grooming skills:

Applying oil, combing hair, applying powder, fixing bindi (in case of girls) wearing chappal/shoes are all activities to be taught under grooming. Generally, by the time children are 8-9 years, they learn all the above mentioned activities by themselves through observational learning. However, children with mental retardation need to be taught all the activities using special methods.

Points to remember:

- For children, who do not know to identify left and right, fix stickers/marking on the inside of heel of the footwear to help in identifying left and right chappal or shoes.



- Tying shoe lace is a very complex activity. There are variety of shoes available in the market without shoe lace, which can be bought for use. Our aim of education is to train students to take care of their personal needs by themselves.
- Use cloth puff to teach applying powder evenly on face. Encourage children (girls) to use bindi stickers which are easy to fix.
- Select comb with a thick handle convenient to hold convenient to hold for teaching combing hair.
- In case of children with low abilily, plaiting hair which is a complex activity may be avoided keeping the hair short where one can use rubber band to fix the hair.

To teach plaiting hair, follow the sequence:

1. Ribbons of 3 colours fixed on undo grill.
2. Wool of three colours.
3. Wool of same colour.
4. False hair.
5. Plaiting other's hair.
6. Plaiting lower half themselves combing and plaiting hair by herself.

With perfect efforts on our part, it is possible to train mentally retarded children in grooming.

Training in grooming.....

- gives the child a sense of satisfaction and pride
- enables him to spend the time he wants
- leads him towards more independence
- enhances social compatibility
- reduces the workload of the caretaker

Let us see how best we can train a mentally retarded child in grooming.

WASHING FACE

Make it a routine to have the child wash his/her face in the morning and evening, everyday.

From the child to chore, if soap, towel, bucket of water and mug are within reach.

- Wash your face as the child watches you.

- Ask him to take handful of water and splash it on the face.

- Let the face soap, rub it between palms and back of hands to foam better and apply it on the face.

Make it a point to train the child to rinse it thoroughly with water before s/he rubbes her eyes to wipe water on the face.

- Ask her to take handful of water and splash on the face till the lather is completely washed off.

- Guide her to dry her face.

PRAISE HER BY SAYING HOW CLEAN AND FRESH SHE LOOKS

Present training in a step-by-step manner. Don't try to teach all the steps at a single stretch.

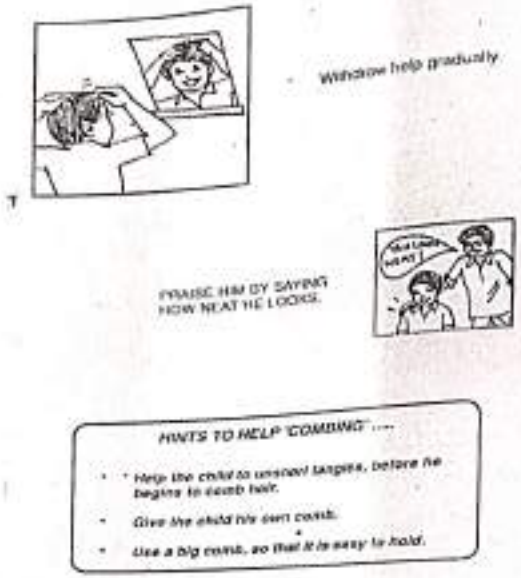
COMBING HAIR

- Train the child to comb his hair both in the morning and evening.

- Let him watch when you comb your hair.

Hold the child's hand and guide him to comb a small portion of the hair. Let him look into the mirror as he comb.

- Gradually increase the portion he is to comb.



Source : Towards Independent Series (1998) - Grooming Skills

Menstrual hygiene

Menstrual hygiene is another important skill to be taught to adolescent girls with mental retardation. Training the girls to be independent (as far as possible) in managing menstruation lessens the burden on the family members and avoid embarrassing situation. Remember the following points.

- Pads, available in the market can be used (If the parent cannot afford, make pad using cloth/cotton).
- Well fitting panties are to be used.
- Two strips of cloth like pockets or elastic strip can be stitched at the lower base of panties (which are to be used during menstruation) to hold the pads in place.
- Dates in the calendar can be marked and the child sensitized to it.
- Too much of exhaustion can be avoided during the periods.

While training in menstrual hygiene, instruct the student to -

- Report when there is stain in the panty.
- Change the panty immediately after noticing the stain.
- Insert the pads into the strips stitched in the pancy.
- Change the pads when it is adequately stained.
- Roll the paid, put in nontransparent (paper/plastic) bags and throw it in proper place.
- Clean the panty and dry in separate place.
- All the way through, ensure privacy.

Shaving

Proper fine motor skill and eye-hand coordination are important pre-requisite skills for teaching shaving. Following points are to be considered while training.

- Task analysis should be done carefully watching an adult (father/elder brother) performing and then taught with appropriate prompts.
- Use a mirror. Provide assistance from behind.
- If the student has motor difficulties or uncontrolled epileptic fits, it is better not to train in shaving. In such cases, train them to recognize when it is time to shave and ask for help from adult at home/go to the shop and get done. Teaching him the competency to get the shaving done.

3.5 FUNCTIONAL ACADEMIC SKILLS - LITERACY AND NUMERACY

Reading, writing and arithmetic are basic functional Academics refer to the literacy and numeracy skills that are required for independent living. We have already learned earlier that children with mental retardation have less ability to understand and learn, need more time to learn skills and are unable to transfer skills to situations when required unless they are taught. Therefore, the selection of content under academic skills should be such that it has functional utility, that is, what we select for teaching should be useful for the boy/girl to function independently at home and in the community at large. For example, a ten year old boy has not yet learned alphabets. It should not stop us from teaching him to read and write his name, which is a basic requirement to write his name in the book, worksheet, on display of his hand work, name list on the notice board, etc. and it should not also stop us from teaching him write the list of items (common items brought by the family) to buy form a grocery shop or read the labels on the items while buying. This is possible by using different approaches in teaching reading and writing other than conventional method of starting teaching from alphabets.

Another example is that, suppose we want to teach a 14 year old boy to take a bus from his house to come to school by himself. The bus number he needs to take is 65. But he can only read and write numerals from 1-5. Do we wait until he learns numerals upto 65 to teach him to identify bus No. 65 to travel by himself to reach the school. No, we can not wait that long and also we do not know whether he can learn the numerals upto 65. Therefore, as identifying the number 65 is important (functional) for travelling by bus to reach the school, we teach him to identify the number 65. Here, teaching him to identify the number '65' is functional. What we are trying to explain is that, the curriculum content which we select under functional academics should be of use to student to function independently in various situations at home, neighbourhood and community.

Functional academics refers to literacy and numeracy skills and include reading, writing and arithmetic (number, addition, subtraction, time, money, length and distance, weight and volume).

3.5.1 Functional Reading

Before we discuss about functional reading, let us know what is reading? Reading is the process of deriving meaning from print. It is a meaningful interaction between an individual and print. When you read the printed words you should be able to understand what you have read. For example, you may be able to read French as the script is in English, but you don't understand what you have read. In that circumstance, we can not say that you can read French.

Let us see, what is functional reading is:

Functional reading is a form of reading that arises from real world needs. This form of reading is called functional reading. Singing, reading signages/boards, filling forms, etc. Most of the children with mental retardation need training in functional reading.

Teaching functional reading

Different approaches have been employed in teaching functional reading to children with mental retardation. The most commonly used method is whole word approach.

- Whole word approach

Through this approach students learn to recognize and read words and later the spelling. For example, the child learns to recognize and read the word "banana" and learns spelling "b – a – n – a – n – a". In the beginning, we need to select words which have high imagery level (eg. Mango, ball, fan, brinjal).

Imagery level refers to the ease with which a word evokes a concrete picture. Low imagery words include abstract terms such as beautiful, good and have. In some instances we can provide high imagery to low imagery words by using them in context. For example, the word "sour". "I ate grapes, they are sour" becomes more concrete and students can remember better. Pairing of words with concrete objects or concrete experiences or pictures will facilitate development of high imagery level in the students.

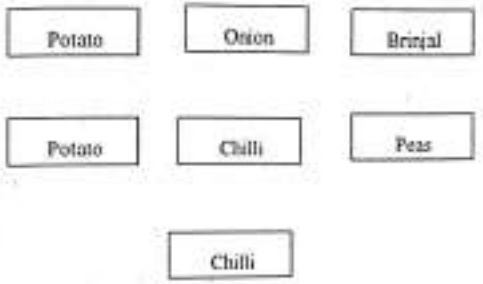
Follow these steps while using whole word approach.

- Before teaching child to read the words see that the child has learned to name the pictures (identify in case of children who are non verbal).

Select the words which are commonly used in the immediate environment.

(b) Three words

(c) More words



Remember to say the word at every step of teaching pairing skill to students.

- Once the student learns to pair the words, teach him to identify the words.

- Follow the principle of simple to complex.

(a) Chilli Potato

Ask child to point to chilli. She looks at two word cards and points to chilli. When the child points to chilli, the one left is potato. So the child automatically points to potato when you ask her to identify.

(b) Chilli Onion Potato

When you add one more word card, the child has to see three word cards to identify chilli. When he identifies chilli, still he is left with two words between which he needs to identify potato.

(c) Brinjal Potato Onion Chilli

Adding more number of words for identification of chilli and potato increases the complexity of the activity as mentioned in teaching matching.

- Once the student learn to identify words, ask him to read the words.
- Follow the same procedure explained above to teach other words.

- Suggested activities
- Distribute flash cards, one each to students. Make sure each one has different flash cards.

❖ Place one card on the flannel board and read.
❖ Tell students, whoever has a similar one, to place on the flannel board.
❖ Show the flash card and ask them to give you the similar one if they have.
❖ Show the flash card which none of the students have. Ask them whether anyone has a similar one.

- Divide the students into two groups (1&2) having two to three students in each group. Distribute two sets of cards, one each to the groups. The student in group 1 places flash card on the table. The students in group 2 look at the flash cards, and locate the similar one with them and earn a point.
- Reverse all the flash cards and place them on the table. Ask each student to turn one card over and find the similar one by turning the other cards. Make sure each flash card has a pair. Give points depending on number of chances the student takes to find the pair.

(See Myreddi, V. and Narayan, J. (1998) Functional Academics – for more details)

3.5.2 Functional Writing

Writing involves four stages namely,

a) Tracing.
b) Joining dots if needed.
c) Copying.
d) Writing from memory (including learning spelling).

Tracing

- Use word cards with sand paper letters for tracing.

mango

- Make child to trace with two fingers over the letters.
- Remember to say the sound of each letter after completing tracing of each letter in the word.
- You can also use sand to trace. Spread sand evenly on the floor and write the word. Ask the child to trace over the written word.
- Later you can write the words on the black board or slate followed by – writing the words in the notebook for tracing.

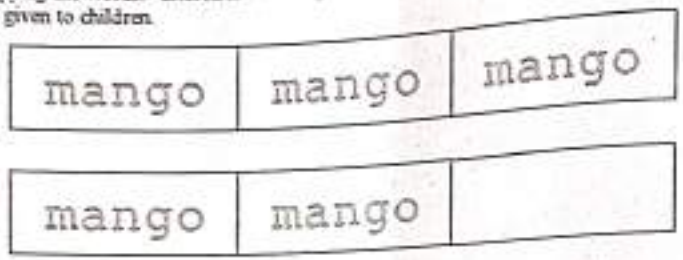
> Always remember to say the sound of the letter after completing tracing of each letter in the word.

- Using sand paper word cards gives multi-sensory input to the child. When the child is tracing each letter, with fingers, the child is seeing the shape of the letter "m" (visual) hearing the sound of the letter "Em" (auditory) and feeling (moving the finger on the shape) the shape of the letter 'm' (tactile). In the process the child associates the sound "Em" to the shape of the letter "m" and learns that this is called "m". Similarly the child learns the other letters in the

word. This will help them to identify and name individual letters in the word "m – a – n – g – o".

Copying

- Plan exercises to join the dots if there is a need otherwise you can go straight to the step – copying the words. Exercises involving copying words in notebook from the black board can be given to children.



Remember to tell the child to say the sound of the letter after copying each letter. If he cannot you say the sound of the letter. It further helps in identifying and naming letters.

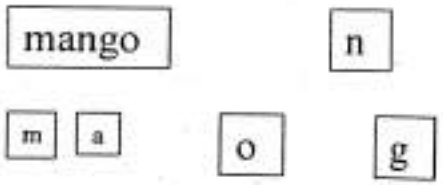
Writing words from memory

The last step in teaching writing is, writing the words without mistakes To write the words without mistakes, the child needs to learn spelling. It requires sequential memory ie., the child should remember the sequence of letters in a word. For example, the child has to write "mango", she has to remember that she should write first "m" then "a" later "n" and "g" followed by "o". Then it is correct. If she misses any of this sequence, then she makes a spelling mistake. The following are some of the activities you can plan to teach spelling.

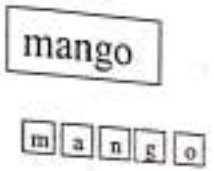
- Take word card and individual alphabets. Keep the word card in front of the child and match with the individual alphabets.

For Example

m Point to 'm' on the word card say 'Em'. Pick up m and place under and say 'Em'. Then point to 'a' and say 'E' and pick up a and place under 'a'.



Complete the filling of the letters in the similar fashion and say now "mango".



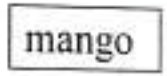
- Tell the child to do the same.

- Tell the child to make word mango with the letters without seeing a model.

m a n g o

- Tell him to check the spelling seeing the model.

m a n g o



- In case the spelling is wrong, the child can correct his mistake by himself.

For example:

(a) mango

m a o n g

Self correction helps him to know where he had made mistake.

(b) mango

m a n g o

- You can also give following exercise to fill in missing letters in the word.

(a) m a n g ___ (b) m a n _ _

(c) m a _ _ _ (d) m _ _ _ _

In this fashion, one can teach children to learn spellings.

- The most important thing we should remember is that reading and writing activities should go together. That is a reading activity should be followed by writing activity. The activities involved in matching of words can be followed by tracing of words. For example, matching activities to teach the word 'mango' and banana can be followed by tracing of the words mango and banana.
- The activities involved to teach identification of words can be followed by joining dots and or copying words.

For example, identification of words "mango" and "banana" followed by copying of words "mango" and "banana".

- Lastly the teaching of reading words can be followed by the activities to teaching spelling. For example, reading of words "mango" and "banana" followed by activities that helps in learning spelling.

Say the child has learned the words "mango" and "banana" to read and write on his own. How many letters he has learned to identify and or read in the process?

m	b
o a	g

Six letters.

Can we make new words out of this? Yes, we can.

man	no	go
bag	on	

These are the new words which you can teach the child to read.

Make sure that the child understands the meaning of words. This can be done by having appropriate pictures for words. Make a word file for children to read.

- Now, you take another two words to read and write. For example, brinjal and onion.

For example, "brinjal" and "onion". To write these two words the child has to learn the alphabets b, r, i, j, a, l, n, o. But the child has already learned the letter m, b, o, a, n, g and the letters required to learn to write the words are r, i, j, l.

When he learns to read these two words (brinjal and onion), you see how many letters he has learned now to read and write.

m	b	r	l	s
o	a	n	g	i

Nine letters.

See how many new words we can make.

girl, bin, man, on, go, ran, log
jam, ball, bag, no, or, bill, sir

- You can teach a number of words following the same procedure.
- Next, you can make phrases and sentences using the learned words.

A girl; This is a girl.
A ball; That is a ball.
A bag; That is a bag.
A man; This is a man.

In this fashion, you can increase the reading and writing ability of children.

3.5.3 Functional Arithmetic

We use number skills in our daily life. Right from waking up, you plan how many cups of tea or coffee to make, how many chapattis/idli/dosa to be make, how much quantity of rice/dall to cook, how long to cook and so on. When you buy groceries, vegetables, ingredients, we talk in terms of how many kilos, grams, litres, meters and paying money in terms of tens/hundreds/thousands. When we talk about travel, we use words such as how many hours it will take to reach that place, how far it is and so on. Another example is, one orange costs Rs 2 and you bought 5 oranges. To pay, you multiply 5x2=10 and give ten rupees. If you give Rs 20/- to the shopkeeper, you expect change (Rs 10/-) back.

from the vender. Here, you applied multiplication and subtraction skills. Hence, learning of arithmetic is essential for independent living.

Points to remember while planning and teaching arithmetic skills:

(a) The content should be arranged in a sequential order for which the task analytic approach is applied.

(b) Concrete material should be used while teaching to provide meaning to the concepts.

(c) Instruction must be practical and functional.

(d) Sufficient practice should be provided to deal with the concepts in variety of ways to ensure understanding.

(e) Activities should be planned to provide opportunity to generalize the learned skills.

Teaching numerals

Before teaching children to read and write numerals, teach counting.

- Counting
  - Use concrete material (shells, pebbles, bottle tops, beads, used pens, spoons, glasses, etc) to teach counting.
  - While counting, it has been observed that some children count objects without corresponding to the number whereby they count either more or less. To overcome this, make child to place the object and say the number. For example, you are using spoons for counting.
- Take a spoon and place it on the floor and say one.
- Let the child also do the same.
- Pick up another spoon, place it next to the first spoon and say two.
- Ask the child to do the same.
- Follow this to make child to learn to count objects corresponding the number.
- Use work sheets where child has to pair up pictures by drawing a line.

Remember to select only a few objects (two) for counting and add more slowly (see the principles of teaching).

- You can make children to count the objects in the environment. Eg. Fans, tables, chairs, windows, doors, body parts.
- Use situations at home while eating and serving snack or food, to teach numbers (eg. Two chapatti/idlis/poories, one spoon of rice, dall, sugar, place three plates, three glass, etc.)
- Use workbooks or work sheets to teach counting.
- Introduce horizontal counting first and later cluster counting.

Horizontal counting	Cluster counting
(a) ◆ ◆ ◆ ◆	(a) ◆ ◆ ◆ ◆
(b) ✱ ✱ ✱	(b) ✱ ✱ ✱
(c) O O O O	(c) O O O O

- Reading and writing numerals

Use the principle – known to unknown. The child has learned to count objects. Now you want to introduce number symbol to read. Reading numeral as one seeing the symbol '1' is not enough. He should know the meaning of one. Therefore, we need to teach the meaning/value of number-symbols. Follow the procedure given below.

Tell the child to pick up one object. Ask him how many objects did he pick up. In case of a child who is non-verbal, you say one.

- Tell him to place on the table.

⇒

- You place the number card below the object and say one.

⇒
1

- Ask him to repeat the activity.

⇒ ⇒
1 1

- Follow the same procedure to teach number 2.

□□ □□
2 2

- Plan activities that involve matching of numerals. Remember the procedure explained under whole word approach.

1.	1 1 2
2.	1 1 3 2
3.	1 1 2 4 3 5

- Once he learns to read numerals 1 and 2 add one more number for reading.
- Give exercises which involve counting and writing numeral or writing the value.

Count and write numeral		Write the value
oo		2
o		3
ooo		1

- Writing numerals

It has already been emphasized that reading and writing should go together. While teaching children to read numerals, teach writing numerals also. Follow the procedure explained under writing words (tracing, copying and writing from memory).

- Teaching numerals above 10

The numerals upto 9 are single digit and are called ones or units. Numeral 10 is two digit. Zero is in once place and 1 is in tens place. Make sure that children notice this difference.

It has been observed that children say one and one is eleven rather than ten and one is eleven. It is important that we teach children to understand that ten and one is eleven. Follow the procedure given below.

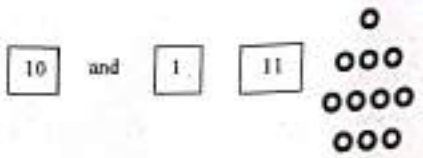
- Take concrete objects and numerals upto 10. Ask the child to give ten objects and place a flash card ten.

oo
ooo
ooo
oo
10

- Next tell the child to pick up one object and the numeral one and place next to ten.

oo
ooo o
ooo
oo
10 1

- Let us see ten and one PUT TOGETHER becomes how much. Push ten objects and one object to the side and tell the boy to count. You also count along with him to add the new word eleven after ten. Then pick up number '11' flash card and place under the objects.



Similarly teach the other numerals.

- Use work sheets once the boy had enough experience of learning with concrete objects.
- In the beginning use the words ten AND one – eleven. Later introduce, ten PLUS one – eleven.
- After nineteen is twenty. Teach two tens together becomes twenty and twenty and one twenty one and so on.
- Introduce rupees, kgs, litres parallely while teaching numbers. For example, teach identification and naming of Rs.1, Rs.2, Rs.5, Rs.10 while teaching numerals from 1-10.

Teaching addition.

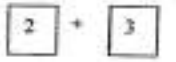
Children need to understand that when we add, two are more things, the quantity increases. Addition means "putting together". Use concrete objects so that children see the increase in the quantity.

- Give three bottle tops to a child.
- Ask her how many she has?
- Give two more bottle tops to her.
- Ask now how many she has?
- Give similar exercises to make children to understand the concept addition.

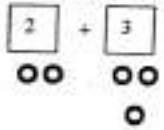
Next, introduce number symbols to explain.

For example 2 + 3 = 5

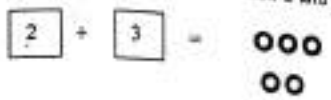
- Place flash cards on the table or floor and read two plus three is equal to



- Ask child to read the sum and tell him to place the value under the numerals.

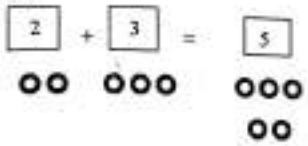


- Tell the child that we have to add 2 and 3. So you put two and three objects together.

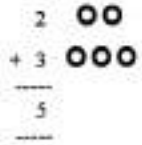


- Ask him to count and place the numeral five.

- To discuss the point that the quantity increases when we add place the quantity under numeral 2 and 3.



- Tell the child to observe the quantity under 2, 3 and 5 and ask him which is more. As the child sees visually the quantity he would say the quantity under five is more. You can also discuss which number is greater and which is less in comparison. For eg. 3 is greater than 2, and 5 is greater than 2 and 3. 3 is lesser than 5, and 2 is lesser than 3 and 5. Discussing these concepts at this juncture helps children to understand the value of numerals.
- Write sums vertically to do addition.



- Once children learn to add using concrete objects and pictures on worksheets, teach them finger counting.
- Teach single digit three line, four line addition.

- Introduce two digit addition without carry over and with carry over.

32	34	42
+ 42	32	24
	+ 12	+ 11
46	38	
+ 37	41	
	+ 74	

Introduce adding of money. Use receipts of small purchases

Rs. Ps.	Rs. Ps.	Rs. Ps.
3-00	1-00	32-00
4-00	5-00	+ 42-00
+ 2-00	3-00	
	+ 2-00	

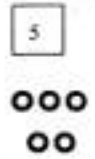
Teaching Subtraction

Firstly we need to make children to understand the meaning of subtraction. Subtraction means 'taking away' things from the group. When you take away, the quantity become less. Show them using concrete objects.

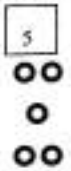
- Give five pencils to a child. Ask him to count and tell you how many she has.
- Tell her to give away two pencils to her friend.
- Ask her how many pencils does she have. Also ask whether she has more or less pencils.
- Give similar experiences to make children understand the meaning of subtraction.
- Next, introduce number symbols to explain.

- Read the sum five minus three is equal to.

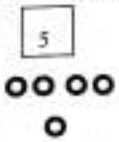
- Tell the child to keep five objects under five.



- Ask her how many to remove and tell her to remove.



- Ask her how many are left and tell her to place the numeral '2'.



- Ask the child whether the quantity has increased or decreased when you do subtraction.
- Give sums vertically.

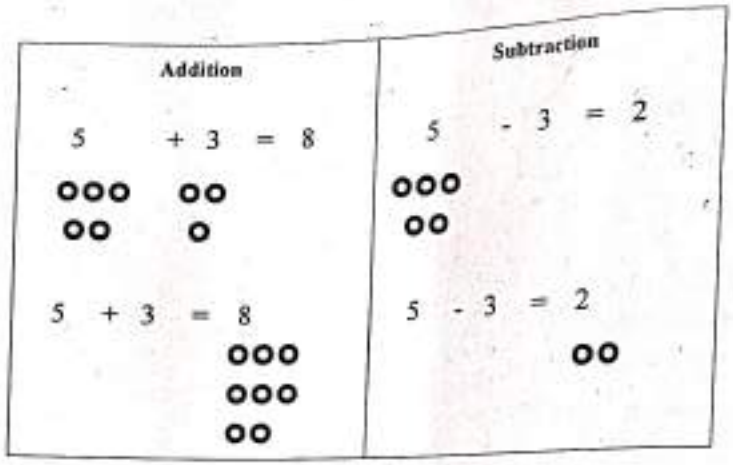
4	3
- 2	- 1

- Use worksheets once the child learn to do with concrete objects.
- Introduce finger counting as children learn to do with pictures.
- Explain zero concept. When you give away everything you have nothing.

  3 - 3 = 0

- Bring child's attention to that when add the quantity becomes more, and when you subtract the quantity becomes less.

For example:



- Introduce two digit subtraction without carry over and later with carry over.

24	42
+ 32	- 20
___	___
52	60
- 37	- 32
___	___

Time

Teaching time includes learning of vocabulary related to time, week days, months and reading time.

- Use the words such as now, later, after some time, stop, start in your daily activities (Eg. Let us play now, we play after some time).
- Discuss the daily activities of children right from waking upto going to bed associating with the time. For example, we get up in the morning, go to school at 9.00 a.m., play in the evening, etc.
- Use calendar to discuss the days of the week, month and date. Ask children to write the day, date and month on the black-board in their notebooks.

- You can also discuss yesterday, today and tomorrow using the calendar, how many days in a week, month and how many weeks in a month.
- Use real clock to teach time to children. Use winding clock so that children can see the movement of long hand and short hand, and also when long hand makes one round the short hand moves from one number to other. Teach first telling time in hours, later half-an-hour, quarter hour and minutes.

Money

Firstly, children should understand that we need money to buy things from the market. Take children along with you when you go to the market and give them money to pay for things which they buy (sweets/biscuits, etc). As suggested earlier, introduce the relevant money skills parallely while teaching numbers, additon and subtraction skills to children. For example, you can introduce one rupee coins for counting while teaching counting objects. Here, the child has to say two or three rupees instead of two or three pencils or stones, etc. Similarly, introduce Rs 1, Rs 2, Rs 5, Rs 10 while you are teaching number symbols 1-10. Here, the child learn to say one rupee, two rupees, etc. instead of saying one, two, five, etc. Practical experience of using money by the students in buying and paying small amounts to bigger amounts as per children's ability is important.

Travel skills

We use different modes of transport for travel – bus, train, car, auto, cycle riksha, bullock cart. Skills required to travel are waiting in a queue, buying ticket, paying money, getting in and getting down, crossing road, etc.

- Plan outings such as going to the shop, park, or any other place where you use the transport. Take the children along with you to train them in traveling independently.

For travelling by bus:

- Getting dressed.
- Reaching the bus stop from the training centre or home which may involve crossing road.
- Waiting in the bus stop till the arrival of required bus.
- Moving in a queue and getting into the bus.
- Finding a seat. If seat is not available, holding the rod and standing.
- Buying the ticket from the conductor.
- Getting down when destination comes.

The boy need to be trained in all the above skills if he had to travel independently by himself.

Use the strategies explained in Unit-45 and follow the procedure explained in Unit-47 to teach children to identify the bus number.

- Teach children to identify/read the words in bus station, railway station and other places of visit in the community (ticket counter, cloak room, toilet-gents, ladies, waiting room, drinking water, platform, vegetarian, canteen, station master, public assistance)
- We need to teach children to read the meter and pay money when they use auto or taxi.

The best method of teaching is by giving direct experience in natural environments. Suggest parents to take their children along with them when they go out. Not only taking their children out with them but they have to train in the skills by giving them opportunity to do by themselves and giving assistance when required. For example, the boy stands in a queue to buy a ticket to travel by train. Parent/family members stands along with him to assist him in paying money.

Teaching shopping skills

Going for shopping involves right from getting ready to making list of items to buy, reaching the shop, buying things, paying and carrying things back home. Teaching generalization of learned skills when required is an essential part of educational programming. When children are taught numerals, the relevant topics in money, time, measurement are to be introduced. For example, If you are teaching numerals 1 to 5 to name, introduce rupee coins 1, 2, 5 to say one rupee, two rupees, ... What we need to remember here is that to add rupee after one when they are saying. You can give them experience of buying things form a shop using the coins or notes. These experiences help them to understand that you need to pay money if you have to take anything from the shop. Similarly, you can introduce litres, kgs. That would help them in doing shopping.

- Provide experience of weighing vegetables, rice, pulses with the balance in the classroom to understand the concept of weighing using weights.
- A kitchen garden can be planned in the school/centers. Children can place the vegetables and sell them to the staff/families using the balance and weights, which provides a practical experience to them.
- Introduce the concept of litres. That is liquids are measured in litres. Show the sachets (milk, oil) bottles (shampoo, oil, cool drinks) in shops. You can collect the empty sachets or bottles to show children in classrooms.
- Similarly you can discuss about kilometers and metres appropriately using the situations and planning activities in school. For example, measuring the distance in walking/running race, measuring the cloth required for a door curtain, etc.
- Teaching cooking is a part of home management skills. You can have an activity in which children estimate the vegetables, grocery required to cook for their group and the money required. They collect money and go for shopping. After coming back, discuss what they have bought, how much they have bought, how much money they have collected and how much money they have spent.
- Inform parents and family members to take their children along with them when they go for buying vegetables, grocery, milk, toiletries, clothes, etc. They can use the receipts to teach children to total the amount, paying money and the balance to get back. All children with mental retardation may not be able to buy things which involve big amounts. In such cases, we need to limit money transaction to the level the child is able to manage.

- Involve children in selecting and picking up vegetables, groceries, toileteries in self accessing shops or, asking for items form the list from general store, paying bills, and carrying bags home.
- Often parents/family members select every thing for a boy or a girl with mental retardation not giving any opportunity to them to decide what they want. Let children decide what type, or colour clothes they want, toileties they want, fruits, sweets they want. It helps them to develop decision making capacity.

Teaching home management skills

Persons with mental retardation need to be taught to manage their homes which is a step towards achieving independent living. Home management skills include dusting, mopping, cleaning, washing, and cooking. Use teaching strategies and principles of teaching, discussed in earlier units. Analyze the tasks and teach students by selecting appropriate material and methods.

Points to remember

Dusting

- Start with dusting plain surfaces with a duster.
- Later teach them to dust furniture, cleaning cub boards, shelves, when things are removed which may be followed by removing things and replacing them back after dusting.

Mopping

- Mopping with a wet cloth after the adult mops to give a practice.
- Mopping part of the room along with the adult.
- Mopping the smaller rooms followed by big rooms.

Cleaning utensils

- Washing with water small kitchen articles such as spoons, glasses, small plates.
- Cleaning small utensils with cleaning powder and washing with water.
- Staking washed utensils.
- Removing the plates and utensils from the dining table and wiping the table.
- Removing the left over food from the utensils and washing them.

Cooking

- Measuring rice and washing with water.
- Storing the groceries in tins.
- Sorting vegetables and storing.
- Pealing vegetables.

- Cutting vegetables which does not involve finer cutting.
- Cutting vegetables which involves finer cutting.
- Making tea and coffee.
- Making juice.
- Making simple snacks such as sand witch.
- Making rotis, dall and simple vegetable dishes.
- Use utensils with non-heat conducting handles. Fill the grocery, ingredients in transparent plastic containers for easy recognition. You can also label the items.
- Use cutting boards if child has difficulty in cutting with knife.
- Avoid using sharp knives in the beginning of teaching to avoid accidents.
- Introduce a timer if necessary in using cooker for cooking.
- Remember to reinforce the boy for near approximation of a target task in the initial stages of learning.
- Use demonstration and modeling strategies extensively as all of these activities need to be demonstrated and modeled.

Washing

- Washing napkins, towels, undergarments.
- Washing clothes.
- Ironing clothes.

3.6 MULTISENSORY MATERIAL

We have seen that there are not many specific teaching learning materials exclusively for mentally retarded children. In the case of a blind child, Braille and abacus become a necessity. As retarded children learn to use what we generally use in our day-to-day life can be used by a mentally retarded child also. In fact, it is better to use materials as they are in natural setting rather than specialize them. One major difficulty with persons with mental retardation is their ability to generalize, that is, use a skill learnt in one environment in another situation. Hence, if we specialize their materials to use, they may not be able to adapt to environment without that materials. However, there are certain simple changes and adaptation that can be made so that they function independently. This needs some thinking on suitable selection of materials as well as making minor modification based on individual needs.

Importance

If independent living by the retarded child is the ultimate aim, any step towards actualizing it is worth the time and effort. One of them is suitable selection and adaptation of TLMs. While talking about learning by mentally retarded children, we have been constantly referring to concrete examples, as they cannot understand abstractions. This necessitates materials that can be experienced by the five senses,

leading to understanding and concept formation. In the classroom or outside, use of actual objects along with verbal explanation is necessary. Allowing the child to experience the new input through appropriate method and materials is the crux of educating the retarded child. Therefore, importance of TLM cannot be under-estimated.

Learning and Functional aids

While teaching children, we use certain material. Some are used for a short duration, while some are used permanently. We know that mentally retarded persons need concrete experiences and examples for their learning. Once they have learnt, we do not need the material any more. For example, stones, beads, seeds, spoons and such other small objects can be used for teaching counting. After the child has learnt to count and has understood what is 1, 2, 3, 4 ...9... 10 and so on, by looking at the number symbol, the objects are not needed any more for counting. Similarly in reading and writing, initially you may use pictures and help the child to name them, read and write. After accomplishing independent reading of the name, the picture or the object is not needed. Such objects and materials are called **learning aids**. They will not be needed by the child for learning purposes once the concept is understood.

On the other hand, **functional aids** are required for a person with disability to be used all through his life, and it compensates for his disability – hearing aids for persons with hearing impairment, crutches/calipers/wheel chair for locomotor disabled person, cane/Braille materials for a blind person, written name and address for identity for a mentally retarded person are a few examples of functional aids. One has to be very careful in selection or development of teaching learning materials.

Consideration and Selection/Development of TLM

If well selected, some can be used **as they are** – beads and blocks, garden tools and so on. **Some need modification** for use by retarded person – shirts with Velcro instead of buttons, skirts and pyjamas with elastic instead of tape and a **few need to be exclusively developed** – name cards, sequence of hair braiding to make it easy to difficult steps (for girls). Whether learning or function aids, first check if it can be used by the retarded person as it is. As there is variation in the ability of the retarded persons utility of readymade material as it is, will depend, to a large extent on the user. If after trial you find that it needs modification, then only adapt it. Do not be in a hurry to adapt. The more the object used resembles the regular one, the more chances of generalization by your trainee.

Examples of functional aids for mentally retarded children include adapted/simple calculator, digital watch, address card, modified brush/towel to scrub/wipe difficult to reach areas while bathing such as centre of the back, pictorial shopping list (if they cannot read), pictorial recipe book and so on.

While developing or selecting TLMs make sure that the material is

- durable.
- has multipe utility.
- age appropriate.
- affordable.
- accessible by school and family.
- maintenance is easy.
- breakable/non-toxic.
- serves the purpose it is meant for.

- minimizes transfer of training (easy to generalize).
- novelty is maintained.
- updated.
- easily available.
- leads the learner towards independent living skills.

3.7 CLASSROOM MANAGEMENT

For many years, educators considered classroom management as disciplining student in the classroom. In recent years, the concept has been expanded beyond discipline to an effective handling of students behaviour that become problematic to the teacher and others in the classroom. In other words, effective classroom management includes careful planning and structuring of the physical environment and the behaviour management of students in the classroom. If the teacher lacks classroom management skills, little learning take place in the class in spite of the tremendous array of teaching skills that they possess. Therefore, teachers should acquire both teaching skills and techniques of management of students in the classroom.

What Does Classroom Management Refer To?

Effective classroom management is the ability to establish, maintain and (when necessary) restore the classroom as an effective environment for teaching and learning (Brophy, 1986).

Classroom management refers to the steps and procedures necessary to establish and maintain an environment in which instruction and learning occurs (Doyle, 1979).

Who is an Effective Teacher?

An effective teacher is one who displays the ability to spread her attention, is well prepared and has momentum, possesses signal continuity, uses group tackling techniques, and who challenges and motivates students with a variety of teaching techniques (Lufbig, 1987, P.418). It is stated that an effective teacher plans a programme for the coming year before the academic year begins. Some of the activities are listed below.

1. Planning the physical environment in the classroom.
2. Constructing seating arrangements.
3. Instituting class rules and a system of discipline.
4. Preparing a daily lesson schedule.
5. Selection of student helpers and / or monitors.
6. Instituting on rules for routine procedures such as those to be followed in toilets, refreshment areas and so on .
7. Instituting playground and recess regulations.
8. Establishing the role of para professionals such as teacher aids.
9. Preparing a schedule and establishing a procedure for the substitute teacher (Charles, 1980)

Scheduling the activities

One o the things a teacher needs to do is to schedule the daily activities for her class. Though scheduling the activities looks simple, yet it is harder in practice because the teacher has to consider outside factors such as curricular activities taught by other professionals in the school, school mandated lunch, recess and other activities.

Curricular areas taught by other non academic teachers / professionals

A majority of special schools have professionals other than the class teachers to tech physical education, music, art and craft, and speech therapy. Either the professionals go to the respective classes to teach children or children might go to a particular place for the lesson. In either case, the person teaching will inform the teacher about the timings and teacher should accommodate all these requirements into her daily routine. Also reaching, children to an appropriate classroom site and picking them up is the teacher's responsibility and she should include the travel time in her schedule.

Lunch and Recess

Recess and lunch times are generally scheduled by school administrators. Often recess time is schedule for two times, once during mid morning and the other after lunch. The teacher need to take these recess and lunch time into account while planning the daily schedule.

Daily schedule of activities

The following points need to be considered while planning a daily schedule of activities

1. The maximum duration of each session may be for about 30 to 40 minutes. However, with young children with, severe and profound retardation and at the re-primary level, the duration of each session may be 15 - 20 minutes.
2. About 5 to 10 minutes time is to be spent on opening activities before starting the regular teaching sessions. The opening activities may include quizzing on the day and date, birth days, festivals, previous day's television programmes, news of the day, and son on. Before these opening activities, the pre-primary and primary groups of children should be trained in removing shoes / chapels and arranging them in a corner of the classroom. This activity will provide and opportunity for the children to practice and / or learn the skill in self discipline.
3. While organizing the classes it must be seen that the desk and non-desk activities are alternatively arranged. For example, after an arithmetic class, an art and craft activity or games class must be organized. Also, if one has planned reading on Monday from 09.15 - 09.45 a.m., the same subject need not taught on Tuesday from 09.15 - 09.45 a.m. One must introduce other subjects in that time slot.
4. Including outing at least once a week must be part of schedule. The outings may be to a park, market place or to a place where community services are provided.
5. Providing some time for preparing before and closing, after an art and craft, music ore games session is necessary.
6. About 10-15 minutes time be allotted at the end of the day for reviewing the entire day's activities and preparation to go home at the end of the school day.
7. Two breaks, one in mid morning for snacks / drinks and another at noon for lunch is necessary. The morning break should be shorter than the noon-break. Extra time may have to be allotted to

young children and also those with severe and profound retardation at snacks and lunch breaks as they require more time for preparation, eating and cleaning up.

Managing the physical environment

Luftig (1978) points out that the physical organization of the classroom has a strong influence on the quality of learning that goes on in the classroom. It also has a strong effect on the motivation of the learners, the quantity and quality of communication used by the learners in the class and in their classroom behaviour.

The following are some of the considerations the teachers need to take into account while designing and arranging the classroom.

Classroom furniture and equipment

The furniture, desk and other equipment should be of the right size for students so that they feel comfortable while using them during the learning activity. The teacher and students may have their own lockers and desks for their individual use.

Spatial Variation

The classroom should have different dimensions so that different groupings can be organized comfortably. Also, it must allow for seating arrangements to be made when necessary for different activities.

Flexibility

Furniture should be versatile and usable for a number of activities (for example, writing as well as for painting). It must be easily movable and manipulatable.

Wear and renewal

Furniture should be durable and easily maintainable. Also, it should be economical when furniture is to be replaced.

Seating arrangement in the classroom

The traditional classroom arrangement is that of making students sit in rows one behind the other. The researchers have observed that the traditional classroom arrangement does not involve an easy two-way communication. Small group arrangements in the classroom are suggested because they facilitate two way communication, between the teacher and the taught.

Apart from the seating arrangement Charles (1980) states that the space on the floor, walls, cabinet tops, shelves, closets and cupboards have to be taken into consideration while designing the classroom, so that optimum use of it is possible.

Floor space

Floor space is mainly concerned with seating arrangement, work and activity space and movement in the classroom for students and teacher. Different types of seating arrangements can be adapted depending on the nature of the lessons, or activities.

Work and Activity space

Work and activity space refers to the usable and functional work space available in the classroom. The requirement of space depends on the classroom activity. For example, the space required for writing is less than that needed for art and craft project. During the project activities, the furniture could be pushed to a corner to make a larger central space for work. If the classroom activities are predominantly seat work and the teacher wants to closely monitor individual student's performance, the seating arrangement could be done liberally leaving less of central space. In addition, the space at the rear end in the classroom should be made functional b arranging activity centers for students to work by themselves. The seating and floor arrangement should also consider the traffic pattern of the classroom. The arrangement should be such that the children move around the classroom when needed, without disturbing others.

Wall Space

The wall space is used for the black board, bulleting boards, display area for student work, notices on class rules, slogans, and so on. The black board is an important teaching aid which is often used by teachers in the classroom. Teachers do not have much say in the fixing of the blackboard as they are usually positioned even when the classroom is in construction.

Bulletin boards are used for displaying material of interest for the children. Often it has been noticed that teachers do not change the material on the bulletin boards frequently due to the other priorities of workload in the school. Teachers may involve students in arranging the bulletin boards with just supervision and not the teacher's total involvement. The material to be displayed must be related to the classroom work and the projects.

It is highly reinforcing for children when they see their work displayed on walls. Displays facilitate parents to realize that their children have positive experiences in the school. In addition children enjoy showing their work to parents and siblings in open house or similar school events. Further it is important that all the students work should be displayed periodically which in turn encourage children to try their best.

Cabinet and closet space

Cabinet and closet space should be utilized for keeping materials and equipment so that the classroom looks net. As far as possible the material must be kept inside the cabinet or closet when they are not in use. Material must be arranged in such a way that the children easily retrieve it on their own without assistance.

Time out Area

A time out area should be, quite an isolated and a non-stimulating separate area in classroom to keep away all other distractions of classroom activities. All children do not time out areas in the classrooms. Therefore, it is not necessary to provide a time out area in every special education classroom. The classroom teacher decide whether a time out area is essential for her class or not and accordingly arrange for one.

Management of behaviour in classroom

Discipline for classroom control is necessary in imparting education. No matter how hard the teacher tries there will still be some students who are unresponsive to all efforts, are disruptive and who do not

confirm to classroom rules. In order to overcome such problems, behaviour modification techniques and social learning theory models are applied in the classrooms situations.

The behaviour modification model asserts that student's behaviours occur because such behaviors are reward by the environment in which the student is in. So using behaviour modification techniques, the teacher tries to increase desirable behaviour and decrease undesirable behaviours. Some of the behaviour modification techniques are reinforcement, shaping and chaining, prompting and fading, modeling and imitation, time out & over correction.

(See Block-III, Unit-4 for more information on Behaviour modification techniques)

Some tips for effective classroom management

Get Them In

The first and foremost strategy is to plan the start of a lesson. The important points to keep in mind are:

- Know before hand what you will be teaching in that class.
- Materials, displays and instructions should be ready before the start of class so that no lesson time is wasted in preparation and distribution of materials.
- Start the lesson on time without delay in unnecessary matters.
- Plan the seating arrangement according to the activity and in such a way that movement in the classroom is under the teacher's control.
- Start every lesson with a four or five minutes activity that keeps each child occupied in his own place.

This activity can be a reinforcement like a skill taught earlier which will serve as a lead on to the actual content of the lesson.

Remember: A lesson well begun is a lesson well done.

Get On With It

It refers to the content, manner and organization of the lesson itself. The important points to be kept in mind at this stag are:

- Adding variety of spice to the lesson. For example, two short lessons are likely to be more effective than one long one. But, a double lesson does not mean repeating the same content in the same manner twice. It simply means presenting one content area in different ways. For example, counting objects could include exchange of objects amongst the children as well as sticking a particular number of pictures as per the functional level of the child.
- Alternating a slightly boring activity with a preferred one, mixing familiar work with new learning and balancing quite individual work with more active group task.
- Activities being clearly specified and the teacher's expectations clarified so that each child knows what he should be doing and when he could be doing it. Giving short, precise instructions is the simplest way to alter misbehavior.
- Minimizing the interference with the lesson at hand by dealing with the situation early and firmly. The more the punishment is dealt out more the nagging and more negative remarks being made and this will only lead to increase in tension.

- Using ample praise in teaching - praise, which should be natural and sincere and not dull and routine to enhance desirable behaviour.
- Remembering that facial expressions, eyes, posture, gestures are all potential means of communication equally important along as speech and tone of voice.
- Use of questions to be made as a source of feedback rather than as a source of negative interaction.

Remember: The way the teacher talks to the class reflects his attitude to them not only in WHAT is said, but HOW it is said.

Get On With Them

The temptation to misbehave is lessened when teachers and children get on well together. The following are some important points to be kept in mind.

- The teacher needs to show an awareness of each child as an individual.
- Remember the names of all children and address them by their names - whether in praise or in rebuke. "Good girl, Radha" helps make the praise more personal, than a plain "Good girl".
- A personal positive comment can be mad each time a child finishes a task.
- A daily chat, however brief, about something not connected with lessons can be a source of insight as well as a way of establishing rapport.
- Paying attention to the entire class rather than focusing on only one bright child would enable the teacher to spot the first signs of trouble and intervene early.

Get Them Out

The final strategy to be mastered is how to conclude the lesson and dismiss the class. The following are important points to be kept in mind at this stage.

- Hard won control of the class is lost and learning is wasted with a bad end to a lesson.
- Finish with the content of the lesson a few minutes before the end of the period.
- After organized collection of materials or putting away of books, plan some time for revision of the lesson.
- If there is still time to spare, utilize it for playing an appropriate game related to your lesson. If made a routine practice, this game can serve as a reward for effort put in during the class and for prompt and orderly collection of material at the end of it.
- Ending a class only means moving into the next activity. Children need to be eased in to their next activity. Giving the children a brief idea about what they will be doing next, helps to prepare them for a smooth change from one activity to another.

Remember: Learning that has taken place during a lesson can often be wasted if any opportunity is not taken to reinforce what has been taught by a summary and a brief question - answer session.

Attention to these four area may not solve all the problem of disturbed and disruptive pupils, but it will definitely avoid problems caused by disorganized teaching. Therefore, to organize and plan every lesson well, a lesson plan has to be made before getting into any sort of classroom teaching.

3.8 UNIT SUMMARY

In this Unit, you have been introduced to the whole process of special education for children with mental retardation. It involves assessment, programme planning and evaluation.

- Assessment is a process of collecting information and analyzing the information to make various decisions.
- Assessment is done for various purposes – screening and identification, diagnosis and referral, programme planning and evaluation.
- - Data is collected by interviewing parents/family members, directly testing the child, observing the child in various settings and situations and form previous records.
- Norm referenced tests, criterion referenced tests and functional assessment tools are used in assessing the performance of children with mental retardation. Selection of tools depends on the purpose for which assessment is to be carried out. However, criterion and functional assessment tools are extensively used in educational programming of children with mental retardation.
- Individualized educational programme has to be developed for each child as the educational needs of children differ from one another. It is a written document in which the child's needs are clearly stated in terms of goals and objectives to be achieved over a period of time.
- Evaluation is comparing the performance of a student to a set criteria.
- Two types of evaluations are carried out in special educational programmes – formative and summative.
- Formative evaluation is done during the intervention programme actually done, where as summative evaluation is a long term or final evaluation done after completing a specific task teaching.
- Systematic recording of performance of children and maintenance of individual records are essential to know the effectiveness of intervention/teaching programmes.
- One of the aims of special education is to train children to look after personal needs ie., training children to eat, drink, attend to toilet needs ,brush, bathe, dress and comb hair, apply powder, fix bindi (in case of girls).
- We need to follow certain points while planning and teaching daily living skills. They are (a) analyzing the task into simple steps, (b) assessing the current level performance of the student, (c) providing appropriate assistance (prompts) and fading procedures, (d) selecting suitable material and reinforcement, (e) including activities that would facilitate transfer or generalization of learned skills and (f) systematic maintaining of records.

In case of children who lack fine motor coordination, use adaptations that reduces dependency on others.

- Functional academics refer to the literacy and numeracy skills that are required for independent living.
- Functional academics include reading, writing and arithmetic (number, addition, subtraction, time, money, length and distance, weight and volume).

- Whole word approach is the popularly used method of teaching functional words to children with mental retardation.
- Tracing, copying and writing from money are the three stages to be followed while teaching writing words.
- Related application mathematics (money, weight and volume, length and distance) skills to be introduced while teaching number skills to children with mental retardation.
- Concepts of addition and subtraction needs to be explained concretely so that children understand that when we add the quantity becomes more and when we subtract the quantity becomes less. It is also important to explain the concept of zero.
- Opportunities should be provided to children to apply the learned skills in natural settings such as shopping, travelling, cooking, etc.
- Classroom management includes both disciplining students and effective management of behaviours that become problematic to the teacher and others in the classroom.
- An effective teacher is one who displays the ability to spread her attention, is well prepared, and motivates students and manages problematic behaviours.
- Teacher need to prepare schedule of activities, plan, organize and prepare the physical facility to create an interactive learning environment.
- Behaviour modification techniques such as reinforcement, shaping, chaining, prompting, time out etc. are used for effective learning among children with mental retardation.

3.9 CHECK YOUR PROGRESS

Exercise-I

1. What is assessment?
2. What are the different decisions one may have to make after collecting and analyzing the information?

Exercise-II

1. What is Individualized Education Programme (IEP)
2. Explain the following:
   a) Annual goals
   b) Short term objectives
3. Write the contents of a teaching plan.
4. What are the components of objective. Explain with an example.

Exercise-III

1. What is evaluation?
2. Explain types of evaluation.
3. State the difference between assessment and evaluation.

Exercise-IV

1. Enlist the general points you need to keep in mind while planning and teaching daily living skills
2. Explain the procedure to train a child in eating food.
3. How will you help a child to hold the brush, spoon, comb who has difficulty in holding?
4. Explain the steps involved in training in (a) bating, (b) toileting, (c) removing and wearing shirt, (c) Removing and wearing pants.
5. Explain the steps involved in plaiting hair.
6. What kind of adaptations you can make to train a child to wear dress who has difficulty in unbuttoning and buttoning?
7. How do you train a boy and a girl in wearing shoes/chappal, to identify wrong and right side of a shoe/chappal?

Exercise-V

1. What is functional reading?
2. Explain the method of teaching functional words.
3. Explain the steps involved in teaching writing words.
4. Plan two activities for the following:
   a) Matching words b) Identification of words

Exercise-VI

1. What does functional arithmetic include?
2. Explain the procedure to teach the following
   a. Reading and writing numerals from 1-10
   b. Addition
   c. Subtraction

Exercise-VII

1. What is classroom management
2. Explain the following
   a) Points to remember while planning and teaching lesson.
   b) Classroom arrangement

3.9 ASSIGNMENTS/ACTIVITIES

1. A 15 year old boy with mental retardation is able to walk, run and climb. He can read and write numerals upto 15. For him you need to teach to travel by bus by himself to reach school. The bus No 25 comes to school from his house. Explain how you will teach him to travel by bus 25 to reach the school and go back home.

2. You are teaching numerals 1-10 to a group of young children with mental retardation. You also need to teach parallely the related money skills. Explain the activities which you will plan to teach related money skills.
3. Explain the type of cooking skills (in an order of simple to complex), you will teach to a girl of 19 years who is mildly retarded.

3.10 POINTS FOR DISCUSSION AND CLARIFICATION

After going through the Unit you may like to have further discussion on some points and clarification on other. Note down those points below:

3.10.1 Points for Discussion

_____

_____

_____

_____

_____

_____

3.10.2 Points for Clarification

_____

_____

_____

_____

_____

_____

_____

3.11 REFERENCES

- Howell, W.K. and Morehead, M. (1987) Curriculum-based evaluation for special and remedial education. Columbus: Merrill Publishing Company.
- Wallace, G., Larsen, S.C. and Elksnin, L.K. (1992) Educational assessment of learning problems. Testing for teaching. Boston: Allyn and Bacon.
- Jayachandran, P. and Vimala, V. (1992) Madras Developmental Programming System (MDPS). Chennai: Vijay Human Services.
- Kohli, T. (1987) Portage Basic Training Course for Early Stimulation of pre-school children in India. New Delhi: UNICEF.
- Krishnaswamy, J. and Jayachandran, P. (1989) Upanayan – A programme of development training for children with mental retardation. Chennai: Madaram Narayanan Centre.
- Narayan, J., Myreddi, V., Reddy, S. and Rajgopal, P. (1995) Functional Assessment Checklist for Programming (FACP). Secunderabad: NIMH.
- Towards Independent Series(1990). Secunderabad. NIMH.
- Werner, D.(1994) Disabled Village Children. New Delhi. Voluntary Health Association of India.
- Polloway, E.A. and Patton, J.R. (1993) Strategies for teaching learners with special needs. New York: McMillan Publishing Company.
- Myreddi, V. and Narayan, J. (1997) Functional literacy series. Secunderabad: National Institute for the Mentally Handicapped.
- Myreddi, V. and Narayan, J. (1998) Functional Academics for students with mental retardation – A guide for teachers. Secunderabad: NIMH.
- Gearheart, B.R., DeReiter, J.A. and Silen, J.W. (1986) Teaching mildly and moderately handicapped. New Delhi: Prentice Hall of India.
- Bolt, D.A. (1988) Mathematics. In J.Wood (Ed.) Mainstreaming – a practical guide for teachers. New York: McMillan Publishing Company.
- Myreddi, V., Narayan, J. and Sachin (2002) Help them learn (video film). Secunderabad: NIMH.
- Narayan, J., Myreddi, V. and Sachin (2002) Make it easy (video film). Secunderabad: NIMH.
- Baine, D.D (1988) Handicapped children in Developing Countries. Alberta: University of Alberta printing services.
- Bauer, A.M. and sapona, R.H. (1991) Managing Classrooms to facilitate learning. New Jersc: Prinice Hall.
- Brophy, J. (1986) Classroom management techniques. Education and Urban Societ. 18. 182-184.Charles, C.M. (1980) Individualized instruction. St. Louis, Mosby.
- Doyle, W. (1979) Making managerial decisions in Classroom. In D.L. Duke (Ed) Classroom management. Chicago: University of Chicago press.
- Lufling, R.L. (1987) Teaching the Mentally retarded Students. Boston: Allyn and Bacon, Inc.
- Mafferpier, A.M. and Scruggs, E.T. (1987) Effective Instruction for special education. Boston: A College Hall publication.
- Ornstein, A.C. (1990) Strategies for effective teaching. New York: Harper Row.Walker, J.E. and Shea, T.M. (1984) Behaviour Management: A practical

UNIT – 4 : DEVELOPMENT OF ADAPTIVE SKILLS, ASSISTIVE DEVICES AND SPECIAL THERAPIES FOR CHILDREN WITH LOCOMOTOR IMPAIRMENT, CEREBRAL PALSY AND SPINAL INJURY

STRUCTURE

4.1 INTRODUCTION

Development of adaptive skills assistive devices and special therapy for children with locomotor impairments, Cerebral Palsy and Spinal Injury is very essential for their medical rehabilitation. The need of Orthotics and Prosthetics devices, assistive physiotherapy, occupational therapy and speech therapy are very essential for their medical rehabilitation.

A brief account of the basic principles of management of locomotor disabilities is given below:

Rehabilitation is the restoration of the disabled individual to his optimum potential for physical, mental, vocational, educational and economic capacity.

The aims of rehabilitation management are :

1. Prevention of disability, if possible.
2. Maximum reduction or elimination of the disability.
3. Training the person with residual abilities to achieve to achieve independent living.

The person with disability of moving may be classified into the following groups

1. Patients for whom full recovery is expected e.g. recovering nerve injury.
2. Patients with permanent, but stable disabilities e.g. Post polio residual paralysis, cerebral palsy.
3. Patient with unstable disabilities e.g. muscular problems :

The persons with disability of moving often suffer from the following problems:

1. Motor weakness, paralysis/paresis
2. Deformities.
3. Loss of limb or its parts (Amputation)
4. Sensory Loss
5. Pressure Ulcers
6. Spasticity
7. Urinary and Faecal Incontinence, Urinary Retention
8. Pain etc.

There may be associated hearing, speech, visual problems, mental retardation or problems of higher mental functions.

The resultant problems arising out of disability of moving subsequently limit the function of the patient in his various activities of daily living (ADL). For example

1. Mobility, ambulation, transportation
2. Transfers
3. Self care activities like toileting, bathing, grooming.
4. Social and leisure activities
5. Work place activities.

4.2 OBJECTIVES

After going through this Unit you will be able to know and understand :

- the importance of adaptive skills, assistive devices and special therapy for LI & CP children, for their rehabilitation;
- Barrier Free Environment, adapted toilets, and seating arrangement in Classroom.

4.3 ADAPTIVE SKILLS & DEVICES

4.3.1 Management of Problems faced due to Disability of Moving

The management disability of moving are described under the follows problems :

1 Motor weakness, paralysis/paresis
2 Deformities.
3 Loss of limb or its parts (Amputation)
4 Sensory Loss
5 Pressure Ulcers
6 Spasticity
7 Urinary and Faecal Incontinence, Urinary Retention
8 Pain.

4.3.1.1 Motor Weakness

Weakness may be complete (paralysis) i.e. negligible power or incomplete (paresis) i.e.e partial weakness. It severely affects all areas of daily living. Either one limb may be affected (monoplegia), both lower limbs (paraplegia), upper and lower limb of one side (hemiplegia), or all the 4 limbs (quadriplegia). Weakness of hand causes complex disabilities like impaired dexterity, hand writing, grasp, hold pinch and proprioception. Weakness of lower limbs causes varying degree of difficulty or inability to walk.

Rehabilitation interventions are called for

1. Maintaining the range of movement of joints of the affected limb.
2. Regaining or improving the muscle power in the weak muscles.
3. Strengthening of normal muscles
4. Restoring the function of the extremity by appropriate training
5. Provision of external appliance, splint or caliper if required.

For planning treatment, total functional assessment of the affected limb(s) is done including :

- Detailed muscle charting of all affected and unaffected groups.
- Extent of contractures and deformities.
- Functional status of the affected limb e.g. hand function, type of grip, grasp manipulative ability, pattern of walking in lower limb involvement, presence of shortening etc.
- Presence of sensory deficit.

After proper assessment and planning, management is based on the following principles:

- Remedial therapeutic interventions in the form of passive movements wherein full range of movements is given to each joint to overcome contractures and joint stiffness. (See diagram 7.1 and 7.2)
- Gentle massage is given as a preliminary to starting exercises, to improve venous and lymphatic drainage to help relaxation of muscles.
- Remedial exercises are advised to suit the muscle power of various groups.

Appliances like calipers, standing frames and splints etc., may be required to prevent deformity due to muscle imbalance, stabilize unstable joints affected by the motor weakness, provide relief from weight bearing, facilitate walking and maintain a stable posture and gait (see diagram 7.3, 7.3 (a) & 7.4)

The aim of surgical management is to attempt to make the best use of the available muscle power and make the limb functionally as useful as possible. The principles are correction of established deformities by surgical soft tissue release, improvement of muscle balance and local function by appropriate tendon transfer and stablisation of un-stable joints by fusion. Therapeutic interventions are continued in the post operative period to prevent contractures are re-educate the transferred muscle in their altered role.

4.3.1.2 Deformities

Commonly accompany motor disability and further contribute to the disabilities. A deformity is defined as an abnormal position, which is not passively correctable, assumed

By a part of the body as a result of some disease or injury. Factors contributing to development of deformity are habitually faulty posture, muscular weakness, muscle imbalance, gravity, faulty posture, limb length discrepancy (shortening). Poliomyelitis, cerebral palsy, spinal injuries, trauma to extremities (fractures), stroke are common conditions associated with various deformities.

Correction of deformity is necessary to improve local function, appearance, posture, balance, stability, walking, fitting of appliances and relief of pain.

Appliances used to prevent or correct deformities are called orthoses. They are named according to the joints they stabilize. E.g. for ankle, ankle foot orthosis (AFO) (see diagram 7.5)

Other measures include passive mobilization, manipulation under anaesthesia, traction (skin or skeletal), cast, gradual controlled distraction and surgical (soft tissue and bony correction of deformity)

4.3.1.3 Amputation

Loss of limb in part or whole many be due to trauma or disease. Common causes are crush injuries of limb, leprosy, gangrene (dry or moist), malignant tumours, diabetes, etc. Missing limb may be congenital. Smoking is a contributory factory in many lower limb amputations of young adults.

Lower limb amputations are more common than upper limb amputations. Below knee amputations are the most common.

The psychological trauma of loss of one's limb is obvious. Lower limb amputations entail severe disability of moving especially above knee amputations. Upper limb amputations severely limit activities of daily living and occupational ability. Other problems are infections of stump, pressure sores, neuroma, Phantom limb, pain and contractures. Ideally artificial limb (prosthesis) (see diagram 7.6 & 6.7) should be fitted to the stump at the earliest. This hastens rehabilitation and minimizes the Phantom sensations. Tremendous advances have taken place in the fabrication and fitting of prostheses. Computer aided design and manufacture has simplified the procedure.

4.3.1.4 Loss of Sensation

Very often accompanies motor weakness. It may be completely intensate or partial (numbness). All or some of the modalities of sensation are affected e.g. pain, temperature and position sense, vibration pressure.

Besides the obvious limitations of not having the proper sensatioin, execution of motor activity is severely affected by sensory loss. Thus co-ordination, initiation of voluntary movements and muscle tone are impaired. Loss of pain and temperature sense predisposes the affected area to recurring injuries, pressure ulcers, and non healing wounds. The result is often amputation of the affected limb. Common causes of sensory loss or impairment are spinal injuries, peripheral nerve injuries, Hansen's disease, spinabifida, diabetic neuropathy and spondylitis of the spine.

Principle of Management

1. Full explanation and education so as to avoid any further injury to the affected area by meticulous care (keep away from the hot/cold/sharp objects).

2. Regular medical follow up and training for self observation to detect early appearance of any new would or injury (the patient should inspect all the affected areas daily in front of a large mirror).
3. Provision of padding the pressure bearing areas of shoe e.g. heel, first metatarsal head.
4. Frequent change of posture, water beds, spilt mattresses, pillows to position the affected areas freely suspended and accessible to ventilation.
5. Massage with emollients is believed to improve vitality of skin.
6. Surgical repair of severed nerves may restore sensations.

4.3.1.5 Pressure Ulcers

Pressure ulcers also called bed sores are areas of skin damage as a result of prolonged and excessive pressure on the soft tissues. Contributing factors are immobility, motor weakness, loss of sensation, excessive perspiration, urinary and faecal soiling, rough and crinkly bed-sheet and lack of care.

Conditions notoriously associated with pressure ulcers are spinal injuries with paraplegia, tuberculosis of the spine with paraplegia, spina bifida, diabetic neuropathy. Hansen's disease and patients bedridden for prolonged period due to any cause.

The key strategy of management is prevention. The sacral, trochanteric and heel areas are regularly inspected (see diagram 7.7.). General care of skin, cleanliness, 2 hourly turning, use of water/air beds mattresses are other important measures (see diagram 7.8 & 7.9). Treatment is by daily dressing, removal of dead tissue and control infection. When clean tissue appear, skin grafting may be required.

Other problems like spasticity, neurogenic bowel and bladder, pain etc are also appropriately managed in order to make the person as physically independent as possible.

4.3.1.6 Spasticity

Muscles tone is a state of contraction of tension found in a normal muscle. Spasticity is defined as a state of increased muscle tone proportional to the velocity of stretch applied. Common spastic conditions are cerebral palsy, cerebro-vascular accident with hemiplegia, spinal injuries and tuberculosis of the spine.

Spastic muscles usually have varying degrees of weakness and incoordination. Repetitive activities requiring rhythmic contraction and relaxation are impaired. Sustained spasticity and muscle imbalance leads to extremely disabling contractures and deformities. For example, in cerebral palsy adduction contracture of things causes 'scissoring', locking the legs and feet together which renders walking almost impossible. Other examples are equines deformity at the ankles, flexion deformity at the knee, pronation deformity of the forearm with flexion at wrist and fingers, the whole upper limb being internally rotaed.

Control of spasticity is necessary to improve muscles balance, strength, coordination, range of movement of joints so that appropriate training for ADL, walking and vocational rehabilitation may be started.

4.3.1.7 Urinary and Faecal Incontinence, Urinary Retention

Bladder and bowel problems often accompany paraplegia and quadriplegia. Thus spinal injuries, tuberculosis of spine patients face these problems. They include-retention of urine, loss of voluntary control and overflow (incontinence), dependence on catheter, recurrent urinary tract infections,

constipation, dependence on purgatives, enemas, manual evacuation and faecal incontinence. Some dreaded long term complications of bladder and bowel dysfunction and repeated catheterization are chronic prostatitis, stricture urethra, hydro nephrosis and chronic renal failure. Bladder and bowel dysfunction due to impaired neural control are commonly called 'neurogenic' bladder and bowel.

Aim of bladder management are :

(a) avoidance of over distension

(b) prevention of infection

(c) Restoration of continence by bladder training

Relief of bladder overdistension by prompt catheterization' drainage is a must to prevent irreversible damage to bladder muscle. When drainage is established, the following, the other measures are taken to prevent ascending infection and stone formation.

1. Liberal fluid intake (2-3 liters) day
2. Prophylactic antibiotics
3. Daily bladder wash

Retaining of bladder is done over several weeks when reflex emptying is established. This is done by catheter clamping intermittently or abdominal compression. Self clean intermittent catheterisation is a new procedure in the management of neurogenic bladder. (see diagram 7.10)

Bowel care includes faecal softening by laxatives, digital evacuation, use of suppositories and enemas. High roughage diet and plenty of fluids should also be encouraged.

4.3.1.8 Pain

It is a subjective feeling and not quantifiable or measurable. It is nature's warning that there is imminent damage to the system. The relief in pain can be either achieved by pain killer medicines or by use of physical modalities like cold, heat etc. in various forms. Either of these should be taken under medical supervision.

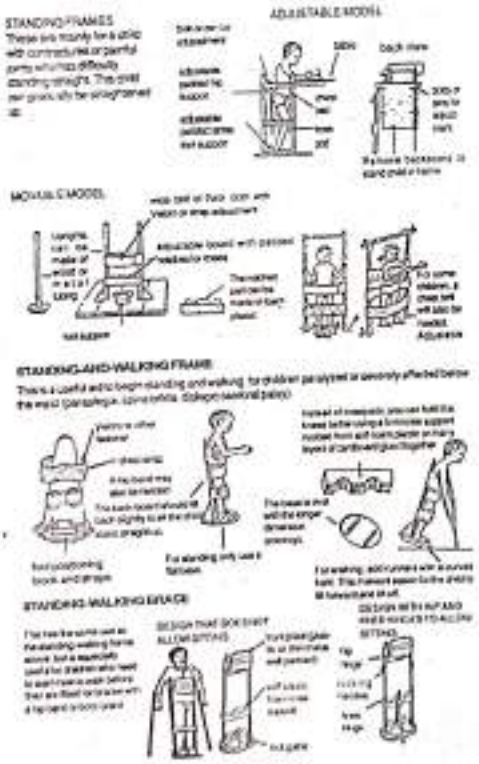
Figure 7.1

EXERCISE THERAPY - III

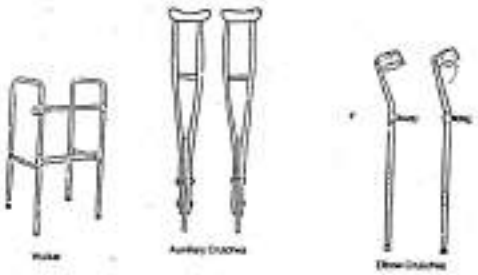
EXERCISE THERAPY IV

DIFFERENT KINDS OF EXERCISES AND WHEN TO USE THEM

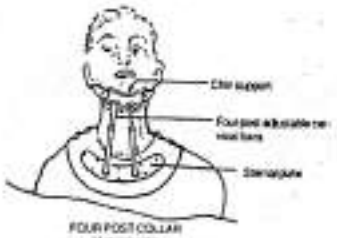
STANDING AND WALKING FRAMES



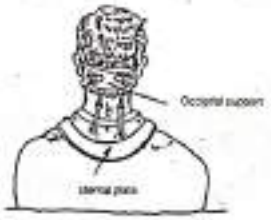
AMBULATORY AIDS



SOFT CERVICAL COLLAR



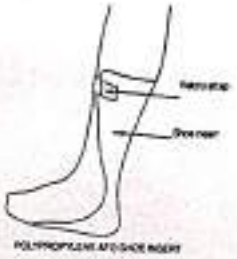
FOUR POST COLLAR

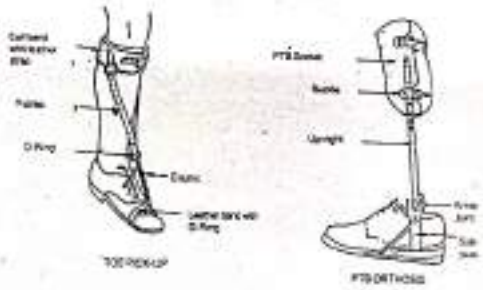


FOUR POST COLLER

Figure 7.4

BELOW KNEE ORTHOSES

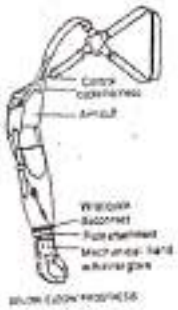


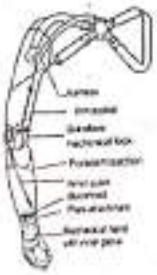


TOE PICK-UP

PTB ORTHOSIS

Figure 7.5





ABOVE ELBOW PROSTHESIS

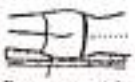
SELF INSPECTION OF SKIN TO PREVENT PRESSURE SORES

TYPE OF MATTRESS

To prevent pressure sores, it is essential that the person who has lost sensation lie and sit on a soft surface that reduces pressure on bony areas.

- It is best to lie on a flat surface with a thick, sponge mattress.

A thick foam rubber mattress often works well. However, some foam is so spongy that it sinks completely down under weight. Then the bony areas do not get protection and the hard board underneath. A firm sponge with very small air bubbles (microcell rubber) works well, but is expensive.



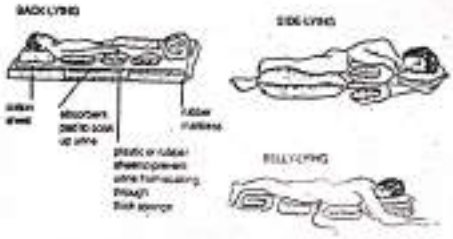
This sponge is too soft. The hip bone is pressed against the board below.

This sponge is below it is firm enough to keep the hip bone off the board below.

A **waterbed** (bag or mattress filled with water) or air mattress also works well.

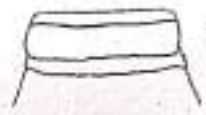
POSITIONING IN BED

Careful placement of pillows, pad, or soft, folded blankets can also help prevent pressure sores. These are especially important in the first weeks or months after a spinal cord injury when the person must be flat and be moved as little as possible. Pillows should be placed to avoid pressure on bony places, and to keep the person in a position that is healthy and that helps prevent contractures.



LOG ROLLING IN BED TO PREVENT PRESSURE SORES

Log Rolling is a simple, effective and low budget method of management. It needs only one person for turning the patient and prevents complications. Any family member can do it. This method can also be used for patients with other chronic illness who are bedridden to get bedsores.



Two foam rubber or rubberised coir or ordinary flat pillows as wide as the bed are laid on the bed. A person's waist mark is drawn over the middle of the upper pillow.

The side view showing the pillows correcting the deformity. For support a box board is placed and also ankle pads.

A fork is made on the patient at the level of the deformity.

The patient lays on the pillows with the marks on his body exactly on the main marks on the pillow.

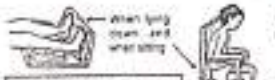
A third pillow is placed between the legs. The upper pillow is used to log roll the patient from his back to his side, first to the left and then to the right side. The turning is done every two hours.

From: The Challenge and the response Dr S.K. Shanmugasundaram, Madras Paraplegia Project.

MAINTAINING HEALTHY POSITIONS TO PREVENT CONTRACTURE AND PRESSURE SORES

The position that the body is in during the day and night is an important factor in preventing contractures.

Contractures that cause loosening of the tendon develop easily, especially when there is spasticity. Keep the body in a supported position as much of the time as possible.



When lying down ... and when sitting

Read the photo: make sure his feet are in good position!

CAUTION: A person like this walks well with floppy feet, but may trigger spasticity or pull off the feet. Position them gently.

Even for a child who is fully able to walk, maintaining the feet in a flat position makes moving from chair to bed, toilet or bath easier.

Another common problem for children with spasticity is that the knees put together and in time contractures prevent the legs from separating. To prevent this, when the child is in bed she should learn to

Place a pillow between the legs, and to keep it there most of the time.

A common problem with wheelchair users is that they slump forward. In time this can deform the spine.

In a wheelchair with a straight-up back a person with spinal cord injury slumps. He has to learn to balance.

A chair can be designed (or adapted) so that it tilts back. This provides balance for a better position.

A special cushion also helps keep the buttocks from sliding forward (and helps prevent pressure sores).

LESS APPROPRIATE

MORE APPROPRIATE

If possible, make cushion out of microcellular foam rubber (foam with very tiny bubbles). Rubber coated coconut fiber (coir) foam also works well.

SELF CLEAN INTERMITTENT CATHETERISATION

1. Wash hands well with soap and water.

2. Wash genital area and surrounding area well with soap and water. Pull back the foreskin or open the vagina and wash.

3. Wash catheter (both inside and outside) with running water.

4. Apply a lubricant (2% lignocaine gel) over the tip of the catheter.

5. Holding the tip open the foreskin back gently put the catheter into the urine hole. Treat it tenderly. DO NOT FORCE IT. It can be done in the lying or sitting position.

6. When the urine starts to flow, wait until all flow stops before withdrawing the catheter. Withdraw the catheter slowly so that all the urine inside the bladder pressure down. The slower (safe) also ensures complete emptying of the bladder.

7. Wash the catheter and discard (either in a dustbin or in the drain). This will minimise infection.

8. Wash hands again.

4.3.2 Barrier Free Environment, Adapted Toilets, Seating Arrangements in Classroom

Existence of different kinds of physical barriers is a matter of great concern in the education of the disabled children. Therefore, it would be necessary to remove all architectural barriers or to modify existing architectural facilities, so as to provide access to locomotor disabled children to the school premises.

4.4 UNIT SUMMARY

- Development of adaptive skills and application of appropriate assistive devices as well as special services are essential for the medical rehabilitation of LI & CP child.
- The child with disability of moving may face the following problems : Motor weakness, Deformities, Loss of limb, Sensory loss, Pressure Ulcer, Spasticity, Urinary and Faecal in continence, , pain etc.
- Barrier Free Environment is necessary for Disabled children.

4.5 CHECK YOUR PROGRESS

1. What is barrier free movement ?
2. Name the problems a child with disability of moving will face.
3. Write brief notes on : a) Deformities, b) Sensory loss, c) Spasticity.

4.6 ASSIGNMENT

Prepare a report on what measures can be taken in your school to create Barrier Free Environment for children with disability of moving.

4.7 POINTS FOR DISCUSSION AND CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification on other. Note down those points below:

4.7.1 Points for Discussion

4.7.2 Points for Clarification

4.8 REFERENCES/FURTHER READINGS

1. Lyons, J. (1970) 'New Horizons in Linguistics'. Penguin.

FOUNDATION COURSE ON EDUCATION OF CHILDREN WITH DISABILITIES

BLOCK–1: DEVELOPING BROAD POSITIVE PERCEPTION OF CHILDREN WITH DISABILITIES AND INTERVENTION MEASURES

- Unit – 1 Defining People With Disabilities
- Unit – 2 Understanding The Needs Of Children With Disabilities
- Unit – 3 Intervention Measures and Legislative Frame Work
- Unit – 4 Concessions Available for the Disabled, Schemes and Benefits
- Unit – 5 Role of Families and Community

BLOCK –2 : UNDERSTANDING EDUCATION FOR CHILDREN WITH DISABILITIES

- Unit – 1 Factors Affecting Learning
- Unit – 2 Understanding Educational Needs Of Children With Disabilities
- Unit – 3 Types Of School And Models Of Education For Children With Disabilitie.
- Unit – 4 Curriculum Adaptation For Children With Disability
- Unit – 5 Equipment And TLM Needed In Resource Room For Children With Different Disabilities

BLOCK – 3 : UNDERSTANDING OF EARLY CHILDHOOD DEVELOPMENT AND INTERVENTION OF CHILDREN WITH DISABILITIES

- Unit – 1 Early Childhood Care And Development
- Unit – 2 Early Identification And Assessment
- Unit – 3 Early Intervention
- Unit – 4 Behavioral Modification Skills

BLOCK – 4 : DEVELOPMENT OF ADAPTIVE SKILLS, ASSISTIVE DEVICES AND SPECIAL THERAPIES FOR CHILDREN WITH DISABILITIES

- Unit – 1 Development Of Adaptive Skills, Assistive Devices And Special Therapies For Children With Hearing Impairment
- Unit – 2 Development Of Adaptive Skills, Assistive Devices For Children With Visual Impairment
- Unit – 3 Development Of Adaptive Skills, Assistive Devices And Special Therapies For Children With Mental Retardation
- Unit – 4 Development Of Adaptive Skills, Assistive Devices And Special Therapies For Children With Locomotor Impairment, Cerebral Palsy and Spinal Injury

BLOCK – 5 : BASIC TRAINING FOR TEACHING CHILDREN WITH SPECIAL NEEDS

- Unit – 1 Early Identification And Intervention
- Unit – 2 Observation Of Teaching In School
- Unit – 3 Teaching Practice Of 15 Lessons
- Unit – 4 Community Contact Programme

ध्वनिर्वर्णा पदं वाक्यमित्यास्पद चतुष्टयम ।
वस्वा : सुरुगादि भेदेन वाग्देवीं तामुपास्महे ।।

The above Idol of *Vagdevi* (The Goddess of Learing) , of international fame, which was initially placed in *Bhojshala* (the school of Learning created by the great King Bhoj of Central India in the Year 1035 AD) is now in British Museum. With a very generous support, of King Bhoj, scholars from all the parts of India converged to *Bhojshala*, which produced 84 monumental works in *Sanskrit*. The last two words in the sloka written on the top mean *Dedication for the cause of learning*. These words appear in the emblem of the Madhya Pradesh Bhoj (Open) University.

MPBOU

RCI

भारत का राजपत्र
The Gazette of India

EXTRAORDINARY
PART II—Section 1
PUBLISHED BY AUTHORITY

MINISTRY OF LAW, JUSTICE AND COMPANY AFFAIRS
(Legislative Department)

THE REHABILITATION COUNCIL OF INDIA ACT, 1992

MPBOU/FC-SEDE Block-04/Fourth Edition/Feb. 2009/3000

Printed by : Bharati Offset Printers, Malviya Nagar, Bhopal-03