

B.ED. SPL. EDUCATION

ASSESSMENT AND IDENTIFICATION OF NEEDS



SES VI 01



MADHYA PRADESH BHOJ (OPEN) UNIVERSITY

**ASSESSMENT AND IDENTIFICATION
OF NEEDS**

B.Ed. Spl. Ed

(SES VI 01)

**MADHYA PRADESH BHOJ (OPEN) UNIVERSITY,
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Bachelor of Special Education

B.Ed. Spl. Ed.

A Collaborative Programme of



Madhya Pradesh Bhoj (Open) University
&



Rehabilitation Council of India

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SES VI - 01

**IDENTIFICATION OF CHILDREN WITH VISUAL
IMPAIRMENT
AND ASSESSMENT OF NEEDS**

BLOCK

1

**ANATOMY AND PHYSIOLOGY OF HUMAN
EYE**

BLOCK – 1 : ANATOMY AND PHYSIOLOGY OF HUMAN EYE

INTRODUCTION

The classification of visual impairment is vital from the point of view of obtaining correct statistics on visual impairment. India presents a varied statistics of 4 million to 14 million visually impaired persons requiring services. A teacher of visually impaired children should have a clear understanding of how the terminology blindness is classified. In terms of learning skills, visually impaired persons may also be classified as educationally blind, legally blind etc. The classification according to these variables helps teachers to design appropriate teaching strategies which will enable them to help visually impaired children for skill development.. A teacher should necessarily study the psycho-social implication of blindness in order to guide the children properly. The teacher, while discussing about psycho-social implications should understand the method of mainstreaming for the better personality development of visually disabled persons.

OBJECTIVES

After going through the four units in block 1, the teacher trainee will be able to

- Describe the historical perspective of the development of services for persons with visual impairment.
- Define legal blindness and its implications in education.
- List the general strategies to be adopted for teaching visually impaired persons.
- Define the responsibilities of the Rehabilitation Council of India.
- Narrate the salient features of the Persons with Disabilities Act 1995.
- Describe the psycho-social implications of blindness
- Enumerate the magnitude of problem pertaining to services for visually impaired persons.

UNIT 1: STRUCTURE AND FUNCTION OF HUMAN EYE

STRUCTURE

- 1.1 INTRODUCTION**
- 1.2 OBJECTIVES**
- 1.3 EFFECTS OF BLINDNESS**
- 1.4 RELATED TERMINOLOGIES**
 - 1.4.1 Impairment
 - 1.4.2 Disability
 - 1.4.3 Handicap
- 1.5 CLINICAL ASSESSMENT OF THE VISUALLY IMPAIRED**
 - 1.5.1 Functional Assessment procedures
 - 1.5.2 Signs of useful vision
 - 1.5.3 Medical assessment
- 1.6 PROGRAMME BASED ASSESSMENT**
 - 1.6.1 School based assessment
 - 1.6.2 Performance Record on Plus Curricular Activities
 - 1.6.3 Anecdotal Records
 - 1.6.4 Performance Record on the Use of Special Appliances
 - 1.6.5 Record on Recreational Activities
- 1.7 CONTINUOUS EVALUATION**
- 1.8 UNIT SUMMARY**
- 1.9 CHECK YOUR PROGRESS**
- 1.10 ASSIGNMENT/ACTIVITY**
- 1.11 POINTS FOR DISCUSSION/CLARIFICATION**
 - 1.11.1 Points for Discussion
 - 1.11.2 Points for Clarification
- 1.12 REFERENCE**

1.1 INTRODUCTION

Though educators use the terminologies impairment, disability, and handicap interchangeably in educational context, there is a significant difference between them from philosophical point of view. The classification of visual impairment is vital from the point of view of obtaining correct statistics on visual impairment. India presents a varied statistics of 4 million to 14 million visually impaired persons requiring services. This discrepancy may be due to the absence of an acceptable classification of visual impairment. Though legal definitions are available for the term blindness, other definitions too are used in the field of special education. In this unit, an attempt has been made to provide a historical and philosophical perspective to the various terminologies used in the area of visual impairment and also the techniques of identification and assessment.

1.2 OBJECTIVES

The student teacher, with the use of this material, is expected to

- Describe the historical perspective of the development of services for persons with visual impairment.
- Distinguish between the terminologies 'impairment', 'disability' and 'handicap'.
- List the commonly used techniques for assessment of persons with visual impairment.
- Narrate the concept of functional assessment to identify children with visual impairment..
- Describe the procedures involved in school based assessment of children with visual impairment.

There has been an evolutionary process throughout history in providing services to persons with visual impairment.. Thousands of years ago, it was a disgrace in certain societies to have a disabled child who could not be strong enough to become a warrior. At that time disability was undesirable and clearly such a person could not get the social status as a contributing citizen.

Those attitudes prevailed for many hundreds of years. Later blindness was treated as a symbol of punishment. Some people still think that the child was punished because he was sinful, or the mother, or father are being punished by God, because they have committed a sin in life. Over the years there was a gradual shift in the attitude of society that came about. So we could see a series of attitudes, first of disregard and rejection, isolation and abuse, gradually shifting over a period of

hundreds of years to the second phase which is characterised by pity, alms-giving and of benevolence.

The third major stage is that of development of positive attitudes towards persons with visual impairment. The society is now beginning to recognise the need for independence of the visually disabled. It is now expecting them to lead a life in which he has an opportunity for education, up to whatever level appropriate, and consistent with that level of education meant for sighted children. We are also expecting them to become economically and physically independent. But it has taken us many years to recognise that the visually impaired individual can be economically independent, and can maintain a strong personal identity in society.

One of the first things that educators have identified is the fact that blind children are *more like* sighted children than unlike them, and that is very important. We have much research now to show us that there are certain important developmental problems which occur, that are a result of the child not being able to perceive the world in the same way as a sighted child does but, at the same time, after recognising that he is more like, than unlike sighted children, we can identify ways in which compensatory skills are developed. If we teach the child proper compensatory skills for learning, we are not automatically guaranteeing that he is going to be a self-sufficient, economically independent, and emotionally adjusted adult but these are the means to reach the goal of independence.

1.3 EFFECTS OF BLINDNESS

According to Lowenfeld (1975) blindness imposes three basic limitations on the individual. They are as follows:

- i) Reduction in the range and variety of experiences.
- ii) Reduction in the ability to move about
- iii) Lack of control over environment and self in relation to it.

The terminologies used by Lowenfeld have sociological, psychological, and educational implications on blindness. According to him, the visually disabled individual gets a reduced experience and, therefore, loss of sight cannot be interpreted as the 'loss of experience'. The sociological implication is that visually disabled persons do have experiences but those are limited in comparison with sighted persons. The psychological implication is that blindness does not mean 'loss of life' since blind persons are more like than unlike sighted persons in terms of basic needs. The educational implication is that the reduction of experience imposed by blindness can be overcome by appropriate training to the affected individual. Education and rehabilitation programmes for visually disabled children are growing in large numbers in the present scenario and the independence of disabled persons is assured in every respect.

1.4 RELATED TERMINOLOGIES

Educators and teachers are rather inconsistent in using terminologies such as visual impairment, visual disability, and visual handicap. These terms are used to represent children who need special assistance for education. Though limited consideration is given to the general usage of these words, clear distinction is required for academic purposes.

1.4.1 Impairment

Impairment is basically a medical term but has become an educational term as well. Impairment in medical perspective means the damage to the tissues. It can be measured and cured and it does not impose obstacles to a larger extent with any of the social and vocational pursuits of the individual. By knowing the limitations the impairment may impose, a person can take all measures to compensate or even to ignore it for his normal functioning.

1.4.2 Disability

There are times however when the impairment leads a person to a stage of *disability*. The impairment develops to the extent that the individual cannot fully participate in the social and vocational pursuits. But this condition *does not prevent* the individual from overcoming his disability conditions and from using his skills to the optimum level possible. The disability is determined by its nature and extent and also on the basis of how much damage the impairment has caused. Persons with permanent loss of some parts of the body or some senses can be trained in a systematic way to compensate experiences caused by such losses.

1.4.3 Handicap

The disability surrounded by a distressing environment makes the person a *handicap*. Therefore, a handicap is made and not acquired by blindness. As experienced by Helen Keller and others the attitude of the public towards blindness is the hardest burden to bear. The 'too much sympathy' towards disability often contributes to negative attitude leading to more dependence of the disabled person. Sometimes this attitude is stereotypic in nature. In short, the terminologies 'impairment', 'disability', and 'handicap' have different ramifications in the educational context.

In the world today, India is said to have the maximum population of visually disabled persons. Many reports reveal that not even five per cent of the visually disabled population is currently enjoying the educational facilities available. Many reasons can be cited for this. While it is true that education of the visually disabled is too costly and most children could not afford good education by themselves, it is also true on the other hand that the existing institutions for the visually disabled are

constantly facing the uphill task of getting even the minimum number of children for the school. We do not come across visually disabled children standing in a queue waiting for admission at the school. The main reason may be that the present educational system is not able to take the education to the doorsteps of these children. Many children with visual impairment are not identified and as a result, they remain unreached. Appropriate strategies need to be adopted for locating such visually disabled children who are mostly concentrated in the rural areas of the country.

Identification and assessment of visually disabled children can be viewed in two dimensions. For identifying visually disabled children of a region, to know the statistical figures, certain types of techniques could be adopted. On the other hand, identification of visually disabled children for a particular school demands specific techniques which would involve the support and cooperation of the public and other sources. School children, teachers, census organisations, rehabilitation centres, village level community workers, etc., can be used for identifying children with visual impairment.

1.5 ASSESSMENT OF THE VISUALLY IMPAIRED

Once identified, assessment becomes very important for planning appropriate instructional strategies for the child. Both clinical and education assessment may be made for the effective understanding of the child. The assessment of visual efficiency is also important from the point of view of using residual vision.

Calculation of total visual efficiency is based on three factors of equal importance :

1. Percentage loss of central visual acuity.
2. Percentage loss of visual field and
3. Percentage loss of coordinated ocular movements

Percentage loss of visual acuity in one eye does not represent the individual's total disability; even a total loss of one eye would not represent a 50% disability if the remaining eye were normal. Many people carry on normal lives with the use of only one eye.

1.5.1 Functional Assessment

Visual acuity of the child can be measured clinically. However, assessing every child for visual problems becomes extremely difficult. Therefore, functional assessment procedures may be used to identify symptoms of visual impairment. Training in functional assessment procedures can be given easily and therefore a large number of persons including teachers and students can be trained, who in turn

can identify persons with suspected visual impairment. Some of the symptoms of visual impairment may be as follows.:

1. Child tilting his head to locate light source.
2. Pain and irritation in the eye.
3. Bumping into objects in the environment.
4. Not able to write from the black board
5. Poor performance in the class
6. Missing information while reading or writing.
7. Not able to read in poor lighting conditions.
8. Not able to see in night.
9. Depending too much on oral information.

1.5.2 Signs of useful vision

On the other hand, visually impaired children may have some useful vision left, which can be used for mobility and reading purposes as well. The residual vision must be put into optimum use for the benefit of the child. The following indicators may be used to identify the useful vision in the child.

1. Attempts to see the braille dots
2. Confident movement in the school environment
3. Visual orientation to the new stimuli
4. Noticeable response to colour in environment
5. Avoidance of large obstacles
6. Unusual head tilt
7. Being the guide to other visually impaired persons
8. Hand flickering
9. Light gasing
10. Sign of visual tracking
11. Avoidance response to shadows
12. Distracted by movement in environment
13. Startle response to suddenly approaching objects
14. Attending to one specific person out of a group
15. Interest in visual games

16. Visual searching

In addition to visual assessment of the child clinically, school based assessment too is pertinent once the child is admitted in school. The following areas need attention.

1.5.3 Medical assessment

Medical assessment is important once the child is identified. The medical eye report provides information on the visual acuity of each eye, follow-up measures to be taken, etc. It is absolutely essential to have medical eye report for every visually disabled child before making formal enrolment in the school. The kind of visual impairment may sometimes cause difficulties to the child if medical care is not provided regularly. Moreover, the medical eye report may reveal the amount of residual vision in each eye so that it can be used effectively by the specialist teacher for educational purposes and mobility of the child. In case the child is able to use the residual vision for reading print, the teacher can help accordingly. Therefore, maintaining medical eye report of the child is vital in education programmes. While the submission of medical eye report is a must for formal admission to school, periodical eye check-up would also be necessary.

1.6 PROGRAMME BASED ASSESSMENT

Programme based assessment is also important in the services for visually impaired persons.

1.6.1 School based assessment

School based assessment is an integral part of any school system and the task of maintaining records is part of the total evaluation. In a normal school setting, records like monthly progress reports, cumulative records, performance records on extra-curricular activities, fitness records, etc., are maintained. Such records should also be maintained for the visually impaired child. This section describes the types of records to be maintained for the visually disabled children and special concerns to be kept in view by the teachers in evaluation.

In addition to the routine records such as monthly progress records, the following special records can be maintained by the special teachers to assess the performances of visually disabled children from time to time.

1.6.2 Performance Record on Plus Curricular Activities

This is an area where constant attention is required by the specialist teachers for enhancing the overall performance of visually disabled children. Experience has shown that the abilities in the plus curricular activities provide a psychological

advantage to the visually disabled child in gaining confidence to improve his performance in the academic subjects. Monthly *checklists for mobility skills* may be maintained by the teacher. The checklist will vary according to levels of visually disabled children because of the varied nature of skills envisaged for them at different levels, viz., at the primary and secondary levels. It is cautioned that the specialist teacher should not be tempted to compare the abilities of one child with another since plus curricular skills are individual-oriented. Similarly activities like *daily living skills, adjustment with sighted children* etc., can be recorded periodically since these activities are part and parcel of a total mainstreaming programme. These records will reveal the status of social integration of the child in the regular school.

1.6.3 Anecdotal Records

In the process of making longitudinal studies of visually disabled children of the programme, every creative teacher will maintain a record to keep various anecdotes pertaining to the respective child. Rather than mere teaching, learning from the learning style of the child will always enrich the teacher in providing various curriculum approaches to the topic. For example, the teacher may have some set approaches for the teaching of geometrical figures. While teaching, the teacher may experience that the child adopts his own way for understanding. Such incidents may be recorded periodically and the anecdotal record as a whole may reveal the whole gamut of information *about, of, and with* the child.

1.6.4 Performance Record on the Use of Special Appliances

Blindness demands some special skills in the child which are not usually expected of a normal child. These special skills are not supplementary in any way and are rather compensatory. Records should be maintained by the specialist teacher on the use of special appliances such as braille slate and stylus, mathematical devices, mechanical braille writer (if available) etc. This record is essential for every visually disabled child whether he is in the integrated setting or in the residential schools.

1.6.5 Record on Recreational Activities

Recreational activities are available in abundance in residential schools than in integrated schools. Recreational activities have the potential of decreasing the mental agony arising out of disability and also pave avenues for substantial employment opportunities. Many visually disabled people have successfully gained employment because of their excellence in creative arts such as music, language arts, sculpture, clay modelling, etc. Necessary attention should be provided by the specialist teacher to encourage this aesthetic sense in visually disabled children from the very beginning. Identification of such interest in the child will be of immense use to guide him for a particular creative arts area which can lead him to a

successful job potential in course of time.

Many other records covering sociogram reading, behaviour of the child in the hostels, mannerism, general knowledge etc., can be maintained periodically to have a total picture of the visually disabled child.

1.7 CONTINUOUS EVALUATION

The concept of continuous evaluation is imperative in the education of visually disabled children because such children exhibit different learning styles. Since they are devoid of visual experience, they assimilate a concept in a step-by-step way. Unless the teacher diagnoses the learning difficulties encountered by the child at every stage of the learning process, the effort of making him learn will become futile. This indicates the importance of maintenance of records in a continuous manner in educational programmes for visually disabled children.

Some guidelines have been provided in this unit regarding the nature of assessment and records to be maintained for visually disabled children. The teacher of the visually disabled child should consider it a part of his work. For a true teacher, educating visually disabled children is 'more than a job'.

1.8 UNIT SUMMARY

- Since the beginning of human civilisation a blind person rarely received a social status as a contributing citizen. Social attitude was/is characterised by pity, alms-giving and benevolence. The society is now beginning to recognise the need for independence of the visually disabled.
- There are clear distinction among the terms impairment, disability and handicap. Impairment in medical perspective means the damage to the tissue. The impairment may lead a person to a stage of disability. The disability in a distressing environment makes the person a handicap.
- Both clinical and education assessment are made for the effective understanding of the child. The assessment of visual efficiency is also important from the point of view of using residual vision.
- The concept of continuous evaluation is imperative in the education of visually disabled children because such children exhibit different learning styles

1.9 CHECK YOUR PROGRESS

- 1) Attitudes towards the visually impaired over the years
 - a) have changed in rapid succession
 - b) have experienced a gradual subject
 - c) have been static

- d) have gone bad to worse
- 2) Children with visual impairment encounter certain developmental problems
- a) as they are not sighted
 - b) as they are more like the sighted
 - c) as they are unable to perceive the world in the same way sighted children do
 - d) as they are emotionally disturbed
- 3) Loss of sight can be interpreted as
- a) loss of experience
 - b) loss of control of self
 - c) lack of control of self
 - d) reduced experience
- 4) Disability
- a) does not prevent person from using skills to optimum
 - b) is impairment
 - c) is a medical term
 - d) can be cured
- 5) The main reason why the visually impaired population does not use the educational facilities available because
- a) the cost is high
 - b) they are in que for admission
 - c) many remain unreached
 - d) parents are not interested
- 6) % loss of visual acuity in one eye
- a) represents total blindness
 - b) does not represent total disability
 - c) is lack of mobility
 - d) is lack of ability to carry as normal eye
- 7) Which is the most symptom of a child with useful vision?
- a) Not able to see at night
 - b) Depending too much on oral information
 - c) Poor performance in class
 - d) Visual tracking
- 8) Which of it is not the reason of importance in medical report?
- a) For admission

- b) For concession
 - c) For giving information of residual vision
 - d) For understanding learning style of child
- 9) Performance records on plus curricular activities are helpful to teacher because
- a) They help teacher to identify the learning style of child.
 - b) They give information on amount of residual vision
 - c) They reveal the level of social integration of the child
 - d) They give an idea about child's vocational interest

1.10 ASSIGNMENT/ACTIVITY

- 1) Make a check list for identifying visually impaired and conduct a survey using it to identify the prevalence in your locality.
- 2) Prepare a case study of two persons with visual disability in your locality and indicate whether the attitude of the public towards the person is positive or negative.
- 3) Out of the methods used by schools in your locality to identify visually impaired children for admission, choose what you think as the best among them and give reasons.
- 4) Make school based assessment report for a child with visual impairment chalk down his current functioning and as a teacher what are your plans for him/her in future.
- 5) According to Lowenfeld (1975) visual impairment leads to reduced experience. Analyse the profiles of two visually impaired persons in the light of this statement.

1.11 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 those points below:

1.11.1 Points for Discussion

1.11.2 Points for Clarification

1.12 REFERENCE

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UNIT 2: NORMAL VISION DEVELOPMENT AND PROCESS OF SEEING

STRUCTURE

- 2.1 INTRODUCTION**
- 2.2 OBJECTIVES**
- 2.3 CONCEPTS OF BLINDNESS**
 - 2.3.1 Legal Blindness
 - 2.3.2 *Visual acuity*
 - 2.3.3 *Visual Field*
 - 2.3.4 Ocular motility
 - 2.3.5 Visual Efficiency of One eye
 - 2.3.6 Visual efficiency of two eyes
- 2.4 SENSITISATION OF CLASSROOM TEACHERS ON STRATEGIES**
 - 2.4.1 Teaching and Learning
- 2.5 TRANSITION FROM SCHOOL TO EMPLOYMENT**
- 2.6 UNIT SUMMARY**
- 2.7 CHECK YOUR PROGRESS**
- 2.8 ASSIGNMENT / ACTIVITY**
- 2.9 POINTS FOR DISCUSSION/CLARIFICATION**
 - 2.9.1 Points for Discussion
 - 2.9.2 Points for Clarification
- 2.10 REFERENCE**

2.1 INTRODUCTION

A teacher of visually impaired children should have a clear understanding of how the terminology blindness is classified. Though blindness in general represents those who are in need of braille and alternative methods for learning, they can be classified into different categories in terms of their visual acuity and also visual functioning. In terms of visual acuity, visually impaired persons can be classified as those who have low vision and those who are braille readers, and those who are totally blind. In terms of learning skills, visually impaired persons may also be classified as educationally blind, legally blind etc. The classification according to these variables helps teachers to design appropriate teaching strategies which will enable them to help visually impaired children for skill development.. This unit enumerates the definitions and appropriate teaching strategies to be adopted in the services for these children.

2.2 OBJECTIVES

After learning this unit the trainee is expected to

- Define legal blindness and its implications in education.
- Define low vision condition and its implication in education.
- Describe measures to be used in the assessment of visually disabled children.
- List the general strategies to be adopted for teaching visually impaired persons.
- Enumerate the strategies to be adopted for the transition of these children to adulthood

2.3 CONCEPT OF BLINDNESS

Before studying various conditions of eye, it is advisable to study the concept of light and refraction. When a light source strikes at an object, three possibilities exist. Firstly, the light ray may pass through without a change. Such substances are known as transparent substances. Clean water, plain glass, etc. are examples of transparent substances. Secondly, there are substances through which the light rays may not pass completely but get diffused. The actual amount of light rays will not be able to pass and, as a result, dimness in light can be seen at the interface of the substance. Such substances are known as *translucent substances*. Frosted glass, tracing paper, etc. are examples of translucent substances. Unlike the previous two conditions, some substances will not allow light rays to penetrate and, as a result, they get absorbed in those substances. Such substances are known as the *opaque substances*. Wood, stone, etc., are examples of opaque substances.

When light rays pass from one surface to another, the light rays at the interface may be in the same direction, or they may deflect from the original path or bend towards the interface depending upon the density of the surface in which the light rays strike. This is known as 'refraction'. Since two eyes receive two different images, both are sent to the central nervous system. The brain after receiving the two distinct images orders the eyes to see one image by a process known as fusion.

2.3.1 Legal Blindness

Legal blindness is defined as 20/200 visual acuity in the better eye after best correction or if vision does not exceed 20 degrees in the visual field (visual acuity means the detailed central vision, as in reading).

In defining, appropriate connotations have to be given for the various terms used in the definition:

- a. *20/200*: An object which is usually seen from a distance of 200 feet by a normal person is seen only from a distance of 20 feet by the person affected by the visual impairment. This ratio is also given in terms of metres as 6/60.
- b. *Visual acuity*: It is the sharpness in the vision and usually represents the central vision.
- c. *Better eye*: Blindness is to be defined for each eye. In case one eye is normal and the other blind, the person cannot be called a blind. For educational purposes, the better eye should always be considered for defining blindness.
- d. *Better correction*: There are some visual defects in the eye which could be corrected by lenses. If such is the eye condition, the definition 'without the possible correction' will not be valid. If the vision does not improve in spite of best correction with spectacles, then it should be considered for defining blindness.
- e. *Partially sighted*: This is a condition in which one's vision is seriously impaired, defined usually as having between 20/200 and 20/70 visual acuity in the better eye with correction. Various aids and educational techniques allow most partially sighted children to be educated as sighted rather than totally blind children.
- f. *Low vision*: This means markedly reduced functional vision in the individual. The visual condition may demand large print materials and magnifiers for reading. Recent technological advancements have facilitated better learning opportunities for low vision children.

While sighted people need to know about the vision problems so that they can prevent blindness, visually disabled people need to know the visual process for avoiding further complications in their eyes, educationally as well as medically.

Training programmes should emphasize more on the eye care to develop a sound

awareness in teachers.

Professional literature and research indicate that a little care to the eye can prevent major disasters. The teacher of the visually disabled child can play an important role in educating the child, and especially the parents, regarding eye care. When children with eye defects are detected by the teacher, he should refer them to the ophthalmologist immediately. In this way, the teachers can contribute their share in preventing blindness.

Simple procedures are also followed for assessing the visual standards of visually impaired children. They are described as follows :

For evaluation of visual efficiency, three visual functions are measured and mathematically coordinated.

1. Visual acuity
2. Visual field, and
3. Ocular motility (diplopia field, binocular field)

2.3.2 Visual acuity

In studying visual acuity, distance and near vision are weighted evenly.

Estimation of Percentage Visual Loss (Using best correcting spectacle lens)

Distance (Snellen)		Near	
Distance visual acuity	Percentage Loss	Jaeger Test Type	Percentage Loss
20/20	0	1	0
20/25	5	2	0
20/40	15	3	10
20/50	25	6	50
20/80	40	7	60
20/100	50	11	85
20/160	70	14	95
20/200	80		
20/400	90		

For purpose of calculating visual acuity loss, near visual acuity is equally important as distance acuity.

Example : If the distance acuity is 20/80 and the subject can read Jaeger 6.

$$\frac{40 + 50}{2} = 45\% \text{ visual acuity loss, or } 55\% \text{ visual acuity efficiency}$$

2.3.3 Visual Field

A white test object is used in eight meridians as given below. This can be done with a 3mm object at 1/3 meter using a perimeter. (This explanation should go with the diagram).

Range of Minimal Normal field (Minimum Legal Visual Field)

Temporally	-	85 degrees
Down & Temporally	-	85 degrees
Down	-	65 degrees
Down and Nasally	-	50 degrees
Nasally	-	60 degrees
Up and Nasally	-	55 degrees
Up	-	45 degrees
Up and Temporally	-	55 degrees
Full field	-	500 degrees

Directions	Moderate visual field (28% loss)	Severe loss of field (52% loss)
Temporally	60 degrees	30 degrees
Down and Temporally	50 degrees	30 degrees
Down	40 degrees	30 degrees
Down and Nasally	40 degrees	30 degrees
Nasally	40 degrees	30 degrees
Up and Nasally	40 degrees	30 degrees
Up	40 degrees	30 degrees
Up and Temporally	50 degrees	30 degrees
Total	360 degrees	240 degrees

$$\frac{360 \times 100}{500} = 72\%$$

$$100 - 72 = 28\% \text{ loss}$$

$$\frac{240 \times 100}{500} = 48\%$$

$$100 - 48 = 52\% \text{ loss}$$

2.3.4 Ocular motility

The extent of diplopia in various directions of gaze is best determined using a tangent screen at 1 meter. A small light is used and diplopia plotted along the three meridians above the horizontal 10, 20, 30 degrees from fixation. Diplopia fields are also plotted on the horizontal meridians and three meridians below 10,20,30 and 40 degrees from the straight ahead position. Diplopia within then central 20% represents 100% loss of motility efficiency of one eye since this condition usually requires patching of one eye. If diplopia is not present in the central 20%, loss of ocular motility is calculated from a field diagram showing percentage loss. The value is then subtracted from 100 and expressed as “80% motility efficiency” etc.,

2.3.5 Visual Efficiency of One eye

The percentage of efficiency for the three measurements are multiplied to give the total visual efficiency.

Example	:	Visual Acuity	=	73%
		Visual Field	=	57%
		Motility	=	90%

$$0.73 \times 0.57 \times 0.90 = 37\% \text{ efficiency or } 63\% \text{ loss.}$$

2.3.6 Visual efficiency of two eyes

The two eyes are calculated separately and the better eye is weighted three times and the poorer eye once. Thus one blind eye and one normal eye gives 75% visual efficiency.

$$3 \times \frac{(\% \text{ visual efficiency in better eye}) + \text{efficiency in worse eye}}{4}$$

= Binocular visual efficiency

Example : Right eye : 90% Left eye : 30%

$$\text{V.E.} = \frac{3 \times 90 + 30}{4} = \frac{300}{4} = 75\% \text{ efficiency}$$

Teachers have to understand the procedures adopted in assessing visual efficiency of the child using clinical procedures. At the same time functional procedures cal also be adopted to find out visual deficiency.

2.4 SENSITISATION OF CLASSROOM TEACHERS ON STRATEGIES

As part of sensitisation, a list of common questions and answers provided by teachers of visually impaired persons has been prepared.

2.4.1 Teaching and Learning

1. *What is the methodology of learning by visually disabled children?*

Sighted children learn approximately 85-90 percent of what they know about the world around them through their eyes. Visually Impaired children must use other senses, primarily, their ears and sense of touch. Thus, through *compensatory* skills, such as braille reading and writing, special auditory training, special training in how to move about independently in the environment, etc. they are able to profit from instruction alongside of sighted children, and thereby gain the same social attitudes, the same information, and develop the same level of confidence.

2. *Can teachers maintain the same academic standards with visually disabled children as with the sighted or must there be any change in expectations?*

Teachers must maintain the same academic standards for all children. It is desirable to expect the same information and concept formation outcomes; occasionally, a lesson must be modified or even substituted. With very young children, when text materials are *highly*, or exclusively visual; a rare lesson may need to be omitted. However, these problems diminish as the child progresses through the early standards. By the middle or end of the third standard, approximately 80-85 per cent of the regular curriculum and regular materials can be presented in duplicate fashion to the blind.

3. *How will the regular teachers know what the braille says? Do they have to learn braille?*

During the first two standards, every item with braille may be over-written (we say "edited") with print, so that the regular teachers will know exactly which word the child is reading, as they observe him working. When questions arise, they will be able to comment to the visually impaired child, or respond to his inquiries, with the very same information available for sighted children. By the time the child is in the third standard, this "editing" can stop, for his reading skills should be sufficient so that he can read efficiently for content, rather than to "learn to read".

The regular teachers should never need to learn braille, in order to effectively integrate a braille reader into the class. However, if they are interested in learning, the resource teacher would be happy to share this skill with them - perhaps informally - or if there is sufficient interest, even

formally with special lessons arranged. It is useful for the regular teachers to become familiar with some of the special equipment the visually disabled child uses.

4. *Do the teachers have to be careful about what words they use while teaching?*

Absolutely not! They can say "Look at this!", "Do you see what I mean?", "Can't you see the meaning of that expression in the text?" etc. "Teachers can be perfectly natural. The visually impaired child is not a fragile thing: he or she must learn to interpret such normal and common expressions as meaning: to examine; to comprehend, and to understand.

5. *Do the teachers have to use any special techniques in teaching ?*

Probably not. In integrated settings, one of the major responsibilities of the resource teacher is to introduce complex concepts, unfamiliar page lay-out, etc., in advance to regular lesson, so that the visually impaired child is prepared for regular, good teaching. The resource teacher will also "follow-up" on regular teachers' lesson to make certain that there was full understanding and readiness for the next level of training.

Some teachers who place material on the blackboard, such as assignments for the next day, special instructions, etc., will discover that if they merely write, without simultaneously saying aloud what they are writing, the visually disabled child will remain oblivious to that information, and therefore "miss out" entirely.

A good teacher knows that a multi-sensory approach-that is, both writing on the board, and saying what one is writing - is really *best* teaching for all children, even the sighted, who likewise learn in a variety of ways. The regular teacher may need to be aware of this technique. It has been the experience that even the very best teachers comment after some time with a blind child in their class: "It is amazing; having to think a little about learning through compensatory skills, I believe I have become an even better teacher of sighted children."

6. *Do visually disabled children need special desks, equipment, or storage in a regular classroom?*

Some of the equipment used by blind children is cumbersome. Books are many times larger; writing frames and writing tools can slip off from the tilted desk top. There may be some minor adjustments that need to be considered in consultation with the resource teacher and the headmaster. However, these should be minimal.

2.5 TRANSITION FROM SCHOOL TO EMPLOYMENT

The education of the disabled person can be treated as complete only when he/she gains successful employment. Only a few organisations in India are exclusively devoted for creating avenues for the employment of persons with visual impairment.

Transition from the school to employment is the weakest link in the services for visually impaired children throughout the world. Teachers of visually impaired children are overburdened with the school curriculum and therefore, have less time to plan a sound vocational programme for the child. Many school leaving visually impaired children either pursue higher studies or join a rehabilitation centre. Still a significant section of them remain idle. Among the educated employed persons, there is usually a low correlation between their academic qualification and job obtained. An educational programme commences with a statement that it should make visually impaired children contributing citizens of the nation but fails to see this in reality. By the age of 18, the visually impaired adult tries to cope with the world. At this stage, educational institutions shirk responsibility for the child's future while the industrial world denies opportunity blaming that the school has not developed adequate skills in the child. The transition from school to employment is a traumatic period of any visually impaired individual in developing countries. In order to overcome this difficulty, pre-vocational skills should find a prominent place in the school curriculum for visually impaired persons.

In short, teachers of visually impaired children need to understand the visual process, strategies adopted in teaching, importance of pre-vocational skills, etc.

2.6 UNIT SUMMARY

- Legal blindness is defined as 20/200 visual acuity in the better eye after best correction or if vision does not exceed 20 degrees in the visual field (visual acuity means the detailed central vision, as in reading) .
- *Low vision* means markedly reduced functional vision in the individual. The visual condition may demand large print materials and magnifiers for reading.
- Simple procedures are followed for assessing the visual standards of visually impaired children. They are described as follows :For evaluation of visual efficiency, three visual functions are measured and mathematically coordinated.: 1. Visual acuity, 2. Visual field, and 3, Ocular motility (diplopia field, binocular field).
- For teaching visually impaired persons suitable strategies should be adopted and special techniques should be used.
- The transition from school to employment is a traumatic period of any

visually impaired individual in developing countries. In order to overcome this difficulty, pre-vocational skills should find a prominent place in the school curriculum for visually impaired persons.

2.7 CHECK YOUR PROGRESS

- 1) What is legal blindness?
- 2) Substances which pass poor light are known as
 - a) Transparent substances
 - b) Opaque substances
 - c) Translucent substances
 - d) None of the above
- 3) What is visual field?
- 4) Who is called a partially sighted?
- 5) How does the visual efficiency of two eyes calculated?
- 6) The normal visual acuity of eye is
 - a) 20/200
 - b) 70/200
 - c) 1/200
 - d) 20/20
- 7) Wood is an example of
 - a) Transparent substance
 - b) Translucent substance
 - c) Opaque substance
 - d) None of the above
- 8) Which is the weakest link in the education of visually impaired children through out the world?
- 9) Why should sighted people know about eye care?

2.8 ASSIGNMENT / ACTIVITY

1. Write down the various definitions of blindness and discuss they can be interpreted for education purposes and for getting social benefits.
2. Low vision children can be fully integrated into the normal school setting. Do you agree? If yes, why? if no, why?
3. Enumerate the various strategies used to teach the visually impaired.

Substantiate with examples?

4. Plan out a transition plan for a totally blind child studying in a school for the blind.
5. Select class I English text and identify a lesson which may need to be omitted in a visually impaired child's curriculum. Give reasons.

2.9 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 those points below :

2.9.1 Points for Discussion

2.9.2 Points for Clarification

2.10 REFERENCE

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UNIT 3: PRINCIPLES OF REFRACTION AND REFRACTIVE ERRORS

STRUCTURE

- 3.1 INTRODUCTION**
- 3.2 OBJECTIVES**
- 3.3 INTERNATIONAL PERSPECTIVE**
 - 3.3.1 Development of Services
 - 3.3.2 Impact of International Declarations
- 3.4 NATIONAL PERSPECTIVE**
 - 3.4.1 Pioneers in Services for Children with Visual Impairment
 - 3.4.1.1 Work of Foreign Missionaries
 - 3.4.1.2 Work of Enlightened Persons with Visual Impairment
 - 3.4.1.3 Work of Employed Persons with Visual Impairment
 - 3.4.1.4 Work of General Educators
 - 3.4.1.5 Work of Charitable Organisations
 - 3.4.2 National Landmarks
- 3.5 THE RCI ACT**
- 3.6 THE PERSONS WITH DISABILITIES (EQUAL OPPORTUNITIES, PROTECTION OF RIGHTS AND FULL PARTICIPATION) ACT 1995**
 - 3.6.1 Prevention and Early detection of Disabilities
 - 3.6.2 Education
 - 3.6.3 Employment
- 3.7 CONCLUSION**
- 3.8 UNIT SUMMARY**
- 3.9 CHECK YOU PROGRESS**
- 3.10 ASSIGNMENT/ACTIVITY**
- 3.11 POINTS FOR DISCUSSION / CLARIFICATION**
 - 3.11.1 Points for Discussion
 - 3.11.2 Points for Clarification
- 3.12 REFERENCE**

3.1 INTRODUCTION

The teacher trainee is expected to know the historical development of services for visually impaired for two purposes. Firstly, the trainee is expected to understand how the services have emerged from a state of neglect to a level of social acceptance in the society. Secondly, review of the historical perspective would provide an idea to the teacher on how preference for techniques have changed over the years in teaching visually impaired children. There is a need to study the historical perspective of services in developing countries in comparison to developed nations as it helps in predicting response to an action, generation of new ideas, understanding the attitude changes and so on. In this unit a brief perspective of education of visually impaired persons at the international level and also in India has been provided.

3.2 OBJECTIVES

After going to the unit the teacher trainee will be able to

- Enumerate the historical perspective of services for the visually impaired in developed nations.
- describe the development of services of the visually impaired in India.
- analyse chronologically the nature of service delivery programmes offered by various agencies for the benefit of visually impaired persons.
- Define the responsibilities of the Rehabilitation Council of India.
- Narrate the salient features of the Persons with Disabilities Act 1995.

3.3 INTERNATIONAL PERSPECTIVE

3.3.1 Development of Services

The history of education of children with visual impairment at the global level is just two centuries old. Before Valentin Haüy started the first formal Institution for blind youth in Paris in 1784, children with visual impairment mostly remained at home. In 1791, the first school for the blind was opened in Liverpool in England. More schools for children with visual impairment around the world emerged after the invention of braille system by Louis Braille in 1832. However, the education for children with visual impairment gained momentum only in the 20th century. Helen Keller, who was born in 1880 became the first deaf-blind person to get a college degree in 1904 and this event could be marked as a landmark in the history of education for the blind in the world.

3.3.2 Impact of International Declarations

The growing population of persons with disabilities in India and the absence of services to a vast majority of them have forced the Government and voluntary organisations to adopt to inclusion strategies. The growing trend today is that the integrated and inclusive education for these children should also grow in addition to the special school services. The concern of the present society for integration of persons with disabilities can be traced back to some historic declarations on disability.

In 1981, the International Year of Disabled People (IYDP) was declared world over. The period 1983-1992 was declared as the UN decade of the disabled. The World Conference on Education For All (EFA) held in Jomtien, Thailand in 1990 included clause 5 to Article 3 which states that the learning needs of the disabled demand special attention and steps need to be taken to provide equal access to education to every category of disabled persons as an integral part of the educational system. As a result of the Jomtien Conference, different countries initiated various measures towards equity and quality of opportunity to all persons including disabled ones. India is also a signatory to the recommendations of this world conference and the commitment to services for disabled children was reflected in the policy perspectives of the Government of India. At the international level, the year 1992, which marked the end of the United Nations Decade of Disabled Persons, brought disability issues to the socio-political settings of the nations. In order to give impetus to services for the disabled, the Economic and Social Commission for Asia and the Pacific of the United Nations (UN-ESCAP) adopted the proclamation on the full participation and equity of people with disabilities in this region. In its proclamation and agenda for action, the need for priority to be assigned to the region's disadvantaged and vulnerable groups, including persons with disabilities, as stated in the social development strategy, is reaffirmed. The UN-ESCAP urged all members and associate members of the commission to stress their commitment to the full participation and quality of people with disabilities in the Asia and Pacific Region by joining as signatories to the proclamation at the highest levels of Government. The UN-ESCAP also invites the United Nations Development Programme, the United Nations Children's Fund and other concerned United Nation's bodies and agencies, in close collaboration with ESCAP, to strengthen their support for the building of national capabilities for effective implementation of the agenda for action. The observance of the Decade of the Disabled Persons (1993-2002) is reminding the countries in the Asian and Pacific region to make education for all disabled children a reality. Many other declarations at the international level also drew the attention of policy makers about the needs of disabled persons. The Salamanca declaration (1994) and the World Summit for Social Development (1995) also provided practical strategies to achieve the goals of universalisation of primary education in the case of disabled individuals. The Salamanca Statement and Framework for Action strongly promotes inclusive

education or 'schools for all'. It proclaims that every child has a fundamental right to receive education and therefore, he/she must be given opportunity to achieve and maintain an acceptable level of learning. The above declarations made at the international levels have tremendous impact at the Indian scenario too.

3.4 NATIONAL PERSPECTIVE

Work for children with visual impairment in India is more than a century old. Miss Anne Sharp founded the first school for the blind in Amritsar in India in 1887. One of the largest schools for the blind in India, which is located in Palayamkottai, was started in the year 1890. Though foreign missionaries started the first two institutions, Sri Lal Behari Shah was the first Indian to start the Calcutta Blind School in 1897 (Murickan and Kareparampil, 1995). The growth of special services for disabled children in India has followed the global trends of care and help. The concept of re-birth and the theory of KARMA stimulated people to create homes for the destitute, including persons with disability. It suggests the availability of some form of education and rehabilitation of persons with disability (Jangira and Ahuja, 1993). Besides efforts from the voluntary sectors, the Government too initiated constructive activities towards the development of services for children with visual impairment. In 1942, the Government of India invited Sir Clutha Mackenzie, a World War I veteran from New Zealand to conduct a survey on blindness in India. The recommendations of his famous report on Blindness (1944) had great influence on the programmes for persons with visual impairment in the post-independence period. In 1947, a unit on blindness was set up by the Ministry of Education, which was headed by Sri Lal Advani. This unit became the focal point for expansion of services to other disability areas through the federal government. The unit was also instrumental for the creation of the concept of separate national institutes for the handicapped in India.

The development of bharathi braille code in India also provided a fillip to the augmentation of services for children with visual impairment. Though the Central Board of Secondary Education (CBSE) initiated the work in 1922, it took a concrete shape only during the first conference on Uniformity of Braille Codes organised in Paris in 1950. Dr. Subsequent to this workshop which resolved in favour of phonetic uniformity of braille codes, the first regional conference on the subject was held in 1951 in Beirut. The code agreed upon at this conference was modified to some extent and introduced in schools for the blind in India. The pre-independence period which witnessed the growth of only 32 schools for the blind rose to approximately 400 in the post independence period. Still, the beneficiaries of the services constitute a meagre 5% or less. One of the reasons for the slow pace can be attributed to the fact that services for the blind remained a 'Welfare and Charitable' activity for decades together.

At the time of independence in India, there was no formal legislation to ensure compulsory education for the disabled. Though the article 45 of the constitution of India is assuring better services to persons with disabilities in India, it was not enforced through legislation until recently. India came out with legislation in the form of Persons with Disabilities (PWD) Act in 1995, and as a result, the services for the disabled are taking a new dimension.

3.4.1 Pioneers in Services for Children with Visual Impairment

Five types of persons/organisations in India initiated services for persons with visual impairment.

3.4.1.1 Work of Foreign Missionaries: In the pre-independence India, foreign missionaries introduced services for the blind in the country. During the British rule, special schools, rehabilitation centres, work on prevention of blindness, etc., were commenced by foreign missionaries. Such missionaries are supporting a large number of present institutions for persons with visual impairment in India. Besides direct services to these persons, the missionaries also assisted the Indian counterparts in attaining skills by undergoing technical courses abroad.

3.4.1.2 Work of Enlightened Persons with Visual Impairment: The second category of persons who initiated services for the blind are blind persons themselves. For example, Dr. Chhatrapati left his medical profession after he became blind at the age of 38 and started a school for the Blind in Ahmedabad in 1900. This school was merged with the Victoria Memorial School for the Blind in 1902 (Murickan and Kareparampil, 1995). Even today, a large number of persons with visual impairment are instrumental for the growth of special education and rehabilitation services. They are serving as role models for the vast majority of persons with visual impairment and their services are recognised by both Government and private sectors in India. Some of the contemporary visionaries for the emergence of services include Sri Jagadish Patel who started the Blind People's Association in Ahmedabad, and Capt. Desai who was involved in the establishment of the National Association for the Blind. Many such personalities at the regional and state levels can also be cited.

3.4.1.3 Work of Employed Persons with Visual Impairment: The third category of people are those who working in government and other organisations and could influence development of services for persons with visual impairment. A classic example is Sri Lal Advani, who was working as a special officer in the Government of India and was instrumental in the formation of the National Institute for the Visually Handicapped. He then became the first Director of that Institute. Many such blind persons, out of their own life experiences, contribute to the development of services for blind persons in India.

3.4.1.4 Work of General Educators: Persons belonging to the fourth category are those enlightened general educators who saw a need for the development of services for persons with visual impairment. The first instance goes back to the starting of the school for the Blind, Palayamkottai, in Tamil Nadu. When a blind boy was seen in front of the house begging, Ms. Askwith, the Principal of the Sarah Tucker College for Women told him that it was an educational institution and not a place for begging. Then came the reply from the blind person, "Why don't you give me education". This reply from the blind person prompted Ms. Askwith to start services for the blind in the College campus itself and it became independent in the year 1908.

3.4.1.5 Work of Charitable Organisations: The fifth category consists of organisations working for the downtrodden section of the community. One such example is the Ramakrishna Mission. The Mission which basically provides services for the needy and poor of the society included services for the blind too under its fold as a result of its concern for the humanity. This resulted in the starting of the Blind Boys Academy in Narendrapur, Calcutta in 1962 and then the Resource and Development Centre in Coimbatore in 1980. The National Association for the Blind is providing

3.4.2 National Landmarks

The notable developments in the last one decade include the enactment of the Rehabilitation Council of India (RCI) act in 1992 and the Persons With Disabilities (Equal Opportunities, Protection, and Affirmative Action) Act in 1995. These acts have made education of children with special needs in India proud. Education being a subject in the concurrent list, both the Government of India and the concerned State Governments are designing programmes to help disabled persons in the areas of education and rehabilitation. The Education Commission Report (1964-66) recommended placement of the disabled child, 'as far as possible' in ordinary schools. Reservation of 3% jobs for persons with disabilities (including persons with visual impairment) in class C and D was introduced in 1977. The National Policy on Education (1986) included a full chapter on 'Education of the Handicapped' and formulated guidelines for action. As a result, several programmes for the disabled have emerged in the recent times. In the same year, the Government of India appointed a committee headed by Justice Behr-ul-Islam to formulate a draft legislation for persons with disabilities. The report was submitted to the Government in the year 1987.

3.5 THE RCI ACT

In 1992, the Rehabilitation Council of India (RCI) Act was passed in the Parliament. The Act was created by the then Ministry of Welfare (presently known as the Ministry of Social Justice and Empowerment) to regulate the manpower development programmes in the field of education of children with special needs. The major responsibilities of the RCI are:

- *To regulate the training policies and programmes in the field of rehabilitation of people with disabilities.*
- *To bring about standardization of training courses for rehabilitation professionals / personnel dealing with people with disabilities.*
- *To prescribe minimum standards of education and training institutions in the field of rehabilitation uniformly through out the country.*
- *To regulate these standards in all training institutions uniformly throughout the country*
- *To recognise institutions/universities running degree/diploma/certificate courses in the field of rehabilitation of the disabled and to withdraw recognition, wherever facilities are not satisfactory.*
- *To recognise foreign degree/diploma/certificate in the field of rehabilitation awarded by Universities/Institutions on reciprocal basis.*
- *To maintain a Central Rehabilitation Register of persons possessing the recognised rehabilitation qualification.*
- *To collect information on regular basis, on education and training in the field of rehabilitation of people with disabilities from Institutions in India and abroad.*
- *To encourage continuing rehabilitation education by way of collaboration with organisations working in the field of rehabilitation of persons with disabilities.*

The RCI has so far developed more than 50 courses and recognised more than 100 institutions to offer special education and rehabilitation manpower development programmes in India. Out of these courses, 12 are pertaining to visual impairment.

Institutes working in the area of disability are encouraged to develop manpower development programmes in specific categories, and recognition to the institutions is accorded when they comply with the norms prescribed by the RCI. The RCI has taken up the gigantic task of offering bridge courses to nearly 20000 personnel who are currently working in the field of education and rehabilitation without requisite qualifications. The RCI has also launched a programme to offer orientation courses to nearly 30,000 medical practitioners of primary health centres in India on "Disability Management." Selected institutions in the country are offering this course and periodical review meetings are organised at national and state levels to improve the quality of the programme. The enactment of RCI Act 1992 goes a long way in accrediting special education manpower development programmes in the country.

3.6 THE PERSONS WITH DISABILITIES (EQUAL OPPORTUNITIES, PROTECTION OF RIGHTS AND FULL PARTICIPATION) ACT 1995 :

The main purpose of the Act is to define the responsibilities of the central governments and state governments with regard to the services for disabled persons. The Act also ensures full life to disabled individuals so as to make full contribution in accordance with their disability conditions. Blindness, Low Vision, Leprosy-Cured, Hearing Impairment, Locomotor Disability, Mental Illness, and Mental Retardation are the seven disability conditions covered under the Act.

Some of the salient features of the Persons with Disabilities Act are:

- The Central Government shall constitute a body to be known as the Central Coordination Committee to exercise the powers conferred on and to perform the functions assigned to it under this act.
- The Central Coordination Committee shall consist of Minister of Department of Welfare, Secretaries to the Government of India incharge of the departments of Welfare, Education, Woman and Child development, expenditure, personnel, training and public grievances, health, rural development, industrial development, urban affairs and employment, science and technology, legal affairs and public enterprises. The Committee shall also comprise the directors of the national institutes for the handicapped.
- The government shall constitute a committee to be known as the Central Executive Committee to perform the functions assigned to it under this act and shall consist of the Secretary to the Government of India in the Ministry of Welfare, the Director-General of Health Services, Director-General of Employment and Training, and Financial advisor, Ministry of Welfare in the

Central Government, Joint Secretary to the Government of India in the Ministry of Welfare dealing with the welfare of the handicapped etc.

- The Central Executive Committee shall be the executive body of the Central Coordination Committee and be responsible for carrying out the decision of the Central Coordination Committee.
- Every state Government shall constitute a body to be known as the State Coordination Committee to exercise the powers conferred on and to perform the functions assigned to it under the act.
- The State Coordination Committee shall be chaired by the Minister of the Department of Social Welfare in the State Government and Secretaries to the State Government of the department of welfare, education, women and child development, expenditure, personnel training and public grievances, health, rural development, industrial development, urban affairs and employment and science and technology etc.
- The state Coordination Committee shall meet at least once in every six months and will observe such rules of procedure with regard to the transaction of business.
- The function of the State Coordination Committee shall be to serve as the state focal point on disability matters and facilitate the continuous evolution of a comprehensive policy towards solving the problems faced by persons with disabilities.
- The State Government shall constitute a committee to be known as the State Executive Committee to perform the functions assigned to it under the act.
- The State Executive Committee shall be chaired by the Secretary, Department of Social Welfare and members from various departments such as health, finance, rural development, education, welfare, personnel, public awareness, science and technology.

3.6.1 Prevention and Early detection of Disabilities

To prevent the occurrence of disabilities, respective governments and local authorities shall:-

- a) Undertake surveys, investigations and research concerning the cause of the occurrence of disability.
- b) Promote various methods of preventing disabilities.
- e) Screen all the children at least once in a year for the purpose of identifying at risk cases.
- d) Provide facilities for training to the staff at the primary health centres.

- e) Sponsor awareness campaigns and disseminate information for general hygiene, health and sanitation.
- f) Take measures for pre-natal, peri-natal and post-natal care of mother and child.
- g) Educate the public through the pre-schools, schools, primary health centres, village level workers and anganwadi workers, on cause of disability and its prevention.
- h) Create awareness amongst the masses through television, radio and other mass media on the cause of disabilities and the preventive measures to be adopted.

3.6.2 Education

The respective Governments and local authorities shall:-

- a. Ensure that every child with a disability has access to free education in an appropriate environment till he attains the age of eighteen years.
- b. Endeavour to promote the integration of students with disabilities in the normal schools.
- c. Promote setting up special schools in Government and private sectors for those in need of special education in such a manner that children with disabilities living in any part of the country have access to such schools
- d. Endeavour to equip special schools for children with disabilities with vocational facilities.

3.6.3 Employment

The respective Government shall,

- a) Identify posts in establishments, which can be reserved for the persons with disabilities
- b) At periodical intervals not exceeding three years review the list of posts identified and update the list taking into consideration the developments in technology.

It has also been proposed to reserve 3% of the existing vacancies in every establishment. A special employment exchange shall also be established in all levels by the government for the disabled. All educational institutions both government and aided by the Government shall reserve 3% seats for persons with disabilities. Institutions for persons with severe disabilities will also be set up, at national and state levels. Further, the Governments shall sponsor and promote research in the

areas of prevention of disabilities, rehabilitation, job identification and development of assistive devices.

Apart from the above mentioned areas many other schemes are also been proposed by the Act.

Though national and international policies have influenced services for visually impaired persons in India, the coverage is still a big concern. The organisations working in India have not succeeded in providing education for all children with visual impairment. Not more than 30000 visually impaired children are enrolled in special schools and integrated education programmes in the country and there is a long way to go in reeling the objective of education for all visually impaired children. There is a need for change in policy perspective as well as service delivery strategies so that a large number of persons with visual impairment can be given reasonable services in the near future.

3.7 CONCLUSION

A new era towards the welfare of the handicapped is in the offing in India and it certainly needs the determined and dedicated efforts on the part of both the Government and Non-Governmental organisations involved in the process. Further, coordination and dissemination of information between the agencies involved is also a vital factor towards the execution of the Acts. Let us be optimistic that the day is not so far when each and every disabled person of the nation is a beneficiary of services.

3.8

UNIT SUMMARY

- **The history of education of children with visual impairment at the global level is just two centuries old. Valentin Haüy started the first formal Institution for blind youth in Paris in 1784. In 1791, the first school for the blind was opened in Liverpool in England. The invention of braille system by Louis Braille in 1832 increased the pace of education for children with visual impairment around the world. In the 20th century. Helen Keller, who was born in 1880 became the first deaf-blind person to get a college degree in 1904 and this event could be marked as a landmark in the history of education for the blind in the world.**
- **In 1981, the International Year of Disabled People (IYDP) was declared world over. The period 1983-1992 was declared as the UN decade of the disabled. At the international level, the year 1992, which marked the end of the United Nations Decade of Disabled Persons, brought disability issues to the socio-political settings of the nations.**
- **The concept of re-birth and the theory of KARMA stimulated people to create homes for the destitute, including persons with disability. It suggests the availability of some form of education and rehabilitation of persons with disability. The growth of special services for disabled children in India has followed the global trends of care and help. Work for children with visual impairment in India is more than a century old. Miss Anne Sharp founded the first school for the blind in Amritsar in India in 1887. In 1947, a unit on blindness was set up by the Ministry of Education, which was headed by Sri Lal Advani. The development of bharathi braille code in India also provided a fillip to the augmentation of services for children with visual impairment. The pre-independence period which witnessed the growth of only 32 schools for the blind rose to approximately 400 in the post independence period. India came out with legislation in the form of Persons with Disabilities (PWD) Act in 1995, and as a result, the services for the disabled are taking a new dimension.**
- **Pioneers in services for children with visual impairment include Foreign Missionaries, work of enlightened persons and employed persons with visual impairment as well as charitable organisations.**
- **The notable developments in the last one decade include the enactment of the Rehabilitation Council of India (RCI) act in 1992 and the Persons With Disabilities (Equal Opportunities, Protection, and Affirmative Action) Act in 1995.**

3.9

CHECK YOU PROGRESS

- 1) The first formal institution for the blind was opened in
 - a) England , 1784
 - b) Italy, 1774
 - c) Paris, 1784
 - d) Spain, 1974
- 2) Who invented the Braille system? In which year?
- 3) What is Helen Keller's importance in the history of special education?
- 4) Who were the first set of people who started services for the blind in India?
 - a) Employed blind
 - b) General educators
 - c) Missionaries
 - d) None of the above
- 5) Which is the recent Act formulated for the disabled in India?
- 6) Which is the body that regulates manpower development programmes in the field of special education?
 - a) RCI
 - a) Ministry of Education
 - b) Action Aid
 - c) UGC
- 7) What is the function of central coordination committee as per the Persons with Disabilities Act 1995?

3.9

ASSIGNMENT/ACTIVITY

- 1) Compare the historical development in India and abroad and explain why we need an indigenous model to serve persons with visual impairment.
- 2) Explain how the RCI Act 1992 has an impact for teacher preparation in India. Discuss with a Principal and write a note.
- 3) How effective has the existence of the PWD Act been in the past 5 years? Provide examples from news clippings, schools, govt. etc.

- 4) Critically evaluate, on the basis of interview with blind persons, the points in the PWD Act pertaining to employment and education.
- 5) Has the PWD act included all categories of disabled in it – give reasons to justify your answer.

3.10 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 those points below :

3.10.1 Points for Discussion

3.10.2 Points for Clarification

3.11 REFERENCE

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UNIT 4: CONCEPT AND DEFINITIONS OF BLINDNESS AND LOW VISION

STRUCTURE

- 4.1 INTRODUCTION**
- 4.2 OBJECTIVES**
- 4.3 PSYCHO-SOCIAL IMPLICATIONS**
- 4.4 INCIDENCE AND PREVALENCE OF BLINDNESS**
- 4.5 AVOIDABLE BLINDNESS: STILL ELUDING**
 - 4.5.1 Cataract
 - 4.5.2 Glaucoma
 - 4.5.3 Corneal Ulcer
 - 4.5.4 Xrophthalmia
 - 4.5.5 Conjunctivitis
- 4.6 OTHER DISORDERS**
 - 4.6.1 Retinal detachment
 - 4.6.2 Albinism
 - 4.6.3 Astigmatism
 - 4.6.4 Nystagmus
 - 4.6.5 Optic Atrophy
 - 4.6.6 Retinitis Pigmentosa
 - 4.6.7 Trachoma
- 4.7 CONCLUSION**
- 4.8 UNIT SUMMARY**
- 4.9 CHECK YOUR PROGRESS**
- 4.10 ASSIGNMENT**
- 4.11 POINTS FOR DISCUSSION/CLARIFICATION**
 - 4.11.1 Points for Discussion
 - 4.11.2 Points for Clarification
- 4.12 REFERENCE**

4.1 INTRODUCTION

Though there is no separate psychology of persons with visual impairment, there are some psychological effects which emerge because of disability. A teacher should necessarily study the psycho-social implication of blindness in order to guide the children properly. A study on how the absence of a particular faculty has a direct impact on the personality of the child right from the early years of life, would help in understanding the learning styles of children. The teacher, while discussing about psycho-social implications should understand the method of mainstreaming for the better personality development of visually disabled persons. The study of mainstreaming should be viewed in terms of the incidence and prevalence rate of visual impairment. In this unit a detailed description of psycho-social implications, mainstreaming processes and prevalence data on disability is given.

4.2 OBJECTIVES

After studying this unit the teacher trainee is expected to

- Describe the psycho-social implications of blindness
- Enumerate the strategies adopted in serving persons with visual impairment.
- Describe the process of mainstreaming in the case of visually impaired persons.
- Enumerate the magnitude of problem pertaining to services for visually impaired persons.
- Narrate the incidence and prevalence trends in the area of visual disability

4.3 PSYCHO-SOCIAL IMPLICATIONS

Really speaking psycho-social development of a visually impaired child is not affected so much by the disability, but it is disrupted by the emotional overtones of the disability. It is now a well-known fact that children tend to achieve as much, and only as much as their parents aspire them to achieve. Once, parents stop treating the child as a developing individual, once they refuse to accept his capabilities and limitations, both, in a realistic manner, his self-concept is bound to be severely affected. Over protection robs his independence, neglect turns him to undesirable behaviours. Either way, it is the suffering child whose handicap multiplies.

Formal education system for visually disabled children came into effect only in the 18th century. Until then, people simply did not consider the possibility that a visually disabled person could learn. In 18th century, the first organised school for the blind was started. Residential setting was the only known approach during those

days and, therefore, the inmates of the institution received 24 hours custodial services. The invention of the Braille reading system in fact provided a tremendous impetus to education of visually disabled children throughout the world. For some time, the fact that 'visually disabled children could learn through tactile mode' became a startling revelation. More institutions were gradually started by missionaries and individuals but those institutions were conceptualised only as residential facilities.

The residential school concept is an accepted phenomenon all the world over even today. The existence of the residential schools at present as well as of the future could be justified though there is a baseless fear that the newly introduced concept of integrated education would replace residential type of education for visually disabled children. The author strongly feels that introduction of integrated education would not affect the existence of special schools, especially in India where 'coverage' of visually disabled children is the major concern rather than the "concept" of service delivery system.

4.3.1 Residential System of education is more than 100 years old in India. The purpose of this setting is to provide education to visually disabled children, usually free of cost. Specially trained teachers in this system are available to teach content and skills to visually disabled children. Attached to the school is a hostel where visually disabled children stay during the school year. This system is conducive especially for children whose parents cannot afford education, children who cannot be provided care at home due to family factors, children who are orphans, etc., but the 24 hours custodial system isolates the child from the society and this might create some adjustment problems later in life. Nevertheless, residential school system in India is not likely to be replaced by other systems.

4.3.2 The Cooperative Model is almost running a special school on the campus of the general school. Often this is called a self-contained classroom plan. Usually the self-contained class has a private entrance, a special play area, etc. but the children come from home. This enables the children to have proper interaction with the family members and community. The children of this programme participate in a few common activities along with sighted children such as singing, eating, etc. Such occasions provide an opportunity to teachers of sighted children to appreciate and encourage the commonness between sighted and visually disabled children and develop the attitude of 'let me try to have a visually disabled child in my class and see how I can teach him'. The children with less handicapping conditions could cope up well in regular classrooms than those with more problems. Gradually such a readiness of regular teachers of the past paved into the concept of integrated education for visually disabled children.

4.3.3 Integrated Education does not mean just enrolling visually disabled children in regular classrooms. The children need assistance. Therefore, there is a need for a special teacher to assist visually disabled children. It is believed that these children can learn more than 85 per cent of teaching in regular class itself if they are provided with the right type of material. Though the regular teacher is not expected to learn skills peculiar to blindness such as braille, he should seek assistance of the specialist resource teacher on matters of learning style of visually disabled children. The responsibilities and collaborative activities between resource and regular teachers are discussed in subsequent chapters.

4.4 INCIDENCE AND PREVALENCE OF BLINDNESS

The PWD Act 1995 states that the person should have 40% disability for availing social benefits. Therefore, there is a possibility that some surveys included those who are eligible for social benefits as persons with visual impairment whereas some others included those who are eligible for educational activities. Still some other surveys might have included persons with visual impairment as those who qualify medical prescription of legal blindness. These differences are evident from the huge discrepancy in statistics available on blindness.

It has been estimated that 45 million in the world are blind and an additional 135 million suffer from low vision conditions, and 90% of these persons are from the developing nations (Thyllefors, 1998). As per the International Council for Education of People with Visual Impairment ICEVI (1995), 35 million people in the world are blind, out of them 23 million live in Asia, 7 million in Africa, 2.5 million in Latin America and 2.5 million in the rest of the world. It states that at least another 15 million are severely visually impaired.

WHO - PBD Data Bank (1997) reports that there are nearly 38 million blind people and almost 110 million with low vision, giving a total of nearly 150 million people with some degree of visual impairment. It states that 8.9 million blind people are in India. As per the global statistics on Blindness 1998, India has approximately 10 million blind persons requiring services. According to the National Sample Survey Organisation (1991), there are 4.005 million blind persons above the age group 4 years. The Rehabilitation Council of India is using the NSSO data as the benchmark statistics.

At the national level there is no authentic survey, which provides information on the number of persons with visual impairment. Many projections made in the past were based on sample surveys only. Mander and Rao (1996) mention that there is limited information regarding the actual extent and range of prevalence of the disability and therefore, to find out the actual number, one may wish to comprehensively cover, possibly a district or some administrative segment of a

district. The only project which made a door-to-door survey of disabled children in the entire block was the Project Integrated Education for the Disabled (PIED) supported by UNICEF through NCERT from 1987 to 1993. The project was implemented in one representative block in each of the states namely, Rajasthan (Chabbra block), Madhya Pradesh (Masturi), Maharashtra (Palghar), Orissa (Balianta), Tamil Nadu (Kattankulathur), Nagaland (Kikruma), Mizoram (Khazal), Haryana (Bhiwani), and the Municipal Corporations of Delhi (Trans Yamuna) and Baroda.

The statistics obtained from this project can be projected safely at the national level as this is the only survey conducted on the basis of 'whole block approach'. As per the PIED, nearly 2.5% of the children of school going population have disability of any kind. Out of the 5306 children with disabilities identified in the 10 blocks, 775 were children with visual impairment ranging from mild to severe cases and this number constitutes 14.6% of the identified cases.

Irrespective of the statistical data available from all sources, it is clear that the coverage of persons with visual impairment in education and rehabilitation programmes is not satisfactory. Even within the population presently being served, there are a lot of imbalances. Such imbalances include locality such as rural and urban areas, gender, dropout, etc.

4.5 AVOIDABLE BLINDNESS: STILL ELUDING

Understanding of the causes of visual impairment would help personnel involved in the services for children with visual impairment to render referral and educational services effectively. Some of the common causes for blindness in India are enumerated as follows:

4.5.1 Cataract

Cataract is a common eye disease in the developing countries. In India, cataract accounts for 80% of avoidable blindness. In cataract, the lens which is transparent in nature becomes opaque and the light rays are absorbed. A person can restore sight with the corrective devices after the removal of the defective lens. It is not the development of a layer over the lens but the opacity of the entire lens itself. Even though this is a common eye disease usually found in group grown up persons, children too are sometimes are found with this defect which is called congenital cataract. Pregnant mothers affected by German measles or rubella during the first trimester of the pregnancy consequently give birth to children with congenital cataract.

4.5.2 Glaucoma

Glaucoma is very dangerous and it occurs due to problems in the intra-ocular pressure. Intra ocular pressure is a function of the ratio between the formation of aqueous in the eye and the resistance to outflow of aqueous from the eye. Glaucoma occurs due to the increase in the intra ocular pressure beyond that degree which is consistent with the continued health and function of the eye. The degree of interference by glaucoma in vision varies from slight blurring to complete blindness. In most cases, blindness can be prevented if treatment is started early. As per the Independent Commission on Health in India (1997), Glaucoma accounts for 2% of adults (aged 40 years and above) with visual impairment and 0.5% of the total population of blind person.

4.5.3 Corneal Ulcer

A foreign body is the cause for most common corneal disorders, and ulcers frequently occur as complications of corneal abrasions or foreign body. When the foreign body stays in the cornea, it may lead to ulcer which in turn reduces the vision from mere blurring to total blindness. In order to avoid this, the eyes should be washed with clean water when the foreign body stays in the eye and on any account the eye should not be rubbed. Corneal ulcers are developed in the eyes due to bacteria, virus infection, fungus, hyper sensitivity reactions, vitamin deficiency, etc.

4.5.4 Xerophthalmia

Xerophthalmia is a general term applied to the Vitamin A deficiency disease. Night blindness is the earliest symptom of this disease. At the onset, the conjunctiva and cornea lose their normal luster and become dry and thickened. Keratomalacia is the severe form of xerophthalmia. Early diagnosis and treatment will be the best way in checking this defect. Uncared condition may lead to scarring in the cornea and ulceration which in turn make the eye totally visionless. Blindness due to Vitamin A deficiency has been controlled to a large extent in India.

4.5.5 Conjunctivitis

Conjunctivitis is the commonest eye disease caused due to bacteria, virus infection, allergic conditions, etc. Inflammation in the eye is the earliest symptom. This defect is usually cleared within a short period with the help of anti-bacterial agents.

In addition to these diseases, diabetes and hypertension can also cause serious damage to the eye.

4.6 OTHER DISORDERS

Visual impairment may also result due to other eye disorders. Some of the possible eye disorders are listed as follows :

4.6.1 Retinal detachment

No physiological symptoms are evident for retinal detachment. Secondary effects such as diabetics and myopia may also cause retinal detachment. A serious blow to the head may also sometimes cause detachment of the retina from its position.

4.6.2 Albinism

Due to the absence of pigment in this iris, skin and hair, affected children report poor visual acuity, and often the defect is accompanied by refractive errors. The albino children are very sensitive to light. Dark sunglasses are suggested for these children as safety measures.

4.6.3 Astigmatism

This is a type of visual defect in which the refractive error prevents the light rays from coming to a single focus on the retina because of different degrees of refraction in the various meridians of the eye.

4.6.4 Nystagmus

A defect in which the eyeball moves rapidly and presents involuntary jerks.

4.6.5 Optic Atrophy

This defect is caused due to the degeneration of the tissue of the optic nerve. The light sensation cannot reach the brain and may lead to blindness.

4.6.6 Retinitis Pigmentosa

This is a defect due to the hereditary degeneration and atrophy of the retina.

4.6.7 Trachoma

This is a form of infection caused by a specific virus which in the chronic form produces severe scarring of the eyelids and cornea.

Punani and Rawal (1996) present the following statistics for the causes of visual impairment in India.

Causes of Visual Impairment in India (Per 1000)

No.	Causes	Percentage
1	Cataract	81.00
2	Refractive Errors	7.00
3	Corneal Opacity	3.00
4	Glaucoma	2.00
5	Trachoma	0.20
6	Malnutrition	0.04
7	Others	6.76

4.7 CONCLUSION

The astronomical growth of the population of persons with visual impairment in India is a matter of concern to everyone. While the number of children who are certified as legally blind are high, the quality of special educational services is not satisfactory. There are large numbers of children who have significant problems in refraction and absence of corrective measures at the appropriate time may make them poor achievers or dropouts in the school system. Many such unidentified children may be benefited by low vision services. Therefore, the magnitude of blindness in India has multifarious dimensions. It is always better to prevent the avoidable blindness than to worry at a later date with rehabilitation attempts. Prevention is better than cure.

4.8 UNIT SUMMARY

- Though there is no separate psychology of persons with visual impairment, there are some psychological effects which emerge because of disability. A teacher should necessarily study the psycho-social implication of blindness in order to guide the children properly.
- WHO - PBD Data Bank (1997) reports that there are nearly 38 million blind people and almost 110 million with low vision, giving a total of nearly 150 million people with some degree of visual impairment. It states that 8.9 million blind people are in India.
- Common causes of blindness are cataract, glaucoma, corneal ulcer, xerophthalmia, conjunctivitis. Visual impairment may also result from other eye disorders like retinal detachment, albinism, astigmatism, nystagmus, optic atrophy. retinitis pigmentosa, trachoma.
- The visually impaired children are mainstreamed into residential system, co-operative model or integrated education system of education..

4.9 CHECK YOUR PROGRESS

- 1) A programme which provides 24 hours custodial care is
 - a) Integrated education
 - b) Cooperative model
 - c) Inclusion
 - d) Residential school
- 2) Over protection of visually impaired persons.....whereas neglect of them.....
- 3) Cataract means
 - a) Development of a thin membrane over the lens
 - b) Dislocation of the lens
 - c) Opacity of the lens
 - d) Defective lens
- 4) As per PIED, constitute.....% of the school age population
 - a) 25%
 - b) 10%
 - c) 15.5%
 - d) 7.5%
- 5) What is Glaucoma?

4.10 ASSIGNMENT

- 1) The trainer should visit a school for visually disabled children and make a survey of the eye defects found in those children. (This information can be obtained from the medical eye reports).
- 2) The trainee should visit an eye camp and observe the types of visual impairment found in them.
- 3) The trainee should design a programme for providing public education on matters of eye care and education.
- 4) The trainee should make a case study on the after-effects of blindness of a case who becomes blind by any of the eye diseases.
- 5) Mainstreaming is the ultimate solution to education of visually impaired children – Discuss.
- 6)

4.11 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 those points below :

4.11.1 Points for Discussion

4.11.2 Points for Clarification

4.12 REFERENCE

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4. Lowenfeld, B., (Ed.) The Visually Handicapped Child in School, New York : John Day, 1973.
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6. Mani, M.N.G., Techniques of teaching blind children, New Delhi : Sterling Publishers, 1992.
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8. Punani, B. and Rawal, N. (1997). Community Based Rehabilitation, NAB, Ahmedabad.

UNIT 5: CONCEPT OF VISUAL ACUITY, VISUAL FIELD, DEPTH PERCEPTION AND CONTRAST SENSITIVITY

STRUCTURE

- 4.1 INTRODUCTION**
- 4.2 OBJECTIVES**
- 4.3 PSYCHO-SOCIAL IMPLICATIONS**
- 4.4 INCIDENCE AND PREVALENCE OF BLINDNESS**
- 4.5 AVOIDABLE BLINDNESS: STILL ELUDING**
 - 4.5.1 Cataract
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 - 4.6.1 Retinal detachment
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- 4.7 CONCLUSION**
- 4.12 UNIT SUMMARY**
- 4.13 CHECK YOUR PROGRESS**
- 4.14 ASSIGNMENT**
- 4.15 POINTS FOR DISCUSSION/CLARIFICATION**
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Though there is no separate psychology of persons with visual impairment, there are some psychological effects which emerge because of disability. A teacher should necessarily study the psycho-social implication of blindness in order to guide the children properly. A study on how the absence of a particular faculty has a direct impact on the personality of the child right from the early years of life, would help in understanding the learning styles of children. The teacher, while discussing about psycho-social implications should understand the method of mainstreaming for the better personality development of visually disabled persons. The study of mainstreaming should be viewed in terms of the incidence and prevalence rate of visual impairment. In this unit a detailed description of psycho-social implications, mainstreaming processes and prevalence data on disability is given.

4.2 OBJECTIVES

After studying this unit the teacher trainee is expected to

- Describe the psycho-social implications of blindness
- Enumerate the strategies adopted in serving persons with visual impairment.
- Describe the process of mainstreaming in the case of visually impaired persons.
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- Narrate the incidence and prevalence trends in the area of visual disability

4.3 PSYCHO-SOCIAL IMPLICATIONS

Really speaking psycho-social development of a visually impaired child is not affected so much by the disability, but it is disrupted by the emotional overtones of the disability. It is now a well-known fact that children tend to achieve as much, and only as much as their parents aspire them to achieve. Once, parents stop treating the child as a developing individual, once they refuse to accept his capabilities and limitations, both, in a realistic manner, his self-concept is bound to be severely affected. Over protection robs his independence, neglect turns him to undesirable behaviours. Either way, it is the suffering child whose handicap multiplies.

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days and, therefore, the inmates of the institution received 24 hours custodial services. The invention of the Braille reading system in fact provided a tremendous impetus to education of visually disabled children throughout the world. For some time, the fact that 'visually disabled children could learn through tactile mode' became a startling revelation. More institutions were gradually started by missionaries and individuals but those institutions were conceptualised only as residential facilities.

The residential school concept is an accepted phenomenon all the world over even today. The existence of the residential schools at present as well as of the future could be justified though there is a baseless fear that the newly introduced concept of integrated education would replace residential type of education for visually disabled children. The author strongly feels that introduction of integrated education would not affect the existence of special schools, especially in India where 'coverage' of visually disabled children is the major concern rather than the "concept" of service delivery system.

4.3.1 Residential System of education is more than 100 years old in India. The purpose of this setting is to provide education to visually disabled children, usually free of cost. Specially trained teachers in this system are available to teach content and skills to visually disabled children. Attached to the school is a hostel where visually disabled children stay during the school year. This system is conducive especially for children whose parents cannot afford education, children who cannot be provided care at home due to family factors, children who are orphans, etc., but the 24 hours custodial system isolates the child from the society and this might create some adjustment problems later in life. Nevertheless, residential school system in India is not likely to be replaced by other systems.

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4.3.3 Integrated Education does not mean just enrolling visually disabled children in regular classrooms. The children need assistance. Therefore, there is a need for a special teacher to assist visually disabled children. It is believed that these children can learn more than 85 per cent of teaching in regular class itself if they are provided with the right type of material. Though the regular teacher is not expected to learn skills peculiar to blindness such as braille, he should seek assistance of the specialist resource teacher on matters of learning style of visually disabled children. The responsibilities and collaborative activities between resource and regular teachers are discussed in subsequent chapters.

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the entire block was the Project Integrated Education for the Disabled (PIED) supported by UNICEF through NCERT from 1987 to 1993. The project was implemented in one representative block in each of the states namely, Rajasthan (Chhabra block), Madhya Pradesh (Masturi), Maharashtra (Palghar), Orissa (Balianta), Tamil Nadu (Kattankulathur), Nagaland (Kikruma), Mizoram (Khazal), Haryana (Bhiwani), and the Municipal Corporations of Delhi (Trans Yamuna) and Baroda.

The statistics obtained from this project can be projected safely at the national level as this is the only survey conducted on the basis of 'whole block approach'. As per the PIED, nearly 2.5% of the children of school going population have disability of any kind. Out of the 5306 children with disabilities identified in the 10 blocks, 775 were children with visual impairment ranging from mild to severe cases and this number constitutes 14.6% of the identified cases.

Irrespective of the statistical data available from all sources, it is clear that the coverage of persons with visual impairment in education and rehabilitation programmes is not satisfactory. Even within the population presently being served, there are a lot of imbalances. Such imbalances include locality such as rural and urban areas, gender, dropout, etc.

4.5 AVOIDABLE BLINDNESS: STILL ELUDING

Understanding of the causes of visual impairment would help personnel involved in the services for children with visual impairment to render referral and educational services effectively. Some of the common causes for blindness in India are enumerated as follows:

4.5.1 Cataract

Cataract is a common eye disease in the developing countries. In India, cataract accounts for 80% of avoidable blindness. In cataract, the lens which is transparent in nature becomes opaque and the light rays are absorbed. A person can restore sight with the corrective devices after the removal of the defective lens. It is not the development of a layer over the lens but the opacity of the entire lens itself. Even though this is a common eye disease usually found in group grown up persons, children too are sometimes are found with this defect which is called congenital cataract. Pregnant mothers affected by German measles or rubella during the first trimester of the pregnancy consequently give birth to children with congenital cataract.

4.5.2 Glaucoma

Glaucoma is very dangerous and it occurs due to problems in the intra-ocular pressure. Intra ocular pressure is a function of the ratio between the formation of

aqueous in the eye and the resistance to outflow of aqueous from the eye. Glaucoma occurs due to the increase in the intra ocular pressure beyond that degree which is consistent with the continued health and function of the eye. The degree of interference by glaucoma in vision varies from slight blurring to complete blindness. In most cases, blindness can be prevented if treatment is started early. As per the Independent Commission on Health in India (1997), Glaucoma accounts for 2% of adults (aged 40 years and above) with visual impairment and 0.5% of the total population of blind person.

4.5.3 Corneal Ulcer

A foreign body is the cause for most common corneal disorders, and ulcers frequently occur as complications of corneal abrasions or foreign body. When the foreign body stays in the cornea, it may lead to ulcer which in turn reduces the vision from mere blurring to total blindness. In order to avoid this, the eyes should be washed with clean water when the foreign body stays in the eye and on any account the eye should not be rubbed. Corneal ulcers are developed in the eyes due to bacteria, virus infection, fungus, hyper sensitivity reactions, vitamin deficiency, etc.

4.5.4 Xerophthalmia

Xerophthalmia is a general term applied to the Vitamin A deficiency disease. Night blindness is the earliest symptom of this disease. At the onset, the conjunctiva and cornea lose their normal luster and become dry and thickened. Keratomalacia is the severe form of xerophthalmia. Early diagnosis and treatment will be the best way in checking this defect. Uncared condition may lead to scarring in the cornea and ulceration which in turn make the eye totally visionless. Blindness due to Vitamin A deficiency has been controlled to a large extent in India.

4.5.5 Conjunctivitis

Conjunctivitis is the commonest eye disease caused due to bacteria, virus infection, allergic conditions, etc. Inflammation in the eye is the earliest symptom. This defect is usually cleared within a short period with the help of anti-bacterial agents.

In addition to these diseases, diabetes and hypertension can also cause serious damage to the eye.

4.6 OTHER DISORDERS

Visual impairment may also result due to other eye disorders. Some of the possible eye disorders are listed as follows :

4.6.1 Retinal detachment

No physiological symptoms are evident for retinal detachment. Secondary effects such as diabetics and myopia may also cause retinal detachment. A serious blow to the head may also sometimes cause detachment of the retina from its position.

4.6.2 Albinism

Due to the absence of pigment in this iris, skin and hair, affected children report poor visual acuity, and often the defect is accompanied by refractive errors. The albino children are very sensitive to light. Dark sunglasses are suggested for these children as safety measures.

4.6.3 Astigmatism

This is a type of visual defect in which the refractive error prevents the light rays from coming to a single focus on the retina because of different degrees of refraction in the various meridians of the eye.

4.6.4 Nystagmus

A defect in which the eyeball moves rapidly and presents involuntary jerks.

4.6.5 Optic Atrophy

This defect is caused due to the degeneration of the tissue of the optic nerve. The light sensation cannot reach the brain and may lead to blindness.

4.6.6 Retinitis Pigmentosa

This is a defect due to the hereditary degeneration and atrophy of the retina.

4.6.7 Trachoma

This is a form of infection caused by a specific virus which in the chronic form produces severe scarring of the eyelids and cornea.

Punani and Rawal (1996) present the following statistics for the causes of visual impairment in India.

Causes of Visual Impairment in India (Per 1000)

No.	Causes	Percentage
1	Cataract	81.00
2	Refractive Errors	7.00
3	Corneal Opacity	3.00
4	Glaucoma	2.00

5	Trachoma	0.20
6	Malnutrition	0.04
7	Others	6.76

4.7 CONCLUSION

The astronomical growth of the population of persons with visual impairment in India is a matter of concern to everyone. While the number of children who are certified as legally blind are high, the quality of special educational services is not satisfactory. There are large numbers of children who have significant problems in refraction and absence of corrective measures at the appropriate time may make them poor achievers or dropouts in the school system. Many such unidentified children may be benefited by low vision services. Therefore, the magnitude of blindness in India has multifarious dimensions. It is always better to prevent the avoidable blindness than to worry at a later date with rehabilitation attempts. Prevention is better than cure.

4.10 UNIT SUMMARY

- Though there is no separate psychology of persons with visual impairment, there are some psychological effects which emerge because of disability. A teacher should necessarily study the psycho-social implication of blindness in order to guide the children properly.
- WHO - PBD Data Bank (1997) reports that there are nearly 38 million blind people and almost 110 million with low vision, giving a total of nearly 150 million people with some degree of visual impairment. It states that 8.9 million blind people are in India.
- Common causes of blindness are cataract, glaucoma, corneal ulcer, xerophthalmia, conjunctivitis. Visual impairment may also result from other eye disorders like retinal detachment, albinism, astigmatism, nystagmus, optic atrophy. retinitis pigmentosa, trachoma.
- The visually impaired children are mainstreamed into residential system, co-operative model or integrated education system of education..

4.11 CHECK YOUR PROGRESS

- 3) A programme which provides 24 hours custodial care is
- e) Integrated education
 - f) Cooperative model
 - g) Inclusion

- h) Residential school
- 4) Over protection of visually impaired persons.....whereas neglect of them.....
- 3) Cataract means
 - e) Development of a thin membrane over the lens
 - f) Dislocation of the lens
 - g) Opacity of the lens
 - h) Defective lens
- 4) As per PIED, constitute.....% of the school age population
 - e) 25%
 - f) 10%
 - g) 15.5%
 - h) 7.5%
- 5) What is Glaucoma?

4.10 ASSIGNMENT

- 7) The trainer should visit a school for visually disabled children and make a survey of the eye defects found in those children. (This information can be obtained from the medical eye reports).
- 8) The trainee should visit an eye camp and observe the types of visual impairment found in them.
- 9) The trainee should design a programme for providing public education on matters of eye care and education.
- 10) The trainee should make a case study on the after-effects of blindness of a case who becomes blind by any of the eye diseases.
- 11) Mainstreaming is the ultimate solution to education of visually impaired children – Discuss.

4.11 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 those points below :

4.11.1 Points for Discussion

4.11.2 Points for Clarification

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BLOCK 2: TYPES OF VISUAL IMPAIRMENT AND COMMON EYE DISORDERS

INTRODUCTION

Studies on child development primarily focuses on four dimensions dealing with (1) bodily growth, which is otherwise called motor development, (2) the beginnings of learning characterising the language development ; (3) the process of differentiation indicating the cognitive development; and (4) the balanced personality which is the result of sound emotional and social development. In child development, the designation of phases is somewhat artificial since life itself is a continuous process. This block provides information regarding the effects of early blindness on personality development of the child. It also describes the nature of parental attitudes, sibling reactions and the necessary attitude modification of the individual as well as the community.

OBJECTIVES

After going through the block, the trainee will be able to

- Describe the facts about various developmental aspects of visually impaired children.
- Describe the influence of visual impairment on education and personality development.
- Narrate the components to be covered in training parents of visually impaired children.
- State commonly seen attitudes in parents, siblings and peer group towards visually impaired children.
- Enumerate indirect strategies for attitude modification.

UNIT 1:LOSS OF VISUAL ACUITY

STRUCTURE

- 1.1 Introduction**
- 1.2 Objectives**
- 1.3 Development Lag In Visually Impaired Children**
- 1.4 Communication Patterns**
 - 1.4.1 Verbalism
 - 1.4.2 Integrated Personality
- 1.5 Experiential Deprivation Of Visually Impaired Children**
- 1.6 Blindness And Its Implication For Education**
- 1.7 Learning Concepts
- 1.8 Early Intervention Program For Visually Impaired In India**
- 1.9 Instructional Areas And Strategies**
 - 1.9.1 Language Development (3-5 Years)
 - 1.9.2 Cognitive Development (3-5 Years)
 - 1.9.3 Motor Development (3-5 Years)
 - 1.9.4 Emotional And Social Development (3-5 Years)
- 1.10 Conclusion**
- 1.11 Unit Summary**
- 1.12 Check Your Progress**
- 1.13 Assignment / Activity**
- 1.14 Points For Discussion/Clarification**
 - 1.14.1 Points For Discussion
 - 1.14.2 Points For Clarification
- 1.15 Reference**

1.1 INTRODUCTION

Development may be defined as any sequential and continuous process of change, both quantitative and qualitative, in any physical and psychological structure or function in any direction. Studies on child development primarily focuses on four dimensions dealing with (1) bodily growth which is otherwise called motor development, (2) the beginnings of learning characterising the language development ; (3) the process of differentiation indicating the cognitive development; and (4) the balanced personality which is the result of sound emotional and social development. Development in these areas are considered essential for every child irrespective of his/her disability.

In child development, the designation of phases is somewhat artificial since life itself is a continuous process. While there are no clear-cut lines of demarcation between phases, the emerging categories and new directions of behavior occur within certain time periods and follow in order. This unit provides information regarding the effects of early blindness on personality development of the child.

1.2 OBJECTIVES

After going through this unit the trainee will be able to

- Describe the facts about the development of visually impaired children.
- Enumerate the communication patterns of children with visual impairment.
- Describe the influence of visual impairment on education and personality development.
- Describe the effects of early blindness.
- Narrate the components to be covered in training parents of visually impaired children.

1.3 DEVELOPMENT LAG IN VISUALLY IMPAIRED CHILDREN

Piaget's theory, centres on the interaction between the child and the environment. Piaget (1936)

(in Hergenhahn, 1982) discusses four main stages: (1) the sensory motor stage, in which integration of reflexes and object permanence occur; (2) the preoperational stage in which language begins; (3) the stage of concrete operations, in which the child achieves conservation ; and (4) the stage of formal operation, in which the capacity for adults' analytic thought emerges. Research studies involving visually impaired subjects indicate deficiencies in the areas of conservation, and formal operation stages in the Piagetian development of cognition. There are ample evidences to support that many visually impaired children remain in the preoperational and concrete operational stages for a long time because of the deficit

in special concepts. These aspects have to be taken into consideration when developing programmes for visually impaired children of 0 to 8 years.

Emotional and social developments are very essential for the total personality organisation of the child. A healthy emotional development is believed to be a basic factor for the social development of children as they grow. The visually impaired child is not an exemption to this phenomenon. Much of the research on the emotional life of infants and young children has centered around the relationship between an infant and his or her mother (or principal care giver). Attachment behaviour, for example, is a crucial factor for emotional development of the child.

A healthy emotional and social development can be facilitated if parents of visually impaired children understand the problems associated with the concept developmental problems of visually impaired children and initiate remedial measures to avoid such deficits. It is in this context, the programme development for visually impaired children should necessarily involve the participation of parents.

Motor development is another area which needs reference in planning the programme for visually impaired children. The child is not merely a miniature adult but differs qualitatively and quantitatively from the latter in many significant physical characteristics and behavioral potential. Human growth the development begin at birth and continue through adolescence, with most rapid changes occurring during and shortly after birth. Visual impairment affects the motor development of the child to some extent. Depriving the child from the normal experiences meant for the appropriate age group might further deprive his/her motor development. The following facts have to be borne in mind both by the teachers and parents in planning educational programmes for visually impaired children.

1.4 COMMUNICATION PATTERNS

The child's ability to communicate with others develops as his social experience widens. Children learn by listening to what others say; also by imitating what they hear. Blind children rely only on hearing.

1.4.1 Verbalism

The unique social and educational situation in which visually impaired children are placed creates the necessity of treating a vast world of the much-discussed verbal mindedness of them. Word-mindedness, or verbalism is not a social phenomenon found only among the blind. It exists in any situation that demands the use of abstract concepts not verified by concrete experience. Words are conventional symbols for objects, qualities, actions, feelings – shorten signs for experience. Words, and words alone are the medium in which socialisation may take place. Due to absence of sight, visually impaired children are reported to exhibit more verbalism.

1.4.2 Integrated Personality

Education of visually impaired children may be said to have served its purpose if it has succeeded in bringing about integration of personality in these who go through the years of school. The integrated personality of a blind child solely depends on his social behaviour. Integrity of personality goes hand in hand with a strong sense of responsibility. These qualities of head and heart ought to be cultivated among blind children in schools.

The following factors should also be taken into account while working with visually impaired children:

1. A visual loss seriously interferes with a child's development of the specific communication skills resulting in verbalism. The child can be helped to develop skills by (1) identifying the child's current developmental stage in using language; (2) reinforcing the child's present developmental stage; and (3) encouraging the child to move on to the next developmental stage.

The process of developing cognitive skills is the same for visually impaired children as for other children. The sooner the children are helped with their problems relating to concept development, the more likely it is that their cognitive development will progress.

3. Visually impaired children's gross and fine motor development is the same as that of other children in their age. The deficiency in concepts may limit the range of experiences of many visually impaired children, so that some of their motor skills come a bit later than they do in non-disabled children
4. Visually impaired children have the same social and emotional needs as do other children. But how these children feel about themselves depends on what they are allowed to, how they are taught, and how they are treated. Attention and assistance rather than rejection and annoyance help them develop feelings of competence in coping with problems they have.

As described in the previous paragraphs, visually impaired children may experience developmental delays in acquiring concepts because of their visual loss. Early blindness, before developing concepts, may retard the child from experiencing the normal growth pattern.

1.5 EXPERIENTIAL DEPRIVATION OF VISUALLY DISABLED CHILDREN

Blindness is a physical condition that relates to impaired sense of vision. Stated simply, it only means that the persons suffers from loss in the sense of seeing; the organ responsible for vision is defective. The objective effects of blindness are therefore cognitive. As senses are the gateway of knowledge, the sensory deficit in vision reduces the range and quality of cognition. Moreover, vision is the most actively used sense by individual and his/her knowledge grows out of visual experience. The resulting effects of the loss of vision are therefore severe. According to Lowenfeld (1975), blindness imposes three basic limitations on the

individuals. Firstly, it restricts range and variety of experiences. Secondly, it restricts the ability to move about and finally, it limits the control of the environment and the self in relation to it. Vision is the major mode of acquiring information about people, places and processes. The visually disabled child is experientially deprived. Therefore, the curriculum and instructions should aid at providing compatible educational experiences, increasing their mobility, and adequate exposure to the environment. Curriculum fulfilling these objectives would yield better concept development in visually disabled children. In this context it is worthwhile to discuss the implications of blindness for education especially at the early stages of life.

1.6 BLINDNESS AND ITS IMPLICATION FOR EDUCATION

Mani (1985) lists the following concerns in educating visually disabled children:

- 1) The visually disabled child may need to be given direct assistance to learn systematically even the simple skills which sighted children learn almost spontaneously through imitation and contact with the environment.
- 2) The visually disabled child may show deficiencies in some subjects when he is untaught. Predictions should not be made that he is unteachable. Efforts are necessary to teach him difficult concepts too.
- 3) A misconception that visually disabled children possess extra power in their auditory and tactile ability should be overcome. They need sufficient practice for developing these skills in them.
- 4) Due to the lack of visual feedback, the visually disabled child may skip a number of intervening steps of an activity which require more visual orientation.
- 5) The visually disabled child may have difficulty in forming exact concepts as he has to manipulate from parts to whole.
- 6) The visually disabled child may develop verbal expression without associating proper meaning for that expression.
- 7) Visually disabled children may take more time for forming a concept. Since the tactile and auditory perception cannot replace visual perception and not even match the experiences formed out of visual perception, visually disabled children tend to attain reduced experiences.
- 8) In learning, visually disabled children have to perceive an idea through "structure" rather than "form" as in the case of sighted children. Therefore, visually disabled children are likely to miss specific information of the learning activity.

1.7 LEARNING CONCEPTS

Learning of “Concepts” in day-to-day life is very vital for the individual to interact with the world. Concepts are the building blocks for knowledge. Body awareness (concepts pertaining to the body), environmental awareness (crucial objects in the environment and specific relationships among elements in the environment), awareness of object characteristics (general properties of objects), time awareness (concepts pertaining to movement), quantity (concepts associated with numbers and combinations), symbol awareness (crucial symbolic concepts), emotional and social awareness (concepts associated with psychosocial adjustment), and reasoning (thought processes in which concepts are used) are the crucial concept development areas which are essential for the day-to-day interaction of the individual (Hall, 1980). Learning of concepts is the basis of higher learning like rules and generalisations and problem solving. Research studies on Concept Development indicate the following:

- 1) Visually disabled children invariably exhibit weakness in the components – (a) time and distance awareness and (b) measurements.
- 2) The quality of interaction of the visually disabled child with sighted people seems to be a determining factor for concept development. The children with effective interaction with sighted persons show better performance in concept development and more favourable behaviours whereas the children who hesitate to get along with sighted people show poor performance.
- 3) Parental attitudes play a significant role in the overall development of the child. Those children who are overprotected by parents and family members face experiential deprivation and in turn show poor performance in concept development. On the other hand, children who are given more freedom show better performance.
- 4) Children who receive constant motivation regardless of the literacy of parents perform well in the concept development and also exhibit more favourable learning behaviours.
- 5) Following are the salient features of learning environment for better concept development.
 - a) Motivated parents
 - b) Helpful siblings
 - c) Least restrictive environment with freedom
 - d) Effective peer group and community interaction
- 6) Most visually impaired children lack in concepts dealing with “time and distance awareness”, “measurements”, and “orientation of environment”. The younger children also lack in “body awareness.” These indicate that

younger visually disabled children, in particular, need contact of parents or sighted peer group in order to development appropriate body image concepts. The school environment should be least restrictive for proper concept development.

1.8 EARLY INTERVENTION PROGRAMME FOR VISUALLY IMPAIRED IN INDIA

Early intervention programme for visually impaired children was not a reality until 1986. The National Policy on Education (1986) of India gave a special impetus to special education in general and education of the blind and visually impaired in particular. Many organisation are currently initiating Early Childhood Care and Education (ECCE) centres to provide early intervention services to visually impaired children. These centres are located in local communities and parents of visually impaired children can be involved in the delivery of services to the child. The early intervention programmes are currently serving children of ages 3 to 5 years.

1.9 INSTRUCTIONAL AREAS AND STRATEGIES

This area is the most important ingredient of the programme development. The instructors and parents need to understand the normal development pattern of children in the area of language, cognition, motor, emotional and social skills and devise techniques and instructional strategies to minimise the deprivation of the visually impaired child. The development areas, implications for visually impaired children, and the remedial strategies are enumerated as follows:

1.9.1 Language Development (3-5 years)

During this stage, normal children begin to understand sentences involving time concepts, size comparatives/directional statements, action oriented sentence, interpretation of stories, verbal directions in play activities, and sequence of events. Visually impaired children experience some delay in these areas. More focus should be on tactile experience at this stage. The child must be given concrete objects for learning purposes.

1.9.2 Cognitive Development (3-5 years)

Cognitive development refers to such skills as reasoning, storing and remembering information, seeing relationships and differences, classifying things, defining and describing, evaluating, comparing and contrasting, inventing, problem solving and other higher order skills. Non-disabled children of this age group are usually able to perform the following tasks.

1. Asking question for more information
2. Building blocks

3. Identification of basic colours
4. Awareness of age and name of self
5. Symbolic and thematic kinds of play activities
6. Creative responses
7. Matching three dimensional objects and pictures
8. Imitating adults

Visually impaired children have the same potential for cognitive development as non-disabled children during this age group. As evident from the above tasks, concept development plays an important role in understanding them. If delay happens in the concept development, its effect will be unavoidable in other developmental activities. The sooner the concept development, the better will be the cognitive development. In order to avoid delay, the visually impaired child can be trained in cognitive oriented tasks simultaneously.

1.9.3 Motor Development (3-5 years)

Non-disabled children of this age group are usually expected to perform the following tasks.

1. Stringing large beads
2. Holding crayon with thumb and fingers
3. Painting and drawing
4. Manipulation of clay material
5. Imitating forms such as circle, cross, etc., in motion
6. Printing a few letters and drawing a few shapes.

Visually impaired children do not experience delay in the age related motor activities. Non-disabled children and visually impaired children cope very well especially in play situations where most of the above said activities are performed. Since the movement of the visually impaired child is restricted because of the absence of sight, they can be expected to perform the same age related motor skills meant for their non-disabled counterparts only when their mobility skills are improved. However, restriction of earlier experience either by the parents or the environment might indicate some delay in visually impaired children, but this delay can be overcome. Often, visually impaired children cope up with the motor skills effectively when ample opportunities are given.

1.9.4 Emotional and Social Development (3-5 years)

Interaction of the child with the environment usually results in social and emotional development. The environment in this context includes family, peer group and the community. Habits and attitudes, physical and intellectual development, self-concept, creative potential, leadership skills, sharing experiences with peer group, discipline, self-confidence, self-control, social conformity, group behaviour, cooperation, etc., are some of the characteristics associated with the emotional and social development of the child. Inadequate social and emotional development is not a result of disability. Even non-disabled children experience inadequacy in these areas. Unlike language and cognitive developments which have primary links to the disability itself, social and emotional developments are associated with the nature of interaction of the child with the environment. Parental counseling is critical for creating a conducive environment for the social and emotional development of the child. In addition, the visually impaired child can be taught social behaviours such as friendliness, participation, sharing, etc.

1.9.5 Training to Parents

Parents of visually impaired children should play a crucial role in the overall development of the child. It is the responsibility of teacher to make sure that parents understand the following aspects:

1. Reasons for visual impairment in the child and its implications for the present.
2. The effect of the visual impairment of the child in his concept development.
3. Ways of helping the child at home to develop his skills.
4. Understanding the skill areas and limitations of the child.
5. The need for praise and encouragement for social and emotional development.
6. Need for cooperation with the Early Child Care and Education programmes and the teachers for improving skills of the child.

The teachers should help the parents to observe the visually impaired child in the classroom settings and notice the nature of training he/she needs in language, cognitive, motor, emotional and social developments. They should be encouraged to ask questions and clarify doubts. Moreover, the parents should be oriented by the teachers to identify the areas where the child needs maximum assistance. In general the close collaboration of the teachers and parents of visually impaired children could make a tremendous impact in the overall development of the child.

1.10 CONCLUSION

Early intervention programmes for visually impaired children are showing positive results. The children learn better and also learn more in primary grade levels as a

result of quality early intervention programmes. Early intervention programmes are most essential if the children are to be mainstreamed at a later stage.

1.11 UNIT SUMMARY

- On the basis of inter-action between the child and environment Piaget outlines four main stages of development : the sensory motor stage, the pre-operational stage, the stage of concrete operation and the stage of formal operation. There are ample evidences to support that many visually impaired children remain in the pre-operational and concrete operational stages for a long time because of the deficit in special concepts.
- Verbalism or wordmindedness is reported to be exhibited by the visually impaired children due to absence of sight.
- Visually impaired children may experience developmental delays in acquiring concepts because of their visual loss. Early blindness, before developing concepts, may retard the child from experiencing the normal growth pattern. In learning, visually disabled children have to perceive an idea through “structure” rather than “form” as in the case of sighted children. Therefore, visually disabled children are likely to miss specific information of the learning activity.
- Most visually impaired children lack in concepts dealing with “time and distance awareness”, “measurements”, and “orientation of environment”. The younger children also lack in “body awareness.” These indicate that younger visually disabled children, in particular, need contact of parents or sighted peer group in order to development appropriate body image concepts. The school environment should be least restrictive for proper concept development.

1.12 CHECK YOUR PROGRESS

- 1) Following of the most important implications of blindness on education
 - a)
 - b)
 - c)
 - d)
 - e)
- 2) Concepts are defined as.....
- 3) Visually impaired children lack concept development in, and..... areas.
- 4) Salient features of cognitive development at the early years include
 - a)

- b)
- c)
- d)
- e)
- 5) Salient features of language development during early years include
 - a)
 - b)
 - c)
 - d)
 - e)
- 6) Salient features of motor development during early years include
 - a)
 - b)
 - c)
 - d)
 - e)
- 7) Salient features of emotional and social development during early years include
 - a)
 - b)
 - c)
 - d)
 - e)

1.13 ASSIGNMENT / ACTIVITY

- 1) Prepare case studies of two visually impaired children highlighting their language development skills.
- 2) Discuss with five visually impaired adults to find out the extent of their social and emotional development.
- 3) Administer a commonly available concept development test to visually impaired children and find out in which areas they experience difficulties.
- 4) Interview with five parents of visually impaired children and find out in what areas they need training.
- 5) Observe five manneristic behaviours which are found in visually impaired children and investigate why such behaviours are present in them.

1.14 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 those points below :

1.14.1 Points for Discussion

1.14.2 Points for Clarification

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UNIT 2: LOSS OF VISUAL FIELD

STRUCTURE

- 2.1 Introduction**
- 2.2 Objectives**
- 2.3 Parantal Attitude**
 - 2.3.1 Confused Stage
 - 2.3.2. Rejection
- 2.4 Sibling Reaction And Peer Group Reactions**
- 2.5 Attitude Modification**
- 2.6 Help In Overcoming Deprivations**
- 2.7 Involving Parents In Educational Programmes**
 - 2.7.1 Acceptance of Responsibility
 - 2.7.2 Parent-Teacher Association
 - 2.7.3 Orientation for Parents of Visually Disabled Children
 - 2.7.4 Support Services
- 2.8 Unit Summary**
- 2.9 Check Your Progress**
- 2.10 Assignment / Activity**
- 2.11 Points For Discussion/Clarification**
 - 2.11.1 Points For Discussion
 - 2.11.2 Points For Clarification
- 2.12 Reference**

2.1 INTRODUCTION

Personality is treated as the total quality of the individual's behaviour as it is revealed in his thought, action, expression and attitude. Among these, the attitude forms the base for all other components and undoubtedly contributes to the development of the self-esteem of the individual. In the case of visually disabled children, their attitudes toward the world and the vice versa play an important role in the making up of the self. This unit describes the nature of parental attitudes, the sibling reaction and the necessary attitude modification of the individual as well as the community.

2.2 OBJECTIVES

After learning the unit the trainee is expected to

- State commonly seen attitudes in parents, siblings and peer group towards visually impaired children.
- Enumerate indirect strategies for attitude modification.
- List down opportunities that a parent can provide to a visually impaired child at home.
- Illustrate some activities through which parents can help visually impaired child overcome deprivation at home.
- Discuss steps that involve parents in the educational programmes for visually impaired children.

2.3 PARANTAL ATTITUDE

Attitude is generally considered as a mediational state of the person that usually predisposes him towards a certain belief system. It varies from person to person in different contexts. For example, the attitude of the parent towards the child will be different from the attitude of a teacher or a third person towards the same child. When the parental attitudes are discussed, one tends to think about the concern and warmth shown by the parents towards the children. These positive attitudes are formed because of the interest of the parents in the lives of the children, their concern to develop them, the confidence shown in their abilities, etc. It is universal that all parents have high aspirations about the well-being of their children and they are ready to undergo any hardships for the improvement of the children so that they can stand independently in their own lives.

These common aspirations are initially shattered when the parents find that their child is visually disabled. The initial stage of the set-back makes them worried and sometimes parents never recover from that shock. This depressing state of affairs changes their entire attitude towards their child who is visually disabled. Unless proper intervention is made at the time of crisis, it is usually difficult to change the

attitudes of the parents at a later stage.

Some of the following attitudes are commonly seen in parents of visually disabled children:

2.3.1 Confused Stage: The birth of the visually disabled child creates a variety of new situations in the family. The family which is accustomed to the normal way of living is forced to think of the life-style of the child who cannot see. Their doubts regarding the child rearing process, communication style, nature of the environment etc., are reasonable apprehensions that may make the family members to think.

On the one hand, the parental affection towards the child, whether normal or disabled, can be found. But on the other hand, this peculiar situation makes the parents confused. Many such parents keep on going to ophthalmologists with the hope of getting the sight back for the child. Such parents should be properly guided by the doctors and teachers so that appropriate measures could be taken for the rehabilitation of the child.

- 2.3.2**
- a) **Over-protection :** Over-protection happens due to various reasons. More fear, apprehensions and the lack of confidence of the parents in the child's independent mobility contribute to over-protection of the child. The main concern of such parents is that the child should not fumble over objects and get himself hurt. Therefore, one type of protection is to safeguard the child from accidents.
 - b) Another type of over-protection comes because of the prestige issue. Parents who are ashamed of having a visually disabled child deliberately hide the child from the sight of others. As a result, the visually disabled child is kept separate, provided food and other requirements at his place and thus cut off from the contact of the world. This develops in him a sedentary condition and, in most cases, such visually disabled children do not develop physically too in addition to their emotional disturbances. This type of overprotection is too dangerous for the growth of the child and results in much damage to his total personality.
 - c) Over-protection also comes out of too much sympathy for the visually disabled child. Treating the child as a blind child and not respecting his feelings as a normal child results in the experiential deprivation of the child. Treating the visually disabled child as a child first helps the parents to overcome to some extent the tendency of over-protection.

2.3.3. Rejection: Like over-protection, rejection too is due to various conditions. Visually disabled children are mostly found from the below-average families. By nature, rearing of the visually disabled child requires

individualised training and care which could not be afforded by the family which has no time to attend to the child as they have to work to earn their livelihood. In such cases, parents look for centres which can take care of their child so that their burden is reduced. There are parents who do not feel that blindness is a sin but they simply ignore the child just like other non-disabled children due to the inadequate resources and financial constraints. Experiences have clearly indicated that over-protection is more harmful than rejection due to poverty. Such rejected children pick up skills which are possible due to their interaction with the world.

While rejection is discussed as one of the main aspects of the parental attitudes, the other side can also be seen. There are poor, illiterate parents who do not want to send the visually disabled children to educational institutions because of a feeling that the child would be further deprived.

2.4 SIBLING REACTION AND PEER GROUP REACTIONS

The sibling and the peer group relations should be discussed taking into account the environment where the visually disabled child is placed. At the initial stages of the child's life, sighted peer group has no fear or apprehension of visually disabled children. The discrimination starts when they realise that this child has a different behaviour and needs different educational methods and approaches. Experience has shown that the peer group is trying to help visually disabled children rather than rejecting them. However, this acceptance is a two-way process. The sighted peer group should be able to accept the visually disabled child and, at the same time, the disabled child should also have the temperament to get along with the sighted in spite of his disability. Visually disabled children who are able to accept the limitations they encounter due to blindness easily get into the group of sighted children whereas the children who are so sensitive to the visual disability find it extremely difficult to get along with the sighted ones. It is the primary responsibility of the teacher of the visually disabled child to make the child accept his limitations and proceed further to achieve his goals. The following common behaviours can be found in the peer group:

1. *Some children may hesitate to use the word blind when talking to the visually disabled child.*
2. *Some children may be curious to know how visually disabled children sleep and dream.*
3. *Some children may not like to talk about colour with visually disabled children.*
4. *Some others may find it uncomfortable to use the word 'look', 'see' etc., with visually disabled children. Instead, they tend to ask 'have you heard me?', 'can you feel this?' etc.*
5. *Some children may feel that visually disabled children have too much of concentration. They may also believe that they have the sixth sense. There*

are sighted children who feel that visually disabled children have spiritual qualities.

The teacher, either in the residential setting or in the integrated programme should see that these stereotypes are overcome through proper advocacy and orientation programmes.

2.5 ATTITUDE MODIFICATION

Attitude modification should occur in a natural way. It cannot be forced either on the peer group or on the parents. On some occasions, the teachers are induced to say to parents, 'you should change your behaviour', 'don't be too sympathetic to blindness', etc. With the sighted students some teachers give direct instruction that they should help visually disabled children and not tease them on any account. These types of orders make the environment so artificial and such an environment may not be conducive for the development of visually disabled child. Therefore, many other indirect strategies could be adopted. Some of them are enumerated below.

1. Advocacy programmes can be organised to highlight the similarities between a sighted child and a visually disabled child. It can also include what a visually disabled child could do and what he can not do. These general information may serve as guidelines for sighted peer group in getting along with visually disabled children and also help the parents to think of the ways in which their children could cope with the sighted children. These advocacy programmes may be in terms of films, radio programmes, and also through some pictorial handouts. These strategies may serve better in the attitude modification.
2. Reading the life histories of visually disabled people who have achieved greater heights will enhance the confidence of visually disabled persons as well as that of the parents. This information can be made available through small handouts. Literature geared to unique audience, such as parents, regular educators, peer groups and administrators, can be developed and disseminated by leading organisations for bringing a positive climate in the education of visually disabled children.

Blindness, in general, evokes the emotional sympathy of the public. Blindness in a person has impact on education, physical independence, emotional stability, intellectual and social development, etc. Sighted people in daily life have limited contact with visually disabled persons and therefore their opinion regarding the life of being blind is mostly stereotype. The attitude is too general. People carry the attitude which they develop with limited exposure to one or two visually disabled people and thus generalise it to the entire population. We come across stereotype attitudes like "blind people have more concentration", "all blind people are musicians", "blind people have god-given abilities", etc. These may be true in case of particular individuals, but need not hold good for all visually disabled people. There are very few people who truly regard visually disabled people as *individuals*.

This stereotype attitude has direct relation with the family acceptance or rejection of visually disabled people.

2.6 HELP IN OVERCOMING DEPRIVATIONS

It can be observed that teachers of visually disabled children start with *readiness activities* for teaching any skill to the child. The importance of prerequisite skills is very well understood. In schools, teachers spend considerable time in teaching the pre-requisite skills. These skills which are expected to be developed before the age of two would be a little difficult for the child to learn at the age of five or six. Enormous practice is therefore necessary *for undoing* many unwanted behaviours which have already been acquired by the child for just satisfying his then needs. If parents of visually disabled children understand this factor and cooperate with the teachers, natural growth would not be far away from the non-seeing child. The list below describes the activities in which parents would be of more help to visually disabled children.

1. In order to be more useful, parents should be oriented by the teachers to have optimistic views about the development of the child. This very feeling helps the child to maintain emotional stability during his schooling. To begin with parents should talk to the child freely which will enable him to get out of fear in his ability to express. The *expressive skills* of the child could be developed within the family.
2. *Tactual and auditory discriminations* have great relevance to the education of the visually disabled child. This orientation need not wait till the child is admitted in the school. Parents should allow the child to explore the objects in the environment and very often he should be encouraged to see the *likenesses and differences*.
The child should be allowed by the parents to *touch and feel* the objects. Parents should be appraised with the importance of this skill for the education of the child. Through auditory clues, the child should be made to *discriminate between the sounds and associate words or object or activity* to such sounds. This development would help the child to fare better in his orientation skills.
3. The family members can orient the child to the environment. The orientation should start from home. The child should be made aware of the different locations of objects inside the house. The child will be able to develop a mental picture and move freely without much dependence on others. Parents and family members should be told that this would assist the child in having better concepts regarding the *position, direction and distance* in reading an environment tactually. When these skills are developed at home, the teacher can straight away use tactile maps, etc., for teaching the child.
4. *Daily living skills* ought to be taught by the family. The learning at home is so natural, and the teaching by the teacher in a simulating environment may

not be of more value for the child. In general, parents are scared to allow visually disabled children to use electricals, fire, etc., but it should be borne in mind that without these experiences, the life of the child would be incomplete. Mothers have to play a big role in developing these skills. The *household activities* are very vital for visually disabled girls and, on any account, natural learning would not be possible in school. Home is the right venue for this to happen and the mother is the best teacher to teach those skills.

5. The *adjustment of the visually disabled child* to the society starts with his ability to adjust to his own family members. The child brought up with affection and care in the least restrictive environment would be able to cope up better with the sighted world. This practice at home makes him behave better in society too. Therefore, the family shapes the social integration of the child more than the formal school.

2.7 INVOLVING PARENTS IN EDUCATIONAL PROGRAMMES

2.7.1 Acceptance of Responsibility

Parents play a significant role in the educational programme for visually disabled children. They should participate in it economically as well as socially. It should make them to realise their responsibilities in the making up of the child.

Parents who get carried away by some misconceptions have to overcome it through right educational programme.

- a. Parents think that the child is not going to be a productive member of the family and is, therefore, a liability. This generates in them a feeling that the investment on the visually disabled child would go waste. This misconception should be overcome.
- b. There is a common trend among many parents of visually disabled children to expect everything free. It is true that visually disabled people should get all possible help from various agencies for their upliftment, but at the same time, the contribution of the parents is also expected for their education, etc.

2.7.2 Parent-Teacher Association

It is very pitiable to notice that there is inadequate teacher-parent consultation in the education of visually disabled children. Parent-teacher meeting should be conducted often for the implementation of the programme for disabled children. The parents should be encouraged to attend these meetings and due weight age must be given to their suggestions. In these meetings,

- a. the development of visually disabled children should be, discussed and the comments of the parents should be sought.
- b. the teacher should appraise the potentialities of visually disabled child and explain the role of the parents and other siblings of the family in raising that

- child.
- c. the teachers should appraise the parents with what to expect out of their children who are visually disabled at different ages.
 - d. parents of sighted children should be asked to observe the activities performed by visually disabled children and the comradeship developed between them and the sighted children.

Hence the Parent-Teacher Association becomes the social agency and the parents of both sighted and visually disabled children become the agents in changing the attitudes of the public towards blindness.

2.7.3 Orientation for Parents of Visually Disabled Children

Parents should compulsorily be oriented to the educational and other implications of blindness. They must be associated with the teachers in planning the *skills development programme* for the children. Most of the basic skills can be developed by the parents with the guidance of the teacher. In case of a child who studies, one member of the family can be encouraged to learn braille in order to assist the child in a better way.

2.7.4 Support Services

There are very few areas in the education of visually disabled children where the services of parents cannot be utilised. The following list of possible services is not exhaustive.

- a. *Parents can serve as counsellors for visually disabled children.*
- b. *They can help the teachers to identify visually disabled children in the villages for school placement.*
- c. *They can act as para-professionals for educating visually disabled children, especially in the non-academic areas.*
- d. *They can act as social agents in working with Government agencies for claiming the rights of visually disabled children.*
- c. *They can talk to the employers for employing visually disabled children in their factories.*
- f. *They can describe the success of visually disabled children as well as their problems through mass media for educating the public on matters of blindness.*
- g. *They can explain the problems visually disabled children encounter at home so that the teacher preparation programmes can expose the student-teachers to those problems and make them better teachers of visually disabled children.*

Another important factor for the family attitude is contributed by the social stigma about blindness that exists in the society. Treating blindness as a sin, punishment, etc., force the family to feel guilty. Some parents feel that the marriage of other members of the family, prestige of the family etc., would be affected, if the visually disabled child of the family is exposed to the public. Such parents tend to hide the

child, overprotect him and therefore the fountain of early childhood experience is denied.

Parents are the most important people in the life of the sighted child as also that of the visually disabled. The habilitation and/or rehabilitation of the visually disabled should, in fact, start from the family. The parents are generally ignorant about implications of blindness on the personality development of the child. Early blindness in particular has a lot of effect on the personality development of the child. Parents can play a significant role in the life process of the non-seeing child. In most of the places, parents also *like* to render maximum assistance to the visually disabled children. But their unawareness of the right methodology in the treatment of such children keeps them away from providing possible assistance. This is the time for the schools and organisations working for the visually disabled to offer guidance and counselling programmes to the families of these children. It is therefore very evident that the parents of these children should be involved in planning the educational programmes for them. In doing so, the parents would be able to appreciate their role in assisting the child to get ready for his total habilitation and/or rehabilitation.

2.8 UNIT SUMMARY

The personality of the visually disabled child will be more strongly influenced by the quality of the devotion of parents to the child. It makes a great difference to him whether the attitude and actions of parents reflect consideration for his real needs or are merely prompted by pity or momentary irritations. It is reassuring to know that assistance with true affection will fully compensate the feeling of visual disability in the child. Teachers with professional background are aware of this fact, but parents with their emotional shock are ignorant of this. This gap can be bridged by establishing coordination between home and school.

2.9 CHECK YOUR PROGRESS

1. Visually disabled people have more concentration
 - a) This is a stereo-typed attitude
 - b) This is not at all true
 - c) This is true
 - d) This is overt attitude
2. Some parents hide and overprotect the visually disabled child because
 - a) They do not have facilities to educate the child at home
 - b) They think that the family prestige would be affected by exposing the child.
 - c) They try to develop the independence of the child in that way by

- protecting the child at home.
- d) They do not like them at all.
3. Most of the possible experiences for the visually disabled child to acquire skills at home are denied because
- a) The parents do not want them to have such experiences
- b) The parents are not aware of the ways to provide opportunities to the child.
- c) The visually disabled child cannot acquire these skills.
- d) The visually disabled children do not need them.
4. Dejected parents have little faith in the independence of the visually impaired child because
- a) The development of skills in visually impaired children is not immediate
- b) They lack the appropriate skills similar to that of a non-disabled child
- c) They compare them with the so called normal child
- d) They believe that their child is born as visually impaired because they have sinned.
5. Parent – teacher meeting should be conducted often for
- a) Proper implementation of the programme for disabled children.
- b) Comparing parent-teacher relationship.
- c) Making monetary gains.
- d) Burdening the child with lots of work.
6. In education of visually disabled child there is greater relevance of
- a) Story books
- b) Television
- c) Colouring books
- d) Tactual and Auditory discrimination

2.10 ASSIGNMENT / ACTIVITY

1. The teacher trainee should interview parents of two visually disabled children and study the type of attitude shown by them towards the life of the child. While doing the study, the attitudes of the father and mother of the child be mentioned specifically.
2. The teacher trainee should prepare a two pages hand out explaining the

parents the need for their involvement in the personality development of the visually disabled child.

3. The teacher trainee should prepare a ten minutes dialogue between a teacher of the visually disabled and a public man regarding the attitude of the public for the positive development of the disabled child. (this imaginative dialogue should be based on the culture specific attitude of the place)
4. The teacher trainee can attend the Parents' Association meetings of any school for the visually disabled and give a small speech on the potentialities of visually disabled children. He can also prepare a list of agencies for auxiliary services, such as reader and recording services.
5. Teacher trainee can plan out a field trip for a group of sighted children to visit visually disabled children and get feedback on what they feel after visiting these children.

2.11 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 those points below :

2.11.1 Points for Discussion

2.11.2 Points for Clarification

2.12 REFERENCE

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UNIT 3: COLOUR VISION DEFECT AND LOSS OF CONTRAST SENSITIVITY

STRUCTURE

- 1.1 INTRODUCTION**
- 1.2 OBJECTIVES**
- 1.3 DEFINITION AND DIFFERENCE BETWEEN 'LOW-VISION' AND 'PARTIALLY -SIGHTED'**
 - 1.3.1 Low Vision
 - 1.3.2 Partially-Seeing Children
 - 1.3.3 How does Vision Develop?
- 1.4 SEQUENCE OF EVENTS**
 - 1.4.1 Development of an Interest in Seeing
 - 1.4.2 Encourage 'Attending' (Fixation and Focus)
 - 1.4.3 'Tracking' Following an Object
 - 1.4.4 Recognition of Objects
 - 1.4.5 Visual Memory Games
 - 1.4.6 Visual Integration
 - 1.4.7 Visual Closure
 - 1.4.8 Form Constancy/Object permanence*
 - 1.4.9 Figure Ground Discriminations
- 1.5 VISUAL MOTOR COORDINATION**
 - 1.5.1 Eye-Hand
 - 1.5.2 Eye-Foot
- 1.6 LOW VISION AIDS**
 - 1.6.1 Magnifiers
 - 1.6.2 Large Print Materials
 - 1.6.3 Computers
- 1.7 UNIT SUMMARY**

1.8 CHECK YOUR PROGRESS

1.9 ASSIGNMENT / ACTIVITY.

1.10 POINTS FOR DISCUSSION/CLARIFICATION

1.10.1 Points for Discussion

1.10.2 Points for Clarification

1.11 REFERENCE

1.1 INTRODUCTION

Total blindness has aroused sympathy and compassion of the sighted public. There have been programmes to educate, rehabilitate and integrate this population. But the group in between total blindness and sighted people with limited vision, are in a disadvantageous position whether to make up their minds to study braille or to try to read print. Many individuals spend their days without coming to a definite decision. On the other hand, people with limited vision did not have the encouragement in the past to use residual vision. The 'sight saving' concept generally prevailed. People thought that more use of the defective eye would cause further damage to perception. Evidently, this has been disproved. Resulting from this, many efforts came into existence to devise ways for persons with limited vision to use their residual vision in a purposeful way. Even the weakest eyes do not have to be "saved", but can be properly used as well. This new concept of maximum use of remaining sight encouraged the development of many kinds of optical aids, and served as an impetus for the formulation of programmes to help all children and adults to get the greatest benefits from whatever sight they had. This unit provides a birds eye view of low vision assessment, visual efficiency tasks and use of low vision aids.

1.2 OBJECTIVES

After going through this unit, the trainee is expected to

- Define 'low vision' and distinguish it from partial sightedness;
- Explain the process of visual development in children and its implications in terms of impairment;
- List a sequence of events to improve the visual efficiency of the low vision child;
- Describe teacher approaches in teaching a low vision child.
- List low vision aids and their uses.

1.3 DEFINITION AND DIFFERENCE BETWEEN 'LOW-VISION' AND 'PARTIALLY -SIGHTED'

1.3.1 Low Vision

Low vision is defined as markedly reduced functional vision. There is usually applied to the person with vision of legal blindness or poorer, who nevertheless has some remaining sight which is useful for certain purposes, or which can become so with special appliances and/or training.

1.3.2 Partially-Seeing Children

For educational purposes, one who has visual acuity of 6/21 (20/70) or less in the better eye after the best possible correction, and who can use vision for most learning is called as a partially sighted person.

Therefore, low vision is defined in terms of reduction in the clarity of vision, whereas partial sightedness is defined in terms of the distance through the Snellen chart. Teachers should distinguish clearly between a 'low vision' child, and one who is 'partially sighted' before imparting the necessary instruction.

1.3.3 How does Vision Develop?

It is interesting, as well as informative, to study the visual process and how vision develops in the child. Misconceptions regarding visual abilities should be overcome. Some such misconceptions are :

- i) Visual abilities are developed automatically;
- ii) Visual ability is determined by visual acuity;
- iii) Visual functioning has a direct relation to the kind of impairment;
- iv) Visual ability depends on the degree of impairment.

These set ideas among teachers, discourage them in handling a low vision child. The feeling that the low vision child can be taught to read print has to be generated among teachers. The ability and visual functioning of people can be assessed through a series of graded visual experiences. The responses of the child to such stimulating visual experiences enables the teacher to determine the visual efficiency of the child and also enable him to plan instruction suitable for the child. Vision develops in rational sequence. The activities are hierarchical and logical rather than random.

I Stage

The child who tries to see, first attends to the light source. Often we see small children staring at objects for minutes together. The child here is developing the skill of '*attending*'. In order to stimulate the child for this activity the environment should have a variety and have colourful objects.

II Stage

Not all information and objects attended to are stored in the memory. The information which has greater interest and value is stored by the child more or less consciously. This process is the '*grasping*' of the information which enables the child to recall when necessary.

III Stage

Following the direction of the light source is another skill. *Tracking* helps the individual to know his position and direction in relation to the light source.

IV Stage

Depth perception is the ability to perceive a three-dimensional object by movements and shades created by the object. Depth perception helps the person to judge distance.

V Stage

Form discrimination is a skill that one develops mostly through observation: observation of shape, size and movement. In printed letters, many of them have similar forms. This skill helps the child to understand the differences between objects.

VI Stage

Likeness and differences are of paramount importance in any child's knowledge. Likeness of sizes, likeness in shapes, likeness in colour and the whole range of similar features is determined by the child through exposure to variety of objects in the environment. It helps the child to discriminate between words and sentences and to have a flow in reading.

Not one, but a series of graded activities develop the visual efficiency in the low-vision child. Various opportunities which are possible at home and school are listed below. They should be practised for a prolonged time in order to improve visual efficiency in a child.

1.4 SEQUENCE OF EVENTS

1.4.1 Development of an Interest in Seeing

- Stimulate visual curiosity by exposing the child to various lighting conditions.
- Encourage continually to maintain interest in seeing. Variety counts a lot here.
- Encourage for seeing first, the inaccuracies may be mentioned later. Encourage discussions about what is seen.
- The child may be assisted in making associations between three-dimensional objects and two-dimensional pictures, picture to picture.
- Develop a vocabulary dealing with visual likeness and difference.

1.4.2 Encourage 'Attending' (Fixation and Focus)

- Providing enough time for the child to observe the objects.
- Using coloured lights in positions of gaze may help the child to fix his line of vision.
- High interest objects for identification. Objects like balls or toys can be used for this purpose.
-

1.4.3 'Tracking' Following an Object

- The teacher can draw diagrams or letters and ask the child to move his finger along drawn pathways.
- The child may be asked to follow a light source / or rolling ball.
- As crayon pencils are used by children, the child of low vision too can follow the pencil or crayon markings.

1.4.4 Recognition of Objects

- Discriminate *three-dimensional objects*, blocks, sticks and stones.
- Teach gradation in size. Small, medium and big should be graded by the child.
- Two-dimensional presentations
- Teach names of colours.
- Teach intensity concept, mildness or thickness are some concepts to be developed in the child.
- Colour intensity can be made complicated and the child can be taught the related vocabulary.

1.4.5 Visual Memory Games

- Flash cards or object presentations and the child should be asked what he has seen.
- Increase duration of memory.
- Increase difficulty of stimulus
- Decrease time of exposure
- Increase number of stimuli.

- Specify order or recall.
- Call for categorising (i.e. with straight lines, with colour, with curves; different sizes, what order of size etc.)

1.4.6 Visual Integration

- Use complete range of forms taught for this purpose.
- Have child make shapes from stubs, clay, card board, wood pieces.
- Draw forms from dotted outlines.
- Draw forms freehand.
- Throwing or catching a ball.
- Begin to relate black abstract forms to familiar concrete objects in environment.
- Use familiar toy objects. For example, a group of match boxes can be grouped together.
- Reinforce vocabulary of 'difference'
- Emphasise 'naming' of objects, as well as descriptions of forms contained.
- Reduce size of stimuli and let the child associate terms to the objects.

1.4.7 Visual Closure : To identify, categorise objects with missing gross details

- Find omissions of parts. For example, the child, can be asked to find the omitted letters of the words which are familiar to him.
- Present a series of diagrams in ascending or descending order with one diagram missing in between. Let the child complete it.
- The child must be asked to find the missing parts of concrete objects.

1.4.8 Form Constancy/Object permanence

- Concrete, familiar objects may be presented in various positions and the child must be exposed to all those differences.
- Two-dimensional pictures of the objects in various forms may be presented to the child for discrimination

1.4.9 Figure Ground Discriminations

- Concrete games-finding central item. The child may be asked to locate a particular spot in a picture.

- Pictures of different colours may be given on the same background and the child can be asked to discriminate.
- The same diagram may be given on different backgrounds and the child can be asked to discriminate. This activity helps the teacher to fix appropriate visual backgrounds for the child's reading.
- The complexity of discrimination can slowly be increased.

1.5 VISUAL MOTOR COORDINATION

1.5.1 Eye-Hand

- Rolling balls, throwing, catching and bouncing are some activities for developing the eye-hand coordination of the child.
- A particular colour bead may be put in the same colour box to develop this skill.
- Nesting cups, cylinders or cartons are some good exercises for eye-hand coordination.
- Tearing paper shapes, clay modelling, folding paper, bead-stringing, cutting and pasting can be practised by the child.
- Tracing lines, curves and other two-dimensional forms or shapes are useful activities.
- Weaving with plastic ropes and cardboard needles develop motor skills.

1.5.2 Eye-Foot

- Placing a 'foot' game; on squares of paper or mats demand the eye-foot coordination skill in the child.
- Following a weaving line made by a rope is good for this skill.

Unlike blindness, the low vision condition demands more creativity in the teacher owing to individual differences in the extent of visual impairment, amount of residual vision and the temperament of the children. The teacher in his approach, should bear in mind the following to make his efforts more fruitful:

1. Visual discrimination takes more time for a low vision child. The teacher should not try to hasten instruction. Teaching should be in accordance with the pace of the child's learning.

2. Some low vision children may develop a poor posture while reading. This in the initial process should be noted but not corrected by the teacher. The child's ability to read the printed letters should be commended first. A poor posture may be corrected in a gradual manner.
3. In learning, children need success to sustain interest. Activities for visual efficiency development should end with successful visual performance. This reinforces the child's interest in seeing. It is the teacher's skill that makes learning more interesting.
4. Some children are auditory-minded. They may attend to the visual task immediately after the sound clues produced by objects. The teacher has to appreciate this and provide similar activities.

The visual efficiency of the low vision child should be developed through the above mentioned strategies. Teachers with simple teacher-made materials can develop visual efficiency in these children.

1.6 LOW VISION AIDS

Besides teacher made materials, some materials presently available can be used for educational and assessment purposes. They are as follows :

- 1.6.1 Magnifiers :** Low vision children should be trained to use magnifiers as per their needs. A number of low cost magnifiers are available today and the child should be trained to use magnifiers to make his reading easy. Just providing magnifiers to the child may not help if he does not know how to use it. It should also be taken into account that some low vision children may not find magnifiers useful for their learning. Therefore, proper assessment is vital before prescribing magnifiers
- 1.6.2 Large Print Materials :** Many low vision children require large print materials for their reading. However, they may require readers at the examination time since a large quantity of large print materials cannot be read by the child. A xerox machine with enlarging facilities can be used to prepare low vision materials according to the needs of the children. As every child may have a specific type of low vision materials, production of them becomes expensive. Therefore, it is preferable to train the child to use magnifiers effectively than providing large print materials so that the child can make use of the regular books. However, important teaching points, mathematical formulae, etc., which may serve as hints for the learning of the child may be prepared in large print by the teacher of low vision children.
- 1.6.3 Computers :** Computers can be used as individual learning devices for children with low vision. As computers enable magnification as per the

needs of the child, they can be used as gadgets for reading purposes. However, use of computers was not popular in the past because of its cost. As computer technology is growing and computers are becoming cheaper day-by-day, its use in education of low vision children would be realised in the near future. In addition to computers for learning, they can be used effectively for assessing visual efficiency of low vision children.

In short, the teacher's flexible approaches in teaching low vision children are effective tools for success in the teaching-learning process. Teachers, as far as possible, should try to stimulate the child who has average vision to read print letters. They can also use gadgets like computer and television and large print materials to enhance the learning of low vision children. This is a section of the population, which has not been given much attention. But the time has come to look at the needs of this neglected sector.

1.7 UNIT SUMMARY

- Low vision is defined as markedly reduced functional vision. For educational purposes, one who has visual acuity of 6/21 (20/70) or less in the better eye after the best possible correction, and who can use vision for most learning is called as a partially sighted person.
- The ability and visual functioning of people can be assessed through a series of graded visual experiences. The visual efficiency of low vision child can be improved by a sequence of events : development of an interest in seeing, fixation and focus, 'tracking' following an object, recognition of objects, visual memory games, visual integration, visual closure, form constancy, figure ground discriminations.
- Teachers with simple teacher-made materials can develop visual efficiency in the low vision children. Besides low vision aids such as magnifiers and large print materials can be used.

1.8 CHECK YOUR PROGRESS

- 1) Low Vision is defined as.....
- 2) Visual ability is determined by the visual acuity Yes/No
- 3) Following low cost materials can be used for preparing teaching aids for visually disabled children
 - a)
 - b)
 - c)

- d)
 - e)
 - f)
- 4) The following list of teaching aids is suggested for a teaching aids kit in the education of low vision children.
- a)
 - b)
 - c)
 - d)
 - e)
 - f)
- 5) Vision develops in a rational sequence. Arrange the processes as it develops in a logical and hierarchical order.
- | | |
|------------------------|----------------------------|
| a) form discrimination | d) tracking |
| b) attending | e) grouping |
| c) depth perception | f) likeness and difference |
- 6) Which one is more feasible?
- a) Training in using magnification devices
 - b) Providing large print materials adequately

1.9 ASSIGNMENT / ACTIVITY

1. The teacher trainee can prepare one teaching aid for sighted children and adapt it to the needs of the visually disabled children. The nature of adaptation should be specified.
2. Visit a low vision clinic in your locality and observe the nature of services provided there.
3. Collect 5 low vision devices available in the market and write descriptions on how to use them.
4. Prepare 10 pages of large print material with twice the magnification of normal print size of text books.
5. Study the visual efficiencies of at least five low vision children.

1.10 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 those points below :

1.10.1 Points for Discussion

Points for Clarification

1.11 REFERENCE

- 1) Barraga, N.C., Visual handicaps and learning. Belmont, CA : Wadasworth Publishing Co., Inc., Inc., 1976.
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- 4) Kelly, L.J. & Vergason, G.A. (1978). Dictionary of Special Education and Rehabilitation. Denver: Love Publishing Company.
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- 7) Rehabilitation Council of India (1999). Status Report on Visual Impairment. New Delhi.
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- 9) World Health Organisation (1993). Management of Low Vision in Children. Geneva.

UNIT 4: REFRACTIVE ERRORS, VITAMIN-A DEFICIENCY, CATARACT, GLAUCOMA, CORNEAL ULCER, TRACHOMA, ALBINISM, RETINAL DETACHMENT, RETINITIS PIGMENTOSA, RETINOPATHY OF PREMATURETY, CORTICAL VISUAL IMPAIRMENT, OPTIC ATROPHY, NYSTAGMUS, AMBLYOPIA, AND MACULAR DEGENERATION

STRUCTURE

- 2.1 INTRODUCTION**
- 2.2 OBJECTIVES**
- 2.3 ASSESSMENT OF LOW VISION**
- 2.4 WHY LOW VISION AREA, A NEGLECTED ONE?**
- 2.5 EDUCATION OF LOW VISION CHILDREN WITH ASSOCIATED DISABILITIES IN INDIA – A NEGLECTED AREA**
- 2.6 LOW VISION CHILD WITH HEARING IMPAIRMENT: EDUCATIONAL IMPLICATIONS**
- 2.7 LOW VISION CHILDREN WITH MENTAL RETARDATION**
 - 2.7.1 Body Awareness
 - 2.7.2 Awareness Of Object/Situation Characteristics
 - 2.7.3 Time And Distance Awareness
 - 2.7.4 Spatial Awareness
 - 2.7.5 Skill Oriented (Action) Concepts
 - 2.7.6 Measurements
 - 2.7.7 Orientation Of Environment
- 2.8 UNIT SUMMARY**

2.9 CHECK YOUR PROGRESS

2.10 ASSIGNMENTS

2.11 POINTS FOR DISCUSSION/CLARIFICATION

2.11.1 Points For Discussion

2.11.2 Points For Clarification

2.11 REFERENCE

2.1 INTRODUCTION

For educational purposes, low vision is considered to be more difficult than education of blind children. Since every low vision child presents a unique situation, even the reading preference, use of light, use of colours, etc., may vary. Assessment of the right preference, again is a cumbersome task. Moreover, low vision children sometimes exhibit additional impairments too. Hearing impairment such as Usher's syndrome and mild mental retardation are other associated disabilities. Therefore, education of them requires unique strategies. This unit deals with the assessment of reading preference of low vision children, why this area has been neglected, in what ways children with associated impairments can be taught, etc.

2.2 OBJECTIVES

After completing the unit, the trainee will be able to

- List the areas in ascertaining reading preference of low vision children.
- Narrate the educational implications for low vision children with hearing impairment.
- Describe the educational implications for low vision children with mental retardation.
- Narrate why low vision education was neglected in the past.
- Enumerate the components of concept development and implications for low vision children with additional disabilities.

2.3 ASSESSMENT OF LOW VISION

Visual efficiency skills of low vision children improve only through systematic visual efficiency training. Large print materials should be prescribed for some low vision children and not for all. While deciding about print reading, certain components such as prior familiarity of print letters, print size required, distance at which reading task is performed, fatigue, etc., have to be considered. Research reveals that a low vision student may use his vision for reading large print for a brief time but may not be able to use it for a prolonged time. Similarly another student may use 30 points print size comfortably but all books cannot be presented in such a magnified manner. Even use of magnifiers may reduce the field of vision. Still in some other cases, the vision in the low vision student may be deteriorating. Therefore, all low vision students may not benefit by large print materials or magnifiers. They may require braille for reading purposes while the residual vision can be used for mobility, reading news headline, etc. Therefore, it is most essential

to know the reading preference of a low vision child before prescribing large print or braille. The Reading Preference Test (REPT) helps any practitioner to determine the print or braille reading preference of a low vision child. The areas, which are considered as vital, in the assessment of the reading preference of a low vision child are:

1. *Light perception: Sunlight/Dim light difference*
2. *Light perception: Good light/Poor light difference in a class*
3. *Light tracking*
4. *Detecting hand movement*
5. *Distance of detecting hand movement*
6. *Finger counting: Fingers raised one at a time*
7. *Finger counting: Fingers spread apart*
8. *Finger counting- (General): Fingers closed together*
9. *Finger counting inside the classroom with good lighting condition*
10. *Finger counting inside the classroom with poor lighting condition*
11. *Visual background*
12. *Colour detection*
13. *Visual closure*
14. *Form constancy*
15. *Eye/hand coordination*
16. *Eye/foot coordination*
17. *Print size preference without magnifiers*
18. *Print size preference with magnifiers*
19. *Time taken to read a passage (Mother tongue/English)*
20. *Skill in reading both print and braille*
21. *Ability to write*
22. *Writing speed*

2.4 WHY LOW VISION AREA, A NEGLECTED ONE?

The problems of developing countries are unique. Majority of the visually impaired population is reported to be in the developing nations and this overwhelming figure makes one to adopt a cautious approach in planning service delivery programmes.

The overwhelming population of "totally blind children" has been the concern of service organizations in the past. Most developing countries are constantly facing problems of unemployment for the blind, the issues of equal opportunity, reservation for the blind in the private sectors and public sectors, etc. Due these problems, the concern for low vision children did not get its due priority.

Another reason for the neglect of low vision service is due to the lack of recognition of low vision service as a discipline. Growth of any discipline in education is characterised by its true identify. Low vision area was not regarded as a discipline a few decades ago. The significant growth of technology in the field of special education in recent years is bringing out the true identity of low vision care. The emergence of closed circuit television, optical aids, and low cost aids are contributing to the quality and advancement of low vision care. Therefore, low vision care is no more a neglected one. Its status is changing but there is a long way to go.

2.5 EDUCATION OF LOW VISION CHILDREN WITH ASSOCIATED DISABILITIES IN INDIA – A NEGLECTED AREA

Education of blind children began in India over a century ago. Even then only a small section of blind children have access to education in special schools or integrated settings. For a long time it was believed that blindness was a bar to education. This belief is no more true now as more and more visually impaired children are getting education. But with modern medical advances, visual impairment is often accompanied by other disabilities. In earlier days deaf-blindness was the most serious multiple disability. The major cause of this condition is rubella or german measles. When it occurs in the first trimester of pregnancy, the child could suffer from deaf-blindness and other health conditions. But fortunately this condition is not very common in India. Moreover a vaccine is also available. Another major cause of concomitant impairment is pre-mature birth. This is becoming extremely common. A number of visually impaired children have such conditions as mental retardation or cerebral palsy in addition to visual impairment. There is no precise statistics available but it is assumed that atleast 20% visually impaired children have an accompanying disability. These children have very special needs for adapted education. Currently only a small number of organizations have developed services for multi-handicapped children. There were no proper curricular adaptations. As a result quite often the education imparted is based on empirical data rather than on proper research findings.

Thus there is a need for more facilities for educating multi-handicapped visually impaired or low vision children, for developing balanced and research based curricula as well as developing special equipment to cope with the problems of such children. Another factor of low percentage of visually impaired children with

associated disorders receiving education is the lack of adequately trained teachers to teach such children.

The advent of vibrotactile speech understanding aids can revolutionize the education of deaf-blind children. Modern technology must be fully exploited to provide better quality education and better quality of life for the multi-handicapped visually impaired children.

2.6 LOW VISION CHILD WITH HEARING IMPAIRMENT : EDUCATIONAL IMPLICATIONS

Low vision children, depending on the degree of visual impairment, have problems in concept development because they can't see things properly. These children may also develop language problems due to the difficulty in hearing. Communication skills are vital for teaching and they involve various techniques such as hand language, eye language, smile language, facial expression, and vocal dialogue. A deaf child can understand all modes of communication except with that of vocal dialogue whereas a blind child has problems with all other modes except vocal dialogue. For a child with both visual impairment and hearing impairment, the modes of visual and aural communications are not practical and therefore, tactile communication becomes the only method of communication and teaching. Therefore, one-to-one assistance is necessary for educating these children. Many low vision children with hard of hearing end up in schools for deaf-blind children as the schools for specific disabilities and integrated schools are not sensitive to their problems. Therefore, timely intervention is needed to facilitate education of these children.

2.7 LOW VISION CHILDREN WITH MENTAL RETARDATION

Visually impaired children are taught concepts in a proper way since they need to convert all visual ideas into non-visual experiences. As the cognitive faculty is intact in the case of a visually impaired individual, modified or adapted experience is understood by them in the process of concept development. A low vision child with mental retardation may find it extremely difficult to understand concepts which are vital for the learning development of the child.

Concepts are described as "verbally identifiable and more-or-less stable abstractions (constructed from experience) which serve man in his psychological adjustment to a particular environment" (Burner et. al., 1960). Concept is defined as "a) an accumulation of all that is conveyed to one's mind by a situation, symbol, or object. Sometimes used to refer to a thought, opinion, or general idea of what something should be, b) The set of characteristics common to a class of objects; e.g., triangularity includes all three-sided figures (Kelly and Vergason, 1978). The term

“concept” normally refers to a general idea about an object or a situation or an abstract notion.

Seven components, namely, body awareness, object/situation characteristics, time and distance, spatial skills oriented (actions), measurements, and environment are considered to be of importance for a visually impaired child. These seven concepts can be operationalised as below:

- 2.7.1 Body awareness** refers to the ability of the visually disabled child to identify his body parts in relation to self and environment.
- 2.7.2 Awareness of Object/Situation Characteristics** refers to the ability of the child to associate characteristics for the objects or learning situation he encounters in his day-to-day life. Skills such as discrimination, association and reasoning are important areas of study in this concept.
- 2.7.3 Time and Distance awareness** refers to the concepts related to time (for example; past, present, future), concepts pertaining to the combination of time and distance (for example: distance traveled in a specific time), and reasoning ability.
- 2.7.4 Spatial awareness** refers to the ability of the child in judging objects in space and his own actions in relation to environment. Positional and directional concepts are also components in this category.
- 2.7.5 Skill oriented (action) concepts** refer to the age related day-to-day activities of the visually disabled child. Skills mostly pertaining to the daily living such as eating, dressing, and the like and age related play activities are to be assessed under this category.
- 2.7.6 Measurements** in the context of the concept development refers to the numerical ability, quantity and reasoning skills appropriate to the specific age group.
- 2.7.7 Orientation of Environment** is pertaining to the awareness and understanding of the child about concrete and abstract objects or situations in the environment.

Concept learning refers to the integration of two or more sets of characteristics of objects, situations or abstract notions and make meaningful interpretation of them in the learning situations. As these tasks involve a considerable mastery in cognitive functions, a low vision child with mental retardation may find it difficult to comprehend the same for his learning. For these children, individualised instruction

becomes vital. For them interactive devices are more useful for learning. Besides providing one-to-one instruction, the use of computers as interactive devices can also be considered for educating them.

A low vision child with locomotor disability will have problems with access if the environment is not disability friendly. However, these children do not experience cognitive problems.

In short, low vision children with additional disabilities have more learning problems and psychological problems as well. The teachers of these children should see that they are given assistance on one-to-one basis. The parents of these children too require training to assist these children.

2.8 UNIT SUMMARY

- The Reading Preference Test (REPT) helps any practitioner to determine the print or braille reading preference of a low vision child.
- For a child with both visual impairment and hearing impairment, the modes of visual and aural communications are not practical and therefore, tactile communication becomes the only method of communication and teaching.
- A low vision child with mental retardation may find it extremely difficult to understand concepts which are vital for the learning development of the child.
- Low vision children with additional disabilities have more learning problems and psychological problems as well.

2.9 CHECK YOUR PROGRESS

- 1) The traditional assessment procedure has limitations because
 - a) It is out dated form of assessment
 - b) As all combinations of colour print sizes etc., cannot be produced at the time of assessment.
 - c) Does not give a clear picture.
 - d) All of the above.
- 2) List down all the assistive devices for low vision children
 - a) _____
 - b) _____
 - c) _____
 - d) _____
 - e) _____
 - f) _____

- 3) The REPT tests
- a) Visual efficiency
 - b) Visual acuity
 - c) Field of vision
 - d) All of the above
- 4) Give 3 to 4 reasons why low vision area was a neglected one in India.
- a)
 - b)
 - c)
 - d)
- 5) State three or four advantages of the growth of technology in the field of special education.
- a)
 - b)
 - c)
 - d)
 - e)
 - f)
- 6) Following strategies work best with low vision children who experience hearing problems too.
- a)
 - b)
 - c)
 - d)
- 7) Following strategies work best with low vision children who are mentally retarded.
- a)
 - b)
 - c)
 - d)

2.10 ASSIGNMENTS

1. Based on the reading preference test, assess the performance of a child and suggest activities in order to increase the visual efficiency.
2. Arrange an awareness programme with parents/general teachers about what low vision is.
3. As a teacher trainee what kinds of services would you suggest for a low vision child with hearing impairment.
4. Prepare flash cards or aids to teach low vision children with mental retardation.
5. Identify one object in your surrounding which you find that a visually impaired child finds difficulty and modify it to his needs.

2.11 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 those points below :

2.11.1 Points for Discussion

2.12 REFERENCE

- 10) Barnett, M.R. (1982). In *Concept Development for Visually Handicapped Children*. (Eds.) Lyndon & McGraw. New York : American Foundation for the Blind.
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UNIT 5: EDUCATIONAL IMPLICATIONS OF DIFFERENT EYE DISORDERS

STRUCTURE

- 1.1 Introduction**
- 1.2 Objectives**
- 1.3 Present Scenario**
- 1.4 Present Challenge**
- 1.5 Approaches In Identifying Children With Additional Disabilities**
 - 1.5.1 Cognitive Approach
 - 1.5.2 Sensory Approach
 - 1.5.3 Ability Based Approach
 - 1.5.4 Society Based Approach
- 1.6 Strategies To Be Adopted In Serving Children With Multiple Disabilities**
 - 1.6.1 Deaf-Blind Children
 - 1.6.2 A Low-Mentally Functioning Visually Impaired Child
 - 1.6.3 Training Needs
- 1.7 Lack Of Concept Development Tasks**
 - 1.7.1 Significance Of Concept Development For Visually Disabled
 - 1.7.2 Outset Of Blindness And Concept Development
 - 1.7.3 Body Awareness
 - 1.7.4 Spatial Awareness
 - 1.7.5 Measurements
 - 1.7.6 Behaviour And Learning
- 1.8 Unit Summary**
- 1.9 Check Your Progress**

- 1.10 Assignment/Activity**
- 1.11 Points For Discussion/Clarification**
 - 1.11.1 Points For Discussion
 - 1.11.2 Points For Clarification
- 1.12 Reference**

1.1 INTRODUCTION

The problems of children with multiple disabilities are at present recognised by the field of special education. Today, there is a conviction among professionals that children with multiple disabilities can be taught through multi-sensory instructions. The advancement in the field of medicine has enabled many visually impaired children with additional disabilities to live meaningfully. The advancement in the field of technology has enabled them to learn even difficult concepts with ease. The changing pattern of educational programmes too is laying emphasis on education of children with multiple disabilities. With the growth of integrated and inclusive education programmes, the general education is slowly accepting responsibilities for education of mild and moderately disabled children whereas special schools are changing their roles to serve visually impaired children with additional disabilities. This unit provides a birds-eye view of the problems of visually impaired children with multiple disabilities and the strategies to be adopted by teachers in teaching them.

1.2 OBJECTIVES

After going through the unit, the trainee will be able to

- Define various disabilities as per the Persons With Disabilities Act 1995
- Describe the approaches to be adopted in identifying children with multiple disabilities
- Narrate the strategies to be adopted in teaching visually impaired children with hearing impairment and mental retardation
- Mention the concept development areas in which visually impaired children face problems
- Describe the general behaviour and learning patterns of visually impaired children with additional disabilities.

1.3 PRESENT SCENARIO

There is an increasing awareness in India that providing the right type of education to persons with disabilities is the first step in their empowerment. There is a need to review the social responsibility of any nation towards the welfare of persons with disabilities and to recognise the abilities of them rather than pointing out at their disabilities. An introspection of the present reality would help the country in planning better reforms in the field of disability.

At the time of independence, the institutes for persons with disabilities were only a few but service delivery programmes multiplied in the post-independence period as

the idea of treating disabled persons as human resources gained momentum. However, the access generated has been a mismatch to the magnitude of the problems of services for disabled persons in India. It is estimated that children with disabilities in the school going age are approximately 16 million as per the projections available from the Ninth Five Year Plan and also from various reports. The scenario on persons with disabilities would be clear when the report of Census 2001 is seen. However, even after 50 years of independence, the coverage of disabled persons in the country in any kind of service is not satisfactory. While the literacy rate among the non-disabled has risen from a meagre 17% in 1950 to 70% in 2000, literacy rate among disabled persons remains in single digit.

1.4 PRESENT CHALLENGE

There is a wide gap between what is needed by disabled persons and what is offered to them. The World Conference on Education For All (EFA) held in Jomtien, Thailand in 1990 included clause 5 to Article 3 which states that the learning needs of the disabled demand special attention and steps need to be taken to provide equal access to education, to every category of disabled persons, as an integral part of the educational system. India is also a signatory to the recommendations of this world conference. The society should recognise the fact that investment on human capital is the underlying principle for the success of any progressive nation, and persons with disabilities should be treated as a part of the nation's human resources pool.

As per the Persons With Disabilities (Equal Opportunities, Protection of Rights and Full Participation) 1995 Act, seven categories of disabilities are defined. They are as follows

- Blind
- Low Vision
- Hearing Impairment
- Mental Retardation
- Locomotor Disability
- Leprosy cured
- Mentally ill.

Before discussing the educational needs of children with additional disabilities, it is desirable to define the terminologies as per the PWD Act. The definitions are as follows:

- a) "Blindness" refers to a condition where a person suffers from any of the following conditions, namely:

- i) total absence of sight; or
 - ii) visual acuity not exceeding 6/60 or 20/200 (snellen) in the better eye with correcting lenses; or
 - iii) limitation of the field of vision subtending an angle of 20 degrees or worse
- b) "Person with Low Vision" means a person with impairment of visual functioning even after treatment or standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive devices.
- c) "Hearing impairment" means loss of sixty decibels or more in the better ear in the conversational range of frequencies.
- d) "Mental retardation" means a condition of arrested or incomplete development of mind of a person which is specially characterised by subnormality of intelligence.
- e) "Locomotor disability" means disability of the bones, joints or muscles leading to substantial restriction of the movement of the limbs or any form of cerebral palsy;
- f) "Mental illness" means any mental disorder other than mental retardation.
- g) "Leprosy cured person" means any person who has cured of leprosy but is suffering from :
- i) loss of sensation in hands or feet as well as loss of sensation and paresis in the eye and eye-lid but with no manifest deformity.
 - ii) manifest deformity and paresis but having sufficient mobility in their hands and feet to enable them to engage in normal economic activity;
 - iii) extreme physical deformity as well as advanced age which prevents him from undertaking any gainful occupation.
- h) "Cerebral palsy" means a group of non-progressive conditions of a persons characterised by abnormal motor control posture resulting from brain insult or injuries occurring in the pre-natal, peri-natal or infant period of development;

A child may exhibit a combination of the above disabilities. Therefore, the problem would multiply further. Provision of education may be possible for those children with multiple disabilities whose cognitive functions are in order whereas only rehabilitation services can be planned for those whose cognitive functions are defective. For example, educational programmes can be planned for a blind child with hearing impairment or locomotor disability whereas a blind child with mental

retardation may find education extremely difficult. Therefore, individual assessment is imperative for planning the educational programmes.

1.5 APPROACHES IN IDENTIFYING CHILDREN WITH ADDITIONAL DISABILITIES

1.5.1 Cognitive approach

By adopting the cognitive based approach, classification of children may be made as those who are mentally retarded, slow learners, normal learners, academically advanced learners and gifted learners. This classification is purely based on the cognitive functions of the child. For example, the child who has an IQ between 56 and 70 will come under the category of educable mentally retarded children. These children can find learning more difficult if they have visual impairment too. The trainable mentally retarded children with visual impairment may find it difficult even to perform manual kind of work. On the other hand, visually impaired child gifted with higher intelligence, may excel in his studies than the sighted children. Therefore, performance of a visually impaired child depends on how effective the cognitive functions are than his visual ability.

1.5.2 Sensory approach

Under sensory approach in identifying disabilities, three groups which emerge are: blindness or deafness or the category of deaf-blind children. While blind children primarily lack in the orientation of environment and mobility skills, the communication skills are not seriously impaired in them. On the other hand, the deaf child's main problem is in the area of communication skills. Therefore, the deaf-blind child will have a serious disadvantage in both orientation and communication skills. As a result, these children have to be provided compensatory experiences mostly through tactile approach. By nature, tactile mode of information is not a match to any other form of communication and therefore these children will be experiencing significant delay in development. Therefore, adequate compensatory measures on one-to-one basis must be initiated to provide services to these children.

1.5.3 Ability based approach

There are many children who experience difficulty in processing information. Though their intelligence is normal and senses too are normal, sometimes they perform poorly due to lack of abilities in processing the information. Information processing theorists feel that these children lack adequate skills in attention, perception, memory, encoding etc. Therefore, a child experiencing such a learning disability also with visual impairment will have a serious problem in understanding concepts. The perceptual problems of the child lead to poor concept development

and therefore individualised instruction becomes inevitable for these children. Dysgraphia, Dyslexia and Dyscalculia are some of the defects associated with the learning problems in general and these combined with visual impairment would further complicate the learning process in the child.

1.5.4 Society based approach

Among visually impaired children and children with other disabilities, some of them are facing emotional problems too. The behaviour disorders in these children may also be a result of social problems such as the state of experience of neglect, over protection, etc. A disabled child who doesn't have a conducive family support or parental affection is likely to have psychological effects leading to isolation, maladjusted behaviour etc. These children have to be provided the most appropriate environment for overcoming difficulties.

As described in the previous paragraphs, the problems of children with additional disabilities are multi-fold. A child with a combination of these disabilities may have a low self-esteem and exhibit mediated learning style. For children with multiple disabilities education through multi-sensory approaches becomes vital. The lack of skills in one or more senses demands the need for introducing multi-sensory approaches.

1.6 STRATEGIES TO BE ADOPTED IN SERVING CHILDREN WITH MULTIPLE DISABILITIES

Specific strategies have to be adopted by teachers and other personnel in serving visually impaired children who experience additional disabilities. Some of the strategies are enumerated below:

1.6.1 Deaf-blind children

Each of the deaf-blind children is different. As these children are devoid of visual and auditory experiences, more training is required in daily living skills, before they are taught educational skills. In teaching them, a teacher alone can't do a satisfying job. He/she should be assisted by therapists, teacher aids, and parents. As these children require information in the tactile form, use of tactile signs are normally advisable. The residual hearing and/or vision can be used to the optimum extent as these are helpful in maximising the learning experiences of the child. These children learn by examples. However, they learn slowly though the cognitive abilities are in tact. These children should be given a variety of tactile experiences which would make more meaningful links to facilitate the learning process. In short, these children are also capable of learning effectively, but the process of learning is rather slow.

1.6.2 A low-mentally functioning visually impaired child

These children lack basic concepts and therefore, development of these concepts should become the highest priority. These children should be given training at the earliest possible time. The training should be given to the child along with the parents, if possible, so that they continue what the teacher teaches in schools.

1.6.3 Training Needs

For many children with additional disabilities, physiotherapy, occupation therapy, speech therapy training inputs become vital. As a result, a centre serving children with multiple disabilities should have these facilities and also trained staff for these purposes.

1.7 LACK OF CONCEPT DEVELOPMENT TASKS

Many research studies support that visually impaired children with additional disabilities lack in concept development.

1.7.1 Significance of Concept Development

For most congenitally blind people, and especially for the adolescent who has been experientially deprived, it is a struggle to move beyond "object space." One of the important areas of concept development, the "spatial awareness" is directly related to the orientation and mobility skills of the individual. Lack of spatial skills can seriously retard the mobility skills. A child with visual impairment and mental retardation would experience serious difficulties in spatial concepts. It is clear that efficient travel requires knowledge of the spatial relationships of the objects in the environment. Similarly time and distance awareness and knowledge on measurements help the visually disabled individual to have a better understanding of the world. Therefore, concept development is a very significant area in the education of visually disabled children. The need is more for the visually impaired child with additional disabilities.

1.7.2 Outset of Blindness and Concept Development

That many blind children lag behind sighted youngsters in their acquisition of concepts is not in question. It should be kept in mind, however, that this is not true for all visually impaired individuals, especially those who are partially sighted children and those who have become blind after birth. Partially sighted children may still exhibit difficulties in conceptual development, but they will generally be at a distinct advantage over totally blind children. The value of even a small degree of sight can be enormous in helping children tie things together in order to form concepts. Likewise, children who are able to gain some visual experience before losing their sight will be able to rely on these experiences to some degree. Although

it is not impossible for children who are blind from birth to acquire some concepts as rapidly as children who become blind after a few years of sight, most professionals agree that children blind from birth generally have a more difficult time learning many concepts. Such things as degree of impairment, age at onset, and motivation often determine how much difficulty the visually impaired child will have in conceptual thinking. If a child has additional disabilities, use of the remaining vision in the child may be of paramount importance. Use of residual vision, whatever it may be, is extremely important for the child with hearing impairment.

1.7.3 Body awareness

To develop an accurate body image and to understand the function of body parts, the child needs some basic knowledge of the structure of his body. A visually impaired child with locomotor disabilities and mental retardation experience difficulties in body awareness concepts. Lydon and McGraw (1982) suggest that we should tell the visually disabled child that the body is composed of a few large bones and many smaller bones, and that where two bones meet, a joint is formed. He should be explained that the design of the joint regulates the range of motion and be allowed to experiment with his own body. Freedom of movement should be encouraged during the early stages of the child's development in order that he begins to develop an accurate assessment of the capabilities and limitations of his body.

Posture is usually defined as the relative arrangement of the parts of the body. "Poor posture is a faulty relationship of various parts of the body which produce increased strain on the supporting structures and in which there is less efficient balance of the body over its base of support (Metheny, 1952). It is often difficult to motivate the blind child to maintain good posture. This is because many of the postural abnormalities are due to a fear of movement and an uncertainty of the surrounding environment. If the child is not secure in his environment (even in a small room), he will revert to protective postural abnormalities (Lydon and McGraw, 1982).

1.7.4 Spatial Awareness

The concept that appears to cause blind children more difficulty than any other is that of space. Although there are studies showing blind people to be inferior on spatial concepts. A number of studies have demonstrated that spatial conceptualisation is not impossible for blind individuals. Blind people apparently learn spatial concepts by the use of senses other than vision. Many research studies state that knowledge of spatial qualities of objects is gained by the blind largely through touch and kinesthesia. Therefore, there are ample research evidences to

support that the tactual sense, in fact, is the primary way which a variety of concepts are acquired through by the blind child.

A few studies tried to test the differences in how the two hemispheres of the brain handle spatial information. In a research conducted by Dodds (1983), congenitally blind, adventitiously blind, and blind-folded sighted subjects tactually examined a target shape and selected its duplicate from three shapes placed in different orientation relative to the target. The performances of all groups declined as the relative dis-orientation between the target and its duplicate increased, suggesting that visual imagery is not crucial to mental rotation. In addition, the sighted subjects performed better with the left hand than did the blind subjects. Because braille is usually read with both hands, this difference was surprising. The author speculates that the sighted subjects were able to recode the tactual information into both the verbal and visual modes whereas the blind subjects relied on the left hemisphere's verbal strategy only.

1.7.5 Measurements

Visually disabled children usually find it difficult to relate knowledge in measurements to practical situations. Since measurement is abstract as well as a skill-oriented concept, a child not habituated to perform the task regularly, may face developmental delays and poor concept development in this area. For example, a child may know that 3 feet is a yard but may not be able to show how long is a feet (Mukhopadyay, Mani, and Jangira 1985).

1.7.6 Behaviour and Learning

Dearth of research is evident in the area of behaviour analysis of visually disabled persons, but behaviour analysis has significant status in the education of visually disabled children. The absence of sight in the individual results in behaviours which are typically named "blindisms". A study conducted by the National Institute for the Visually Handicapped (1981) found that visually disabled children exhibited more undesired behaviours than the sighted children. Head movement, eye poking and rubbing, clapping, and jumping were found to be peculiar in visually disabled children. Several techniques such as contingent management. Substituted activity, reinforcement, positive feedback, are employed to reduce the undesired behaviours in blind children. The manneristic behaviours are more in the case of children with additional disabilities. Iverson (1986) found that the addition of a neurological disease or disorder to the visual impairment increased the variety of stereotypic behaviours in blind children. Abang (1985) argues that blindisms may be due to the fact that the blind child is never reminded visually of the gestures, mannerisms and attitudes of sighted people and cannot see how his own. The above references might be useful for the researchers who are interested in behaviour modification of visually disabled children.

As is evident from various sections of this unit, visually impaired children with additional disabilities present many problems pertaining to physical posture, communication, concept development, and self-image. As a result, education and rehabilitation processes become difficult. An insightful teacher, therefore, creates creative learning environment constantly so that the child can compensate to a large extent, the deficits, which emerge from his/her multiple disabilities.

1.8 UNIT SUMMARY

- Cognitive , sensory, ability-based and society-based. approaches are adopted for identifying children with additional disabilities
- For many children with additional disabilities, physiotherapy, occupation therapy, speech therapy training inputs become vital.
- Visually impaired children with additional disabilities present many problems pertaining to physical posture, communication, concept development, and self-image. As a result, education and rehabilitation processes become difficult.

1.9 CHECK YOUR PROGRESS

1. The definition of blindness as per the PWD Act 1995 is
2. The definition of low vision visual as per the PWD Act 1995 is
3. The definition of deafness as per the PWD Act 1995 is
4. The definition of mental retardation as per the PWD Act 1995 is
5. The definition of mentally ill as per the PWD Act 1995 is
6. The definition of locomotor disability as per the PWD Act 1995 is
7. The definition of leprosy cured as per the PWD Act 1995 is
8. Cognitive approach helps in identifying the following children with disabilities.
 - a.
 - b.
 - c.
 - d.
 - e.
9. Visually impaired children with additional disabilities, usually need training in the following areas.
 - a.
 - b.
 - c.
 - d.
 - e.

1.10 ASSIGNMENT/ACTIVITY

- 6) Make a check list for identifying visually impaired and conduct a survey using it to identify the prevalence in your locality.
- 7) Prepare a case study of two visually impaired persons with mental retardation in your locality and indicate whether the attitude of the public towards the person is positive or negative.
- 8) Prepare a case study of two hearing impaired persons with mental retardation in your locality and indicate their educational needs.
- 9) Describe how special schools can change their roles in serving visually impaired children with additional disabilities.
- 10) Compare the concept development skills of non-disabled children and visually impaired children with additional disabilities.

1.11 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 those points below :

1.11.1 Points for Discussion

2

2.11.1 Points for Clarification

1.12 REFERENCE

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**BLOCK 3: IMPLICATIONS OF VISUAL
IMPAIRMENT AND NEEDS
OF VISUALLY IMPAIRED**

UNIT 1: PSYCHOSOCIAL IMPLICATIONS OF VISUAL IMPAIRMENT

STRUCTURE

- 2.1 Introduction**
- 2.2 Objectives**
- 2.3 Braille Services**
- 2.4 Reader And Recording Services**
- 2.5 Medical Services**
- 2.6 Social Services**
- 2.7 Current Status Of Education Of Visually Impaired With Additional Disabilities**
- 2.8 Unit Summary**
- 2.9 Check Your Progress**
- 2.10 Assignments/Activity**
- 2.11 Points For Discussion/Clarification**
 - 2.11.1 Points for Discussion
 - 2.11.2 Points for Clarification
- 2.12 REFERENCE**

2.1 INTRODUCTION

Blindness is among the demonstrable impairments. Other than skeletal anomalies of the grossly physically impaired, few problems stand out in the public mind like blindness. Problems of mild to moderate retardation, deafness, learning disabilities, chronic health conditions and communication disorders may be equally disabling, but blindness and its objective effects tend to interfere more visibly with day-to-day life. As a result many organisations are attracted towards the services for the visually disabled persons in various ways. At the government level, many departments like education, health, school welfare, labour, finance, etc., are involved in the service programmes for the visually disabled children. While this is necessary, local support in the form of auxiliary assistance will definitely enrich any educational or rehabilitation programme for visually disabled persons. This chapter describes how different agencies and persons could help visually disabled children in school programmes by offering braille, reader, recording, medical and social services and also the current status of education of visually impaired children with additional disabilities.

2.2 OBJECTIVES

After completing the unit the trainee is expected to

- List down the importance of Braille services for visually disabled children.
- Describe the significance of medical and social services for the benefit of a visually disabled child.
- Explain the patterns of social behaviour in a visually impaired child.
- Explain the following in reference to visually impaired child.
 - a) Eating behaviour
 - b) Excretory responses
 - c) Dressing habits
 - d) Personal hygiene
- Enumerate the current status of education of visually impaired children with additional disabilities.

Education of visually disabled children has different dimensions. Unlike general education, this area demands more material, more equipment, individualised instruction, supplementary reading material, assistance of the volunteers, etc. The amount of service offered by an individual to the welfare of the visually disabled may be minimal, but it is significant. For example, the service rendered by a

volunteer in reading a lesson to the visually disabled child is significant. Some of such voluntary services are enumerated in the following paragraphs.

2.3 BRAILLING SERVICES

Braille service is purely technical and requires expertise. Its need for visually disabled is being increasingly recognised. It is desirable for any blind child to have tangible material for his education. Concrete experiences are acquired by the child by having more material of this type and schools constantly face this need throughout the year. Experience has shown that braille presses could not meet the entire textbook needs of visually disabled children because of their inadequate capacities.

Moreover braille production involves enormous cost. Frequent changes of books also affect the uniform braille text production and dissemination. As a result, resource teachers are spending considerable time on production of braille literature. When substantial time is devoted to this task, attending to the teaching aspects and teaching aids preparation becomes difficult. While the former is mostly a manual work, the latter involves proper development and application of methods to make the teaching/learning more interesting to the child. Therefore, service of volunteers could be solicited for braille work so that the teacher can concentrate more on teaching methods. The following key aspects could be borne in mind while organising voluntary braille service:

1. Selection of volunteers should be on purely on voluntary basis. If the school has budgeted to pay the workers, it should be stated clearly at the time of selection.
2. It is necessary to ascertain that the volunteers have enough time to spare to prepare braille material.
3. It is essential to see that the volunteers are oriented to the appropriate learning of the equipment to prepare the braille material. In most of such programmes, mechanical braille writers are used because of time factor. Using the braille typewriter saves considerable time. Some volunteers may also try to use slate and stylus for preparing braille material but the task is very slow and difficult. Therefore, the organisation arranging this braille service should have sufficient brailers for the use of the volunteers.
4. The volunteers should be oriented to the braille codes and their usage. Once they are familiar with the codes, transcription work can be given.
5. In braille service, correct decisions regarding the selection of braille papers is to be made by the organisers.

To be cost-effective, various kinds of papers can be used. While it is essential to use high quality paper for the matter which is to be preserved for

- many years, medium quality papers could be used for less important work. To be more functional, newspapers can be folded and used for 'read and throw' matters. In this way, the braille material production will have economic viability.
6. It is essential to see that there is sufficient space to store all brailled material by the volunteers. Since the dots get squeezed when they are placed horizontally, vertical shelves are necessary to keep the material intact. Durability aspect should also be considered.
 7. Decision regarding the selection of material is to be made on the basis of actual needs of a particular educational programme. Subjects such as mathematics, science, etc., could be given preference for braille production.
 8. Handling of the brailier is a very critical issue. Since mishandling of the brailier may lead to further complications, limited number of volunteers should be assigned to use the particular machine if sufficient machines are not available.

2.4 READER AND RECORDING SERVICES

Braille reading is practical to duplicate educational experience, particularly in the early primary standards when a student is learning to read in order to be able to read for general study purposes. However, once the reading skill is developed, and the purpose of reading is for acquiring content, the amount of reading required makes it difficult for a braille reader to be fully competitive with his sighted classmates.

In order to increase the learning momentum of the child, two major alternatives emerge:

- a. the braille reader must learn to use efficiently the services of a 'live' reader--a teacher, a classmate, a volunteer from the community or nearby college; and
- b. as the world becomes more electronically oriented, the braille reader ought also to have selected experience in the use of recorded materials--the most practical form at this type in India being is the use of cassette recordings.

Since some materials are more suitable for reader assistance than others--even at High School level--each decision as to which method to be employed must be made by the teacher of the visually disabled child. He/she should consider, on an individual basis, the following:

- i. the volunteer's reading skill level;
- ii. nature and extent of the material required; and
- iii. number and kinds of reader resources at hand.

With these data, selection of live and recorded technique could be made. For example: A complex mathematics problem, a geometrical display, or chemical bonding diagram, etc., ought to be brailled in all circumstances, while narrative type material such as history, social studies, certain aspects of science, types of literature in language arts, etc., and especially current events used by a creative classroom teacher, might lead themselves to one type of substitute method or another.

Considering the heavy responsibility placed upon the braille reader for auditory recall, memorisation and bearing in mind the heavy reading assignments in high schools--and later, in colleges or universities--skill in use of *both* reader service *and* recorded materials *must* be taught to visually disabled children and be practised.

The quality and tone of one's recorded voice is often a surprise--since we really never bear ourselves as others do. Therefore, if a volunteer is not considered for recording service, it should not be construed as a rejection of one's basic intellectual or academic abilities - all these superior qualities are assumed. Rather, *a pleasant, natural, accurate speech, free of impediments, and especially, a 'good match' with available recording equipment* will most likely determine those accepted for this important service role.

The organiser of these services should bear in mind the following important aspects:

1. The reader should have a positive attitude towards the service programme and the education of the visually disabled child.
2. Reading assignment for three to four per week may be given to the individual reader. The reader should practise the passage thoroughly before recording.
3. Reading techniques such as articulation, pronunciation, appropriate speed, voice modulation etc., have to be adopted by the reader. If the reader is not proficient in these, adequate measure should be taken for training.
4. In recording, the volunteer should know the operation procedures of the equipment used for recording.
5. Interactive reading--that is, two persons reading paragraph after paragraph or one reading the question and another reading the answer--is very pleasant for listening. However, these judgements should be made on the basis of the interest of the listener.

2.5 MEDICAL SERVICES

In most cases, defective eyes need constant medical attention than the normal eyes. Visually disabled children incur a lot of medical expenses on purchase of eye-drops, consultation with ophthalmologists, etc. Since most visually disabled children come from the below poverty level families, they cannot afford these medical expenses.

Voluntary organisations can help such children through the local eye hospitals. Periodical free check-up and follow-up services can be rendered by eye hospitals.

In educational programmes, it is very essential to determine the level of visual disability for planning suitable educational programmes for the individual children. Moreover, schools demand authentic certificate from visually disabled children about their visual defect at the time of admission. Since it is a difficult task for the parents to go to the eye hospitals and obtain such certificates, vision screening can be arranged on a particular day for selection of students for the school placement. Schools can solicit the help of the nearest eye hospital and ophthalmologists for vision screening.

2.6 SOCIAL SERVICES

Social workers can be used in various capacities to assist in the welfare of visually disabled children. Since they are working with the community, their assistance can be sought to locate visually disabled children from a particular locality. They can also guide the individual visually disabled child or the institution to get proper assistance--both financial and professional--from individual sponsors and funding organisations. They can also help in the advocacy programmes in changing the attitude of the public towards blindness. Similarly, social service for educational programmes for visually disabled children can also be sought in numerous other ways.

Welfare of the visually disabled requires joint effort by various personnel. Welfare goals could be achieved to the fullest extent when all these resources are mobilised. The organisations working for visually disabled should assume complementary rather than competitive roles in serving the visually disabled. Such a healthy attitude and continuous efforts will pave the way for upliftment of visually disabled children.

2.7 CURRENT STATUS OF EDUCATION OF VISUALLY IMPAIRED WITH ADDITIONAL DISABILITIES

Though children with visual impairment and additional disabilities are not found in large numbers, their problems are multifarious. As on today these children are not receiving the right services both in the education and rehabilitation sector due to various reasons. Though services for specific disabilities are available, educational and rehabilitational services to visually disabled person with additional disabilities remained a low priority area in both government and private sectors. The following reasons can be quoted for the absence of tangible services for this group of children.

- 1) In India, teacher preparation in the area of disability at present is mostly focusing on single disability areas. There are institutes which specialise in blindness, hearing impairment, mental retardation, locomotor disability etc.

But very few organisations provide services for more than one category of disability. As a result, there are hundreds of single speciality teachers but very few of them can teach children with additional disabilities. Because of the absence of trained teachers for teaching visually impaired children with additional disabilities, this area remained a low priority area for many year.

- 2) Although the number of visually impaired children with additional disabilities compared to the population of visually impaired children is low, such children are not brought to school by parents. Often parents of visually impaired children with additional disabilities are not able to know which disability among the disabilities present in the child is more dominating in nature. Since assessment services for visual impairment, hearing impairment and locomotor disability are not available under one umbrella, assessing the child itself becomes a big problem. As a result, parents of these children don't bring them the educational programmes.
- 3) Lack of institutions for preparing such teachers is also another reason why this area is not getting attention. For some years the multi-category training covering all disability areas was in operation in India, but at present very few training institutes focus on multi-category disabilities. Therefore, lack of trained manpower is an impediment for providing services to these children.
- 4) The cost factor is also a concern. It is true that education of disabled children is certainly costlier than that of education of non-disabled children. For example the teacher:pupil ratio in the case of visually impaired children is approximately 1:8 to 10 whereas the same ratio in the case of non-disabled children is much higher. However, in the case of visually impaired children with additional disabilities such as those with deafness, with mental retardation etc, can be served effectively only when minimum number of children are prescribed for one teacher. In some cases the instruction may be on one to one basis too. Therefore, serving these children will not become effective unless there is substantial subsidy from government, private sectors etc. The education of these children will remain a welfare activity and therefore subsidy is inevitable. Due to the lack of financial resources, these children are not brought to schools. At present schools like the Helen Keller Institute for the Deaf-Blind Children, Mumbai, are only a few. More such schools are needed for expanding services.
- 5) The scattered population of visually impaired children with additional disabilities is also another reason why they are not getting timely services. These children due to their severity in disabilities cannot be successfully educated through special schools or integrated education programmes. Therefore, residential facility becomes inevitable for these children. The growth of integrated education today should not aim at eliminating special

schools for visually impaired children. Integrated education schools can serve visually impaired children who are otherwise normal whereas children with additional disabilities can be served through special schools.

Therefore, the status of services for visually impaired children with additional disabilities is not satisfactory. Sporadic attempts are made in India to provide services to these children. Government schemes are also encouraging services for such children through special schemes. International organisations such as the SENSE International and CBM International are also trying to provide services to these children. Though the need for services to such children is un-disputable, the danger of labelling children as multi-disabled should also be taken into account. The definition of multiple disabilities should be thoroughly discussed and agreed upon by the academic community. For example, the definition of deaf-blindness is still a subject of debate. Suppose a child with mild visual impairment is mildly hearing impairment too, there is a chance for this child being labelled as deaf-blind. Similarly, a deaf child with mild visual loss may also end up in a school for deaf-blind children. In the enthusiasm of serving more such children, unnecessary labelling should be avoided.

In short, visually impaired children with additional disabilities who are in need of special care must be given proper services by all concerned.

2.8 UNIT SUMMARY

- Many organisations render services for the visually disabled persons in various ways. At the government level, many departments like education, health, school welfare, labour, finance, etc., are involved in the service programmes for the visually disabled children.
- Different agencies and persons could help visually disabled children in school programmes by offering braille, reader, recording, medical and social services.
- Though the visually impaired children with additional disabilities are not found in large numbers, their problems are multifarious. Though services for specific disabilities are available, educational and rehabilitational services to visually disabled person with additional disabilities remained a low priority area in both government and private sectors.

2.9 CHEEK YOUR PROGRESS

- 1) Braille service is
 - a) A fairly easily task
 - b) Is purely technical and requires expertise
 - c) Can be give to any one who shows interest
 - d) None of the above
- 2) List some important aspects that the organiser of the reading services for the blind should bear in mind before taking up the service role
 - a) b)
 - c) d)
- 3) List down qualities of a reader for recording service
 - a) b)
 - c) d) e)
- 4) In the light of the reading material, give importance of the following
 - Medical Services Social Services
 - a)
 - b)
 - c)
 - d)
- 5) The following are reasons for the absence of services for visually impaired children with additional disabilities in India.
 - a) b)
 - c) d)

2.10 ASSIGNMENTS/ACTIVITY

- 1) The teacher trainee can organise for a small workshop for volunteers and depending on the volunteers' ability choose them for either braille reader or recording service.
- 2) The teacher trainee can find out about the difference medical and social services available in the nearby locality and find out from them about free services which can be offered to visually impaired children – eye camps, donation of spectacles or eye drops etc.

- 3) The teacher trainee can hold a workshop for parents of visually impaired children and explain them the importance of socialisation on personality development.
- 4) The teacher trainee can make observations of the learning behaviours of a visually impaired child with hearing impairment.
- 5) Prepare a model educational programme for visually impaired children with mental retardation.

2.11 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 those points below:

2.11.1 Points for Discussion

2.11.2 Points for Clarification

2.12 REFERENCE

1. Bishop, V.E., Teaching the visually limited child. Springfield, IL : Charles C. Thomas, 1977.
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**UNIT 2: FACTORS AFFECTING
IMPLICATIONS OF VISUAL IMPAIRMENT:
AGE OF ONSET, DEGREE OF VISION, TYPE OF
VISION LOSS, PROGNOSIS, AND SOCIO
ECONOMIC STATUS OF THE FAMILY**

STRUCTURE

- 1.1 Introduction**
- 1.2 Objectives**
- 1.3 Anatomy and Physiology of the Eye**
 - 1.3.1 Structure of the eye
 - 1.3.2 Different Parts and functions of the eye
- 1.4 Eye Functioning**
- 1.5 Eye and its care**
- 1.6 Visual Deficits**
 - 1.6.1 Tunnel Vision
 - 1.6.2 Visual Field
 - 1.6.3 Scotoma
 - 1.6.4 Low vision
- 1.7 Unit Summary : Things to remember**
- 1.8 Check Your Progress**
- 1.9 Assignment / Activity**
- 1.10 Points for Discussion / Clarification**
- 1.11 References / Further Readings**

INTRODUCTION

Sight is the sense through which the brain receives approximately 75% of its information. Sight is made possible by the eye, serving as a channel through which visual information is perceived. The eye collects information about size, shape and colour and transmits it to the brain where it is interpreted. The process by which the brain interprets information received from the eye is called vision. Vision is possible only if light is present. Light rays reflected of objects are received by the eye, converted into electrical impulses and interpreted by the brain. Vision, therefore, requires light and partnership of the eye and the brain, the collector and the interpreter. This visual process can be well understood by the learners when they have the knowledge of anatomy and functions of the eye.

1.1 OBJECTIVES

After going through this unit the learners will be able to:

- state the various parts of human eye
- explain the functions of various parts of the eye
- understand the importance of eye care
- describe different visual deficits commonly affecting visual functioning.

1.3 ANATOMY AND PHYSIOLOGY OF THE EYE

Nature has taken great pains to protect the eyes. The eyes are set in bony sockets called 'orbits'. In addition, the upper and lower lids prevent flying particles from entering the eye by reflex closure. Tears keep the eye ball moist and clean. They also help in combating infection.

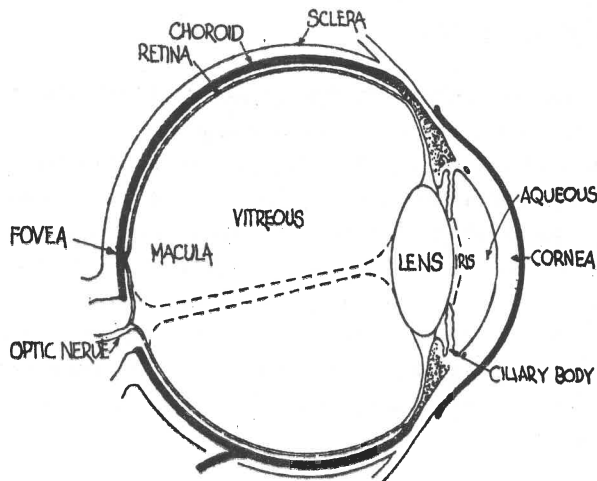


Fig : Structure of human eye

1.3.1 Structure of the Eye

The eyeball which is 23-24 mm in length has 3 coats namely outer coat, middle vascular coat, and inner nervous coat.

Outer coat

The white portion of the eye which one sees from the front is a part of *Sclera*. It forms $\frac{5}{6}$ th portion of the outer coat of the eye ball. The remaining $\frac{1}{6}$ th portion in front of the sclera is the *Cornea*. It is transparent and sits over the sclera like a watch glass. The anterior part of the sclera is covered by a mucous membrane – the *Conjunctiva* which is reflected over the lids and also adheres firmly around the periphery of the cornea – *Limbus*.

Middle vascular coat

It is also called as the Uveal track. It consists of:

Anterior part called iris which rests on the lens. In the centre of the Iris there is a hole called pupil which regulates the entrance of light into the eye.

Middle part called the *ciliary body* which has ciliary muscles and ciliary processes. Ciliary muscles are responsible for accommodation and ciliary processes are responsible for secreting *aqueous humour*.

Posterior part called the *choroid* which lies on the inner side of sclera. The function of the choroid is to supply nutrition to the retina.

Inner nervous coat

Inner nervous coat is called Retina. It acts like the film of a camera. The nerve fibres arising from the retina come out of the eye ball posteriorly as the optic nerve. The cavity of the eye ball contains several spaces and structures. The anterior chamber is a chambers filled with aqueous humour. It is bounded in front by the cornea, behind by the iris and part of the anterior surface of the lens which is exposed in the pupil. Its peripheral recess is known as the angle of the anterior chamber.

Posterior Chamber

It is a triangular space between the back of the iris and the anterior surface of the lens, having its apex at the point where the pupillary margin comes in contact with lens. It is bounded on the outer side by the ciliary body. It contains aqueous humour.

Behind the lens there is the large *vitreous chamber* containing the vitreous humour. It is a transparent jelly like structure containing a few cells.

1.3.2 Different Parts and Functions of the Eye

Eyelid

The eyelids serve an important function in preserving clear vision. They act as a protective shield from injury threatening the surface of the eye. The eyelids spread and maintain the tear film and moisture covering the eye, helping to retain transparency, a vital necessity for the visual system.

Lacrimal Apparatus

The lacrimal apparatus consists of lacrimal glands and lacrimal passages. In structure, the lacrimal gland resembles the salivary glands. The gland is located in the upper, outer, and anterior areas of the orbit. The tears which are secreted by the lacrimal glands into the conjunctival sac are drained by the lacrimal passage into the nose.

Conjunctiva

The conjunctiva is the transparent membrane which covers the inner surface of the eyelids, the outer surface of the white of the eye, and bridges the angular space between. It is of necessity elastic as it must stretch when the eye and eyelids move. It is rich in blood vessels, and it is these vessels that usually result in redness of the eyes when they are stimulated to dilate by exposure to inflammatory agents. The conjunctiva is normally smooth and glistening, permitting movement of lids and eyeball to be free of friction and pain.

Cornea

It is the clear circular transparent portion of the external coat of the eyeball which covers the anterior or front surface. It is a transparent, avascular, rigid laminated structure, elliptical in shape measuring in the normal adult 12mm in the horizontal plane and 11mm vertically. The thickness varies from slightly more than 5mm to 1mm in different areas. It has a very delicate sense of touch and pain. The nerve endings are close together and near the surface. There are five layers of the cornea. The first epithelium layer is the outer thin and fragile surface. The second layer is called Bowman's membrane. The third layer is Stroma. The fourth layer Descemet's membrane, acts as a tough, protective barrier to injury and infection. The innermost fifth layer is composed of endothelial cells. The cornea must remain intact, moist, transparent, and regular in its surface curvature for good vision to be preserved, because it is through the cornea that light from any object must initially pass. Its convex surface acts as a lens which bends, or refracts the rays of light from their course of direction so that they can form an image on the retina.

Sclera

Sclera is the posterior external protective coat of the eye ball. Anteriorly, cornea fits into anterior scleral opening like a watch glass, the junction between the two is called limbus. It is white, thick, strong and inelastic. It serves to maintain the shape of the eyeball. The structure is composed of connective tissue bundles and connective cells bound together by cement substance. It is less sensitive than the cornea. Its optical density helps to prevent excessive light penetrating the eye and distorting the image which is entering through the cornea. The main difference between connective tissue bundles and sclera is that their arrangement in sclera is irregular, while in cornea the arrangement is very regular.

Sclera varies in thickness upto 1mm. There are several weaker regions where the optic nerve exits posteriorly and at the sites of attachments of the six extraocular muscles. Blood vessels and nerves to the important inner parts of the eye penetrate the sclera. Disease processes inside the eye sometimes cause the blood vessels to become swollen and it can be seen against the white background of the sclera giving a visible indication that something is wrong within.

Uveal Tract

Uveal tract is the vascular coat of eyeball and lies between the sclera and retina. It is composed of three parts i.e. iris, ciliary body and choroid. These three portions are intimately connected and a disease in one part also affects the other

portions though not necessarily to the same degree.

Iris

Iris is a delicate membrane placed in the anterior part of the eye ball and perforated in the centre i.e. pupil. It arises from the middle of anterior surface of ciliary body. It is slightly pushed forward by the lens which gives it the appearance of a truncated cone, the apex of which has been cut off.

Ciliary body

Ciliary body is continuous with the iris posteriorly. It forms a ring which is 6 to 7 mm wide. It is dark because of dense pigmentation. On its surface, it has ciliary processes. These project inward from 0.5 to 0.75 mm and from these the zonular fibres are attached to the lens. They hold the lens suspended centrally behind the pupil. When the muscle of the ciliary body contracts and relaxes, the tension on these fibres is changed. This permits the lens curvature to vary, enabling the light passing through the pupil to focus or be deflected in its course of direction. This is part of the accommodation reflex referred as previously. The ciliary muscles are also supplied by branches of the third cranial nerve. The ciliary body is very vascular and from these blood vessels the transparent fluid called the aqueous humor is formed.

Choroid

Choroid is the third continuous and posterior portion of the uveal tract. It consists of varying size blood vessels lying between the sclera and the retina. It provides the important nourishment to this inner nerve layer. There are pigment cells scattered throughout the meshwork of vessels. The larger vessels are more superficial and the smaller capillaries are deeper. There is a thin basement membrane separating the choroidal vessels from the retina. When this permeability may be changed thus permitting fluid to permeate from the choroids into or beneath the retina. Inflammations, tumors, and blood vessel disorders which occur initially in the choroid usually extend into the retina and disturb the vision-perceiving elements. Systemic illnesses which spread by way of circulation most frequently enter the eye through the choroid.

The Lens

It is a biconvex transparent structure. It is normally placed in a small depression on the anterior vitreous face known as the patellar fossa. It remains suspended by the suspensory ligament. This consists of bundles of fibres which pass from the ciliary body to the capsule of the lens. This suspensory ligament is very strong in young and gradually weakens with advancing age.

The lens is formed of fibres growing from the cells at the equator. The lens thickens during life and becomes less elastic. As this occurs, its ability to

change its curvature and to focus light is decreased. A young child has great focusing power while the older adult has minimal accommodation. This reduced function has a predictable time pattern, and it is possible to closely estimate an individual's age by measuring the accommodation.

Retina:

Retina is the inner layer of the eye, composed of a thin, transparent membrane of nerve structures. It is analogous to the photosensitive film in a camera. There are ten layers or subdivisions which can be identified under microscopic examination. It is also important to recognise the separation into the peripheral retina and the central or macular retina. The microscopic structure is different in these two portions and the function is different. The side vision or peripheral field of vision is seen with the peripheral retina while the macular retina is used when the sight is directed at an object. Macular region of retina is important for the maintenance of sharp central visual acuity. The peripheral retina is primarily important in scotopic vision, the ability to perceive light and dark and motion. The predominant nerve ending which serves this purpose is called the rod. Photopic vision and the ability to discriminate colour are confined to the central or macular region, and the cone nerve endings act as the recipients of these stimuli. Chemical changes occur when light enters the eye. The light sensitive nerve endings are located in the outer portion of the retina so that light must pass through the inner retina before the light reflex is initiated. The chemical changes cause electrical impulses to start in the nerves. These are transmitted along the nerve fibers or on the inner surface of the retina.

The retina consists of two types of visual receptors. These receptors are called rods and cones. Rods are long and thin; Cones are shaped like bulbous carrots. The rods are sensitive to light of any wavelength and function at very low intensities. The cones on the other hand are quiet discriminative receptors. A small blind spot is there where the optic nerve joins the eyeball. At this junction, there are no visual receptors. The cones provide the ability to detect fine details and colour. They function best in daylight or under conditions of higher illumination. The rods provide the ability to detect gross form and movement and they function best in conditions of minimum light.

Aqueous Humour

Aqueous is secreted in the ciliary body. As the liquid is secreted, it fills the posterior chamber and through the passage between the lens and the iris, it enters into the anterior chamber. After filling the anterior chamber, the excess fluid gets out of the tiny holes at the boundary of the cornea and the sclera, the

canal of schlem and lubricates the eyeball externally. The aqueous is transparent in nature and allows the light rays to enter.

Optic Nerve

The optic nerve is formed by a combination of nerve fibres as they exit from the back of the eye. It has the appearance of a light pink disc from which blood vessels emerge and spread over the surface of the retina. The optic nerve passes through the orbit and out of it by way of the opening called the optic canal. Optic nerves send the light sensations to the central nervous system.

1.4. FUNCTIONING OF EYE

The physical components of the visual system include the eye, the visual centre in the brain and the optic nerve, which connects the eye to the visual centre. The basic anatomy of the eye is illustrated in the figure 1.1. The cornea is the external covering of the eye, and in the presence of light it reflects visual stimuli. These reflected light rays pass through the pupil which is an opening in the iris. The pupil expands or contracts to control the amount of light entering the eye.

The iris is the coloured portion of the eye and consists of membranous tissue and muscles whose function is to adjust the size of the pupil. The lens focuses the light rays by changing their direction so they strike the retina directly. As in a camera lens, the lens of the eye reverses the images. The retina consists of light—sensitive cells i.e. rods and cones, that transmit the image to the brain through optic nerves. Images from the retina remain upside down until they are flipped over in the visual centre of the brain.

1.5 EYE AND ITS CARE

A general knowledge of educational implications of the eye conditions can be helpful to the teachers and parents of visually impaired children. Eye examination report form the ophthalmologist can be used to provide information about visual acuity, prescriptive lenses, etiology, age of onset, field of vision, prognosis and educational implications for the teacher to use in the classroom. Visual evaluation could be conducted at regular intervals. The important period in which the vision assessment should be conducted, is the time just prior to the child's entering school. Visual problems must not go undetected as these children attempt to cope with the new and complex demands of the educational environment.

Optical Defects

For individuals who are low vision, use of an optical aid can vastly improve access

to the visual world. Most of these aids are in the form of corrective glasses or contact lenses which are designed to magnify image on the retina. Some aids are used to improve muscle control within the eye, while others clarify the retinal image. Appropriate use of optical aids, in conjunction with regular medical examinations, not only helps the child to correct existing visual problems but may also prevent further deterioration of existing vision.

Fatigue is a common characteristic of hyperopic children because of excessive accommodation. The teachers or the parents can solve this problem by reducing the study load and arranging for frequent rest periods. The teachers can use activities requiring distant vision such as the chalkboard and projectors to these children. Periods of close work should be alternated with activities in which the eyes are used for looking at distant objects, especially in the lower classes. The teacher can encourage the farsighted child to wear glasses and to get them checked frequently. Most of the children with hyperopia do not need corrective lenses.

Cataract

Surgery may be needed if the cataracts are severe. The teacher may use variable lighting conditions depending on the location of the cataract and the nature of the visual task. Children with central cataracts may often prefer lower levels of illumination. Children with peripheral cataract may often prefer higher levels of illumination than normal.

Albinism

Children with albinism are sensitive to light due to loss of pigment in the iris and retina of the eye. Average illumination is suitable for most children with albinism. Children must usually be placed in the front side of the class to see the blackboard.

Glaucoma

Children with glaucoma exhibit a loss of peripheral field of vision in the later stages of this disease. They may be able to read print to a limited extent.

Night blindness

The children with night blindness experience blurred vision and progressive constriction of the visual field. Closed circuit television and handheld magnifiers are often helpful when central vision is good. Braille may be needed in severe cases when the loss becomes more severe.

1.6 VISUAL DEFICITS

The following are some of the visual deficits that may occur due to various reasons such as infections in the eye, injuries, malnutrition, and other causes.

1.6.1 Scotomas

In general, scotoma is defined as a blind or a partially blind area in the visual field. Individuals with scotomas, or blind spots, generally have difficulty in doing tasks which require good visual acuity, such as reading the newspaper, writing a check, identifying people's faces across the room, reading a street sign, etc. The prescription of an optical aid is often the first step towards giving remedy to this problem.

1.6.2 Tunnel Vision

It is referred to the contraction of the visual field to such an extent that only a small area of central visual acuity remains, thus giving the affected individual the impression of looking through a tunnel.

1.6.3 Visual Field

It is referred to the entire area which can be seen without shifting the gaze. Vision in the peripheral area of retina is known as visual field or field of vision.

Loss of Visual Field

Field of vision is very much limited and hence the area which can be seen without shifting eye gaze is narrowed down to a specific limit.

1.6.4 Low Vision

Low vision is defined as 'markedly reduced functional vision'. This definition is usually applied to the person with vision of legal blindness or poorer, who nevertheless has some remaining vision, which is useful for certain purposes, or which can become so with special appliances and/or training.

According to World Health Organisation, (1992), Low vision is defined as follows :
"a person with low vision is one who has impairment of visual functioning even after treatment and/or standard refractive correction, and has a visual acuity of less than 6/18 to light perception or a visual field of less than 10 degrees from the points

of fixations, but who uses, or is potentially able to use vision for the planning or execution of a task”.

1.7 UNIT SUMMARY : THINGS TO REMEMBER

- The white portion of the eye which one sees from the front is part of sclera
- The eye lids act as a protective shield from injury threatening the surface of the eye
- The lacrimal glands are responsible for secretion of tears.
- The inner surface of the eyelids is covered by the transparent membrane called ‘Conjunctiva’.
- A transparent, avascular, rigid laminated structure, elliptical shape of the external coat of the eye ball is called as Cornea.
- Uveal tract is composed of three parts namely iris, ciliary body and choroid.
- Ciliary body is responsible for secreting aqueous humour.
- Choroid consists of varying size blood vessels lying between the sclera and the retina
- Visual field is referred to the entire area which can be seen without shifting the gaze.
- Markedly reduced functional vision is called as low vision.

1.8 CHECK YOUR PROGRESS

1. A combination of nerve fibers as they exit from the back of the eye is called as.....
2. Explain the functions of the important parts of the human eye.
3. Tear is secreted by (put a tick mark)
 - a. cornea
 - b. lacrimal gland
 - c. conjunctiva
 - d. iris

4. What is meant by ‘Scotoma’?
5. Explain the educational implications of visual defects.
6. Describe the process of visual functioning.

1.9 ASSIGNMENTS / ACTIVITIES

1. Draw neatly the structure of the human eye and mark the important parts of the same.
2. Collect the pictures representing visual deficits such as tunnel vision and refractive errors.

1.10 POINTS FOR DISCUSSION / CLARIFICATION

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

1.10.1 Points for Discussion

1.10.2 Points for Clarification

1.11 REFERENCES / FURTHER READINGS

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UNIT 3: EFFECT OF VISUAL IMPAIRMENT ON GROWTH AND DEVELOPMENT: PHYSICAL, MOTOR, LANGUAGE, SOCIO- EMOTIONAL, AND COGNITIVE DEVELOPMENT

STRUCTURE

- 2.1 Introduction**
- 2.2 Objectives**
- 2.3 Definitions of Important Terminologies**
 - 2.3.1 Visual Acuity
 - 2.3.2 Fusion
 - 2.3.3 Depth Perception
 - 2.3.4 Refraction
- 2.4 Refractive Errors**
 - 2.4.1 Emmetropia and Ametropia
 - 2.4.2 Hyperopia
 - 2.4.3 Myopia
 - 2.4.4 Presbiopia
- 2.5 Common Eye Diseases**
 - 2.5.1 Cataract
 - 2.5.2 Glaucoma
 - 2.5.3 Traucoma
 - 2.5.4 Corneal Ulcer
- 2.6 Unit Summary : Things to remember**
- 2.7 Check Your Progress**
- 2.8 Assignment / Activity**
- 2.9 Points for Discussion / Clarification**

2.9.1 Points for discussion

2.9.2 Points for clarification

2.10 References / Further Readings

2.1 INTRODUCTION

Certain physical principles and definitions are necessary to a complete understanding of the normal way in which the eye functions as an optical instrument. The definitions of such terms related to the important areas of 'refractive errors' and 'common eye diseases' are explained with illustrations in unit 2.

2.2 OBJECTIVES

After going through this unit, the learners will be able to:

- state the definitions of important terms related to visual functioning
- explain the different refractive errors with illustrations
- distinguish between various refractive errors
- describe the common eye diseases and their influences upon visual functioning

2.3 DEFINITIONS OF IMPORTANT TERMINOLOGIES

As discussed in the previous unit, the eye gathers light stimuli from the environment and brings these stimuli to a focused image on the retina. This process of visual functioning is influenced by many factors such as visual acuity, refraction, fusion, and depth perception. Hence, it is necessary to know about the definitions of such factors that contribute to the assessment of optical defects to a greater extent.

2.3.1 Visual Acuity

'Visual acuity' may be defined as the ability to see or distinguish small separations between portions of the visual fields. The testing for distant visual acuity is usually set at 20 feet or 6 meters, because rays of light are practically parallel at this distance, and the muscle controlling the shape of the lens in the normal eye is believed to be in a state of rest when viewing objects at this distance.

Visual acuity is recorded in the form of a fraction in which the test distance, usually 20 feet, is recorded as the numerator. The denominator represents the distance at which the smallest letters should be read by the normal eye. A visual acuity of 20/200 indicates that the child reads at 20 feet the line which should be read by a normal eye at a distance of 200 feet. The Snellen E chart is designed in such a way that the entire letter subtends an angle of 5 minutes and the spaces between the bars subtend angles of 1 minute at the designated distance. At 200 feet, the Snellen E chart measures 3.48 inches square.

The Snellen fraction is:

$$\text{Visual Acuity} = \frac{\text{distance at which symbol is clearly seen}}{\text{distance at which the smallest symbol read subtends an angle of 5 minutes}}$$

‘Visual Acuity ‘ is also defined as “the ability of the eye to perceive the shape of objects in the direct line of vision”

2.3.2 Fusion

‘Fusion’ refers to the ability to perceive two dissimilar images seen by each eye as one single mental image. In other words, the power of coordinating the images received by the two eyes into a single mental image is also called as ‘Fusion’. Fusion is a relative process regardless of the alignment of the eyes, and is classified into three stages. The final stage constitutes ‘stereopsis’. The process of combining two images at the brain level is called as ‘stereopsis’.

Absence of fusion is not a serious handicap but affects only depth perception and estimation of distance to a limited degree.

2.3.3. Depth Perception

‘Depth perception’ refers to ‘the ability to perceive three dimensional world through the aid of perceptual cues’. It is also referred as the ‘ability to perceive the solidity of objects and their relative position in space’.

As it is mentioned in the above definition of depth perception, the perceptual cues are responsible for the formation of better depth perception about different characteristics of objects in the environment. Among the commonly used cues, binocular vision is the most familiar one as it relates to both the concepts of fusion and depth perception.

Binocular vision is helpful in perceiving depth. Since the eyes are set two or three inches apart, each receives a slightly different view of the visual field. When we focus on a three dimensional object, both eyes receive light reflected from the front of the object and each eye can receive light from one side of the object as well. However, we do not see double images, instead, the two images are combined into a single image of perception. Hence, we experience one three dimensional sensation rather than two different images.

2.3.4 Refraction

“Refraction” refers to the state of focus of the eye. When a person is examined for refraction, the error of focus in the eye is measured and then the lenses to correct the error are prescribed. This correction brings light rays into exact focus on the retina.

Refraction is also referred to as “evaluation process of refractive status of ocular optical system and correction of errors”.

2.4. REFRACTIVE ERRORS

Refractive errors is defined as “a defect in the eye that prevents light rays from being brought to a single focus exactly on the retina” (Bourgeault, S.E., 1969). Numerous variables influence upon refraction, e.g., corneal curvature, depth of the anterior chamber, shape of the lens, and length of the eye. Upon entering the eye, a ray of light passes through the cornea, the aqueous humour, the anterior and posterior surfaces of the lens, and the vitreous to focus upon the retina’s fovea.

The refractive power of the eye is determined by the radius of curvature of the cornea and the lens as well as the refractive index of the aqueous and the vitreous. This power can change during life with growth, age, or changes in health or exposure to certain drugs or chemicals. A normal physiological alteration in the ability of the lens to change its convexity occurs at a predictable rate from childhood to a later adult life.

The lens of the child is very flexible and can readily change its curvature enabling the eye to focus on a very near object as well as a more distance object.

As the age of the lens increases, it grows in thickness and is less able to change its curvature. When it loses most of the adjusting mechanism or accommodation, it is termed as presbyopia.

2.4.1 Emmetropia and Ametropia

The ideal refractive condition of the normal eye is called ‘Emmetropia’. This condition of ‘Emmetropia’ refers to the production of an image on the retina and has no relationship to the vision produced. That is, when the optical system is normal and the image is focused clearly on the retina, the condition of ‘emmetropia’ exists.

Despite Emmetropia there may be cataract, retinal scarring, or nerve damage that prevents normal vision. As emphasised, this is actually an ideal rather than a normal condition, since most adults have some degree of refractive disorder.

When an exact image is not formed on the retina, it is the indication that 'Ametropia' is present. Ametropia refers to all variations from the emmetropic state which are not due to opacities or disease. This can vary in severity from one which is relatively free of symptoms to one which leads to seriously affect the visual condition. The most commonly encountered variations of ametropia - 'Hyperopia', 'Myopia' and 'Presbyopia' are discussed below:

2.4.2 Hyperopia

This condition of refractive error is also referred to as 'hypermetropia' or 'farsightedness'. In this condition parallel rays of light are brought to a focus behind the retina when accommodative powers are relaxed. Typically vision is normal beyond 20 feet, but near-vision is poor. Hyperopia may result from shortness of the anteroposterior dimension of the eyeball or weakness of the refractive power of the cornea or lens.

In brief, hyperopia is that state of refractive power of the eye which occurs when the principal focus lies behind the retina. This can result from inadequate growth in size of the eye, from a flatter curve of the cornea, or from a decrease in the refractive index of the lens.

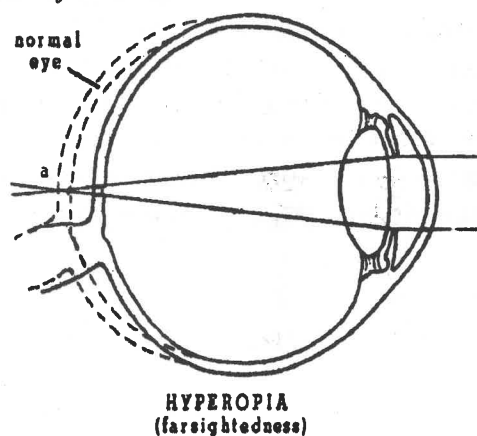


Fig. 2.1 Hyperopia (Farsightedness)

Hyperopia may be corrected with the use of a convex lens. This assists the insufficient refractive ability to bring the image on the retina. The convex lens increases the angle of incidence of the light rays entering the cornea and lens and thus focusing the light rays on the surface of the retina.

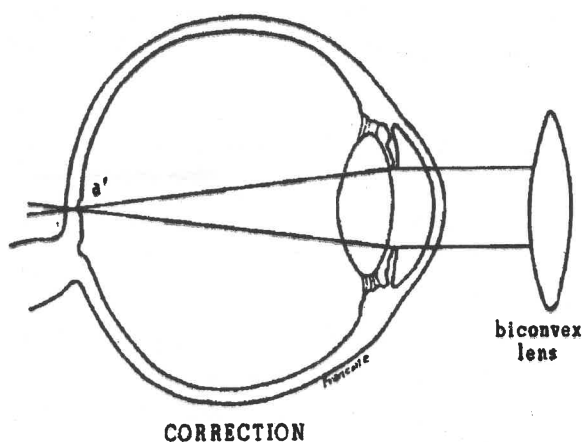


Fig. 2.2 : Correction of Hyperopia

2.4.3 Myopia:

This condition is also referred to as 'nearsightedness'. In this condition parallel rays of light are brought to a focus in front of the retina, i.e., before reaching the retinal surface. Typically near vision is normal, but distant vision is defective. Myopia is caused by an abnormally long anteroposterior dimension of the eyeball or by an increase in the strength of the refractive power of the media.

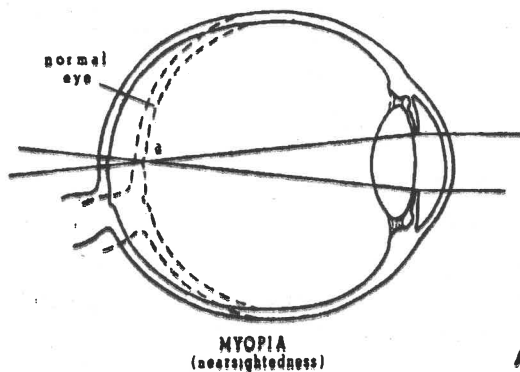


Fig 2.3 : Myopia (Nearsightedness)

In brief, Myopia is that state of refractive power of the eye that occurs when the principal focus lies in front of the retina as shown in fig. 2.2.

This develops from an excessive diameter of the eye, from a greater corneal curvature or from an increase in the refractive index of the lens. The most common symptom is inability to distinguish objects clearly at a distance.

Myopia may be corrected with concave lenses which diverge the light rays so they will focus correctly on the retina as in the fig. 2.4. Myopia usually increases in the teen ages and reaches at a level at about age 25. In the 40's presbyopic symptoms develop, necessitating reading glasses or bifocals.

A myopic person can see objects clearly when they are closer to the eye because light emanating from a source closer than 20 feet is diverging. Thus near objects can be seen more easily than far objects by the myopic individual.

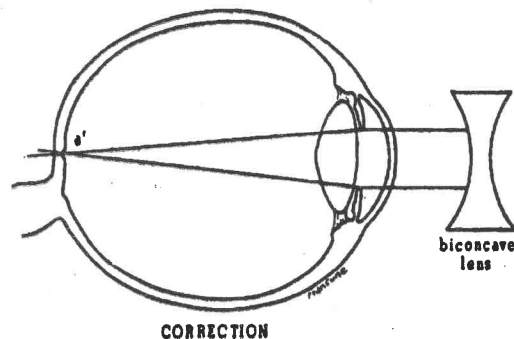


Fig. 2.4 : Correction of Myopia

2.4.4 Presbyopia

This is a condition in which the power of accommodation is reduced as a result of hardening of the lens due to the aging process. Loss of accommodation is manifested by blurring of near objects or visual fatigue when doing "close work".

Presbyopia may be corrected with a lens which corrects any basic refractive error and which also has a proper convex reading addition for close work. This lens brings the near point within suitable range for focusing on the retina. Usually first reading lenses are necessary between ages 42 and 45.

Presbyopia does not mean a worsening of hyperopia, but is merely a reduction of the power of accommodation. With increasing age, presbyopia frequently occurs and hence the lens of the eye becomes less flexible. As a result, the person loses accommodation for near vision and therefore experiences difficulty with close reading without backing away from the material.

2.5 COMMON EYE DISEASES

Eye diseases can be classified into internal diseases and external diseases. External diseases are those affecting the areas adjacent to the eyes as well as those on the surface of the eye.

Internal diseases are those affecting the structure and function of the enclosed area of the eye and the central nervous system connections.

2.5.1 Cataract

A cataract is an opacity of the lens or its capsule. The clouding may be throughout the entire lens or may involve a small localised area. If it is confined to the periphery, the vision may be normal or only slightly reduced. If it is centrally located in the direct line of vision, it can distort the sight at an early stage of formation. The greatest loss that can be sustained by a cataract is a restriction of the ability to perceive light. The vision is lost because the normal clarity of the lens is reduced and the lens cannot focus the rays of light into an image on the retina.

The lens is developed in the first three to four months of embryonic life. Defects in the lens can occur from illness in the mother during the early time of her pregnancy. German measles, viral infections causing mild symptoms in the mother can have devastating effects on the developing infant, including his/her vision. This type of cataract is called 'congenital cataract'.

Cataracts may also result from genetic deficiency. Cataracts are associated with metabolic disorders of the childhood such as diabetes, hyperthyroidism and hypocalcemia. These types of cataracts are called 'secondary cataracts'.

The lens may also become opaque when exposed to excessive heat, electrical current and irradiation.

Eye injuries can cause cataracts in patients of any age, which is called 'Traumatic cataract'.

The treatment for the cataract is to remove the clouded lens through surgery. The removed lens will be replaced by either 'cataract eye glasses' or 'Intraocular lens implant (IOL).

2.5.2 Glaucoma

Glaucoma is not a disease, but rather a complex of ocular disorders, all of which share the characteristic symptom of increased intraocular pressure, resulting in loss of visual function. If uncorrected, blindness may result. The loss of vision usually begins in the peripheral rather than the central field.

Normally, the aqueous humour fills the anterior and posterior chambers and permeates the vitreous humour. Aqueous humour is produced by the ciliary body and is crystal clear. In addition to serving as a refractive medium, the aqueous humour furnishes nutritional support to the avascular lens and cornea and contributes to the maintenance of intraocular pressure.

The intraocular pressure is determined by the rate of aqueous humour production and the resistance to outflow of aqueous humour from the eye.

Normally an almost constant balance is maintained between the rate of formation and the rate of absorption of aqueous humour. From the posterior chamber, the aqueous humour passes between the iris and lens and leaves through the pupil. Emerging from the pupil into the anterior chamber, a portion of aqueous humour then passes through the trabecular meshwork of the chamber angle into the *canal of schlemm* and out through the collector channels or aqueous veins into the anterior ciliary veins. This is the major direction of outflow of aqueous humour. Additionally, however, a portion of the aqueous humour is absorbed through the iris vessels, and some diffuses into the vitreous humour to leave the eye by posterior drainage routes.

Glaucoma [increased intraocular pressure] results from obstruction of the trabecular network and the canal of schlemm, thus interfering with the mechanism of outflow in the angle of the anterior chamber.

Glaucoma is in various types such as chronic simple glaucoma, acute congestive glaucoma and secondary glaucoma. Early diagnosis and successful treatment is essential in preventing permanent loss of vision.

2.5.3 Trachoma

Trachoma has a worldwide distribution which is estimated to affect some 15 percent of the world's population. Trachoma is a chronic infectious disease of the conjunctiva and cornea caused by an organism which appears to be an intermediate between the virus and the rickettsia. Trachoma is highly communicable and if untreated may result in blindness. Teaching regarding personal cleanliness is also important in eliminating this disorder since it is spread by direct contact.

2.5.4 Corneal Ulcer

The cornea is the front part of the eye through which light must first pass prior to forming the visual image on the retina. Two groups of corneal disorders are discussed here. The first is keratitis or inflammation of the cornea. The second is growth abnormalities, many of which are genetic in origin appearing at birth or at times later in life.

Inflammations of the cornea generally are characterised by the following symptoms: pain, photophobia, lacrimation, and interference with vision. Corneal inflammations may be divided into 1) superficial keratitis, 2) deep keratitis, 3) corneal ulcer.

Corneal ulcer will occur when the general resistance of the host or the corneal epithelium is diminished in the aged individuals during or after acute infectious diseases such as measles.

Some bacteria are also responsible for the cause of corneal ulcer. Due to indiscriminate use and abuse of antibiotics and steroids, the corneal ulcer is formed. Some specific viruses such as herpes simplex, etc., may also cause corneal ulcer. Contaminating bacteria, fungi, and viruses are often present and waiting for the opportunity to grow in the denuded area. If the organism is virulent, the normal defenses may be diminished and a corneal abscess develop and a dense scar in the line of vision appears. A major educational effort should constantly be made to inform everyone of the possible blinding significance of what are frequently considered unimportant ocular symptoms resulting from minor injuries or infections.

Corneal ulcer can be superficial involving only the front surface layers or deep involving the central stroma of the cornea. If only the outermost cells are destroyed the transparency is interfered with temporarily as these cells will regenerate normally. If the inflammation extends below the surface, cloudiness usually follows. The cornea has a very sensitive nerve supply to touch and pain stimuli. A slight amount of drying initiates the normal blink reflex. Airborne irritants also cause excessive blinking. When the corneal surface is removed from a small area, there is severe pain, sensitivity to light, tearing, and reflex closure of the eyelids. Small foreign bodies, slight scratches, and burns are frequent causes of superficial ulceration of the cornea. This permits removal of the eye's normal barrier to infection and exposes the cornea to such disease.

2.6 UNIT SUMMARY : THINGS TO REMEMBER.

- Refractive error is a defect in the eye that prevents light rays from being brought to a single focus exactly on the retina; can be corrected with lenses.

- Myopia is the condition in which the eye ball is excessively long and focuses light in front of the retina; nearsightedness.
- Hyperopia is the condition characterised by refractive problem in which the eyeball is excessively short and light rays are focused behind the retina; farsightedness.
- Glaucoma is the condition characterised by high pressure inside the eye ball.
- Trachoma is an infection caused by a specific virus which produces severe scarring of the eyelids and cornea.
- Corneal Ulcer is developed due to bacteria, viral infections, fungus, vitamin deficiency, etc.,
- Cataract is the condition characterised by the eye lens becoming opaque and cloudy.
- Presbyopia is a normal and gradual decrease in power of accommodation in the eye due to a physiological change that starts in the middle age.
- Visual acuity refers to the sharpness of vision.
- Fusion is the power of converting the two images received by the two eyes into a single mental image.
- Depth perception is the ability to perceive the solidity of objects and their relative position in space.

2.7 ASSIGNMENTS / ACTIVITIES

1. Identify ten individuals who wear spectacles and find out their nature of refractive errors.
2. Prepare a list of preventive measures to be taken for preventing Glaucoma and Corneal Ulcer.

2.8 CHECK YOUR PROGRESS

1. It is represented by a fraction relating to the distance of objects seen by an individual:
 - a) fusion
 - b) visual acuity
 - c) refraction
 - d) depth perception
2. Nearsightedness is referred to

- a) myopia
 - b) hyperopia
 - c) presbiopia
3. What is meant by depth perception?
 4. The eye disease associated with intracular pressure is called
 5. Explain any two common eye diseases found in India.

2.9 POINTS FOR DISCUSSION / CLARIFICATION

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

2.9.1 Points for Discussion

2.9.2 Points for Clarification

2.10 REFERENCES / FURTHER READINGS

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UNIT 4: EDUCATIONAL NEEDS OF THE VISUALLY IMPAIRED AND NEED FOR EXPANDED CORE CURRICULUM

STRUCTURE

- 3.1 Introduction**
- 3.2 Objectives**
- 3.3 Clinical assessment of Visual Impairment**
 - 3.3.1 The Snellen Chart
 - 3.3.2 Field of Vision Tests
 - Lister's Perimeter
 - Bjerrum's Screen
- 3.4 Functional Assessment Procedures**
 - 3.4.1 Recommended Procedures for Assessing Visually Impaired Children
 - 3.4.2 Educational Assessment
 - 3.4.3 Visual Screening of Low Vision Children
- 3.5 Commonly Used Tests of Assessment**
 - 3.5.1 Snellen Test and Visual Field Tests
 - 3.5.2 Muscle Balance Tests
 - Maddox Rod Test
 - Allied Muscle Balance Test
 - 3.5.3 Tests for Hyperopia
 - Plus Lens Test
 - 3.5.4 Near Vision Testing
 - 3.5.5 Geometric and Symbol Picture Tests for Low Functioning Children
 - 3.5.6 Colour Discrimination Tests
 - Ishihara's Test of Colour Blindness
 - The Hardy-Rand-Rittler Test

- 3.6 Importance of Early Identification and Intervention**
- 3.7 Unit Summary : Things to Remember**
- 3.8 Check Your Progress**
- 3.9 Assignment / Activity**
- 3.10 Points for Discussion / Clarification**
- 3.11 References / Further Readings**

3.1 INTRODUCTION

The primary goal of the assessment process is to gather sufficient information to provide a basis for decisions about the personal and educational needs of children. This includes the determination of possible learning opportunities and the existence of related environmental factors. As such, the assessment should be process oriented rather than instrument or test-oriented. The assessment should be a collaborative effort that involves the active participation of all members of the team to determine the educational needs of visually impaired children and the impact of handicapping condition on the overall functioning of these children. In this lesson, clinical and functional assessment procedures applied for assessing visually impaired children are discussed. The importance of early identification and commonly used tests for assessment will also be discussed.

3.2 OBJECTIVES

After going through this unit the learners will be able to:

- understand the clinical and functional assessment procedures applicable for assessing visually impaired children.
- know the uses of clinical and functional assessment procedures.
- mention a few commonly used tests of assessment.
- explain the importance of early identification and intervention.

3.3 CLINICAL ASSESSMENT OF VISUAL IMPAIRMENT

Visual assessment of children requires more than the mere mechanical application of a visual screening device. The identification of visual problems requires teamwork of educational, medical, and other personnel such as volunteers and health workers. The team work consists of vision screening of all children, continuous classroom observation for behavioural and physical symptoms, and extending referral services for identified children for comprehensive eye examinations. An adequate programme of identification requires the carrying out of each step in a carefully planned systematic effort.

3.3.1 The Snellen Chart

Most visual screening procedures are based on the use of the snellen chart plus careful observation for symptoms of eye trouble in the class room. Hermann Snellen, a Dutch Professor of Ophthalmology, developed his chart in 1862. The snellen chart is the most commonly used chart for measurement of distant, central

visual acuity. The standard letter chart may be used for literate children, but the E symbol chart is especially suitable for young children.

It is important that visual acuity screening be administered under standardised conditions. The chart must be clean and properly placed according to background and eye height. Correct illumination for the chart is important to avoid glare. Insufficient lighting can alter the results of the examination. An illumination intensity of 10 to 30 footcandles on the chart is required. The child must stand or sit

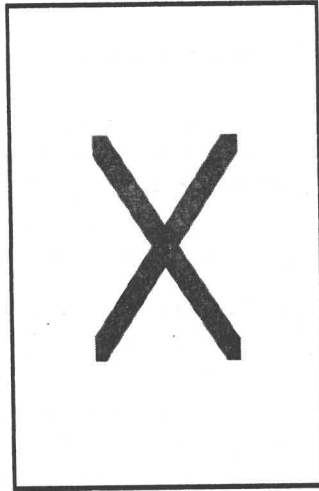


Fig 3.1. Snellen chart

at the specific distance of 20 feet from the chart, and his position during the examination must be carefully observed. After both eyes are tested together, the right eye and left eye are tested individually. To pass a line the child must read a majority of all symbols on that line.

In addition to a history of visual complaints and illnesses, the screening process should include careful observation of the behaviour of the child during the measurement of visual acuity from the Snellen Chart. The appearance of the eyes should be noted by the vision screening team for correlation with visual acuity before referral to an ophthalmologist. For example, crusts on eyelids or among eyelashes, red or swollen eyelids, watery eyes or discharges, sensitivity to light, reddened conjunctiva, and lack of coordination in focusing the two eyes should be noted.

In addition, the teacher may report certain complaints from the child while he is using his eyes at the desk or chalkboard. The child may rub his eyes frequently or attempt to brush away blur. He may experience

headaches and/or nausea following visual closework, or he may complain of itchy, scratchy, or burning eyes. The child may have to move extremely close to the chalkboard or books to discriminate pictures, words, or diagrams. Any unusual visual behaviour or symptoms should be noted on the child's screening record.

3.3.2 Field of Vision Tests

Some children may be handicapped due to the restriction of the field vision. The field of vision is the entire area which can be seen while the eye remains fixed upon one point in straight line. When the widest angle of the central field is restricted to 20 degrees or less in the better eye with correction, the person is considered legally blind, even though he is usually able to read ink print materials.

The Snellen Chart is not designed to identify a child with visual field restrictions. Visual field limitations can be noted by careful observation of the child by the teacher and Snellen tester. If the loss is very extreme, the individual may have difficulty in reading print or in travel. The teacher may note the child stumbling over chairs, tables, and objects which may be in his path. The child may also be retarded in reading speed because of inability to see a complete word or phrase. He may sometimes have 'tunnel vision' (or contraction of the visual field to such an extent that only central visual acuity remains) giving the affected individual the impression of looking through a tunnel.

Several of the binocular testing instruments have an accessory that can be used for lateral field screening. This accessory, sometimes called a *perimeter*, is usually attached to the binocular instrument itself. However, the screening of lateral vision is more designed for driver education or of the persons working with moving machinery. The examination of visual field by an ophthalmologist should detect the location and severity of the visual field limitation.

The commonly used tests for assessing field of vision are: 1) Lister's _____ perimeter _____ and 2) Bjerrum's Screen.

Lister's perimeter This instrument is generally used for assessing the extent of visual field of an individual.

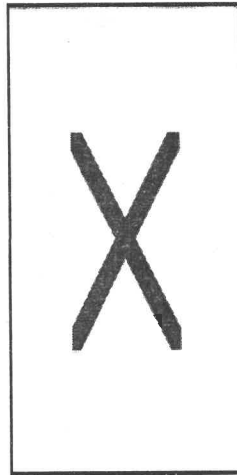


Fig. 3.2 Lister's Perimeter

In general, the extent of normal visual acuity is prescribed as:

- temporally - 100°
- superiorly - 60°
- nasally - 60°
- inferiorly - 75°

Bjerrum's Screen

It is used for more accurate detection of field defects in the central field. The visual field within a radius of 30° is said to be as 'central field'. It is particularly useful to diagnose field defects in chronic simple glaucoma, and scotomas.

3.4 FUNCTIONAL ASSESSMENT PROCEDURES

In the above paragraphs, the clinical assessment of visual functioning has explained. It is discussed that visual acuity and visual field are primarily tested through clinical devises for understanding the nature of visual process. Reduction of visual acuity or constriction of visual fields can have a profound effect on an individual's visual functioning. The reduction can be so great as to require major changes in the person's lifestyle, travel methods, work habits and overall functioning. Optical aids can be of use to solve these life skill problems. However, just an optical aid, with or without adequate training, is not the only answer. There are many functional problems, caused by the reduction of visual acuity or constricted visual fields,

which cannot be totally solved with optical aids. For example, poor night vision and lack of depth perception are among the common problems which cannot be entirely managed with optical aids.

Since the Snellen test only measures visual acuity, it must be used primarily as an initial screening device that is supplemented by more in-depth assessments, such as a thorough ophthalmological examination. Parents and teachers must also carefully observe the behavior of the child, and a complete history of any presence of symptoms of visual impairment should be documented. These observable symptoms fall into three categories: **appearance, behaviour, and complaints.** The existence of symptoms does not necessarily mean a person has a visual impairment, but it does indicate that an appropriate specialist should be consulted for further examination.

Appearance of the child

The basic observable category for functional assessment is related to the physical symptoms that may be noticed with the child in a specific known environment. The responses may be obtained for the following questions and due qualitative interpretation could be drawn on the basis of the same.

- Are the eyes crossed?
- Are the eyes functioning in unison?
- Are the eyelids swollen ?
- Are the eyes overly sensitive to light ?
- Are the eyes frequently becoming reddish ?
- Are the pupils of different sizes?
- Are the eyes constantly in motion?

Observable Behaviour:

The second aspect to be considered for functional assessment include the observable behaviour of an individual. The responses need to be obtained for the following queries in order to consider them for overall assessment of visual functioning.

Does the individual:

- Blink constantly?
- Stumble frequently?
- Cover one eye when reading?
- Hold reading material either very close or far away?
- Distort the face when concentrating on something in the distance?
- Walk cautiously?
- Fail to see objects that are to one side or the other?

Complaints

The aspect to be carefully considered for functional assessment is concerned with basic complaints that may come from the individual for the specific issues as given below:

Does the individual complain of:

- Frequent dizziness?
- Frequent headaches?
- Pain in the eyes?
- Itching or burning of the eyes or eyelids?
- Double vision?

3.4.1 Recommended Procedures for Assessing Visually Impaired Children

- 1. Consider assessing in several short sessions rather than one long one.**
- 2. Consider assessing in the home rather than in a strange environment.**
- 3. Position the child so : materials can be comfortably and easily manipulated.**
- 4. Consider effect of lighting: is it sufficient, too intense, distracting? Is glare minimised?**
- 5. Lighting conditions which will optimise performance vary widely depending on the visual condition.**
- 6. Give the children time: to explore materials, to familiarise himself or herself with environment, and to respond.**

7. **Eliminate distractions. People talking outside, a radio playing are all examples of conditions which can distract the baby and affect performance.**
8. **Be sensitive to the child's viewpoint. Remember that you are a stranger and this may be the most relevant thing about you at certain points in development. Use the parent whenever necessary.**
9. **Be familiar with behaviour and developmental patterns of children with visual impairment.**
10. **Use a transdisciplinary team for assessment whenever possible.**

3.4.2 Educational Assessment

In the area of education, the assessment process of visually impaired is not very much different from the students who are sighted. In educational assessment, people are interested in assessing the cognitive ability, academic achievement, language skills, motor performance, and socio-emotional functioning of the student. Assessment must also focus specifically on how the student utilises any remaining vision (visual efficiency) in conjunction with other senses.

The nature and severity of the visual problem determine the assessment instruments to be used. Some assessment instruments have been developed specifically for students with visual impairment. Others are intended for sighted students but have been adapted to students with visual impairment. There are also instruments that were developed for sighted students and are used in their original form with students who are visually impaired. Regardless of the instruments employed, educational assessment, in conjunction with medical and psychological data, must provide the diagnostic information that will ensure an appropriate educational experience for the student who is visually impaired.

3.4.3 Visual Screening of Low Vision Children

Visual screening of very young children or low functioning children is sometimes difficult. Factors such as brief attention span, lack of interest in the test, anxiety in performing before onlookers, fatigue, and difficulty in communication with the tester can impede the screening process.

Variables which influence the results of the test depend heavily on the intellectual development of the child. His sense of form, span, and visual memory coupled with

his previous experience with the objects pictured on the test chart will highly influence the results. The examiner can help to overcome some of his emotional difficulties by showing patience and developing rapport with the child before the testing procedure is initiated. He can help to develop a communication system with children who have very little expressive language ability. In some cases the examiner may need to train the child to make a proper nonverbal response to sample test items.

Distance is an important factor in testing the visual acuity of low functioning children. The shorter distance is recommended in most cases in order to obtain greater rapport and attention span. Testing with exposure of a single symbol generally results in better visual acuity than when a line of symbols is exposed.

The exposure of a line of symbols may cause a crowding phenomenon resulting in separation difficulty .

3.5 COMMONLY USED TESTS OF ASSESSMENT

The tests that are commonly used to measure the extent of visual functioning will be discussed in this section.

3.5.1 Snellen Test and Visual Field Tests

These tests are used to measure visual acuity and visual field and the details of which have already been discussed in the earlier sections of this lesson.

3.5.2 Muscle Balance Tests

In testing muscle balance, special instruments are used which cause fusion to be dissociated. The most common tests are: 1) Maddox Rod Test, and 2) Allied Muscle Balance Test.

Maddox Rod Test

This test is used to determine the postural position of the eyes when fusion is disrupted. This test is excellent for measurement of heterophoria and can also be used to detect heterotropia. The procedure calls for the presentation of a different image to each eye at the same time.

Allied Muscle Balance Test

This test consists of a procedure in which the child wears specialised lenses while using a projector to place a red dot within a rectangle projected on a screen. This

test may be difficult to teach to some children, and it requires fine motor control and eye-hand coordination.

3.5.3 Tests for Hyperopia

The tests for distant vision will detect the child with hyperopia or far-sightedness. The hyperopic child usually sees quite well at a distance but must accommodate for near-vision tasks.

Plus Lens Test

It is a more adequate test to detect hyperopia. The child's vision is checked on the Snellen chart or on one of the binocular instruments while he is wearing plus lenses mounted in a small, inexpensive frame. If the child can see the 20-foot line at 20 feet from the chart with both eyes while wearing these lenses, he should be referred.

3.5.4 Near Vision Testing

Near visual acuity should be determined for children with low vision. Near vision information is especially important for children with pathological defects where only distance visual acuity may be inadequate. Near vision is determined with one of several reading cards which are either symbols, numerals or letters. The reading distance for low-vision children and illumination should be recorded.

Educational materials are prepared on the basis of this information.

3.5.5 Geometric and Symbol Picture Tests for Low Functioning Children

The use of the picture chart has also been found to be a successful means of vision screening of very young children. The toy test does not give a very accurate measure of visual acuity, and the children may want to keep or play with the toys. Picture tests are dependent on psychological interpretations of figures which may depend on complex form perception, emotion, and experiences.

3.5.6 Colour Discrimination Tests

The simplest type of colour-vision test is designed to detect children who have defective red-green and yellow-blue colour vision. Although such a test is not recommended to be given in the usual vision screening programme, it is recommended that a test for colour vision be given at least once during the child's school experience.

The dichotomous vision tests, which are used for general screening purposes do not determine the kind and amount of defects. They simply separate children with colour defective vision from children with normal colour vision.

Two such tests, which have been satisfactorily used with children are Ishihara's Test of Colour Blindness and Hardy-Rand-Rittler Test.

Ishihara's Test of Colour Blindness:

This test, which is used for testing the colour blindness is available in a variety of editions and number of plates. One series is composed of digits, and another series which is designed for illiterates uses path patterns. The subject must recognise these path patterns. The plates are arranged in six groups according to the colour of the discs. The colours of discs which are used to describe the numerals or paths are carefully selected to fall within the areas where colour defectives are most likely to differ from normal.

In administering the test, the subject is seated with his eyes at a distance of 75 cm from the chart, which is illuminated with an Easel Lamp. The test is a good instrument for screening red-green defections, but it does not indicate the type or intensity of the colour defect.

Hardy-Rand-Rittler Test

It contains twenty-one plates with simple designs that can be used with children or illiterates to find types of red-yellow and red-green defects. The HRR is a saturation test, that can be used as a diagnostic test to indicate the type of defective colour vision and the intensity of the defect. The principle used in designing this saturation test is to present designs of each critical cue in increasing steps of chroma in order to rate the extent of the defect in terms of the highest chroma of designs failed.

3.6 IMPORTANCE OF EARLY IDENTIFICATION AND INTERVENTION

The review of recently conducted studies indicates that about 20 to 25 percent of school going children may have an eye difficulty which needs professional attention in our country. More assessment programmes are needed to identify children who need eye care in general schools as well as schools meant for impaired children. A crossed or deviating eye can cause suppression of vision in one eye and leads to unnecessary loss of vision if not detected and treated in the early years. Early detection and treatment of visual problems may save the child's vision and enable him to make a better adjustment upon entering school.

The screening test should be simple, short, and inexpensive. It should be of such a nature as to be easily administered by teachers to a large population in order to determine those who need professional diagnosis and care. Screening of preschool children can be limited to the visual acuity test, but older children

should obtain tests for hyperopia and heteropia.

Early visual screening should be a component of the general assessment. Early screening would include a medical examination at birth, with an emphasis not only on the physical condition of the newborn but also on a complete family history. The eyes should be carefully examined for any abnormalities, such as infection or trauma.

At 6 weeks of age, visual screening should be a component of another general assessment. This examination should include input from the parents concerning how their child is responding. The physician should check eye movements, as well as search for any infection, crusting on the eyes etc.,

The next examination should occur at about 6 months of age. A defensive blink should be present at this age, and eye movements should be full and coordinated. If there is any imbalance in eye movements, a more thorough examination should be conducted. Family history is extremely important in assessment.

Between the ages of 1 and 5, visual evaluation should be conducted at regular intervals. The most important period for visual evaluation is the time just prior to the entry of the child to school. Visual problems must not go undetected as these children attempt to cope with the new and complex demands of the educational environment.

3.7 UNIT SUMMARY : THINGS TO REMEMBER

- Clinical assessment deals with the assessment of quantitative aspects of medical nature.
- Functional assessment deals with the qualitative interpretations of factors responsible for visual impairment.
- In educational assessment, people are interested in assessing the cognitive ability, academic achievement, language skills, motor performance, and socio-emotional functioning of the student.
- Lister's perimeter is generally used for assessing the extent of visual field.
- Maddox Rod Test is used to determine the postural position of the eyes when fusion is disrupted.
- Bjerrum's Screen is used for more accurate detection of field defects in the central field.
- Ishihara's Test is commonly used for assessing Colour Blindness.

- Early screening would include a medical examination at birth, with an emphasis not only on the physical condition of the newborn but also on a complete family history.

3.8 CHECK YOUR PROGRESS

1. Distinguish between clinical assessment and functional assessment.
2. Mention the uses of snellen chart.
3. What are the standard procedures of conducting functional assessment?
4. Mention the uses of Lister's perimeter.
5. "Early assessment is mandatory for a visually impaired child". Why?

3.9 ASSIGNMENTS / ACTIVITIES

- 1- Select any two visually impaired children and do the functional assessment using the procedure suggested in this lesson.
- 2- Prepare a list of visually impaired persons who are living in your street/village and help them to utilise the services of the local school/hospital for screening.

3.10 POINTS FOR DISCUSSION / CLARIFICATION

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

3.10.1 Points for Discussion

3.10.2 Points for Clarification

3.11 REFERENCES / FURTHER READINGS

10. Jose R.T., (1983). "Understanding Low Vision". New York: American Foundation for the Blind.
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UNIT 5: IMPLICATIONS OF LOW VISION AND NEEDS OF CHILDREN WITH LOW VISION

STRUCTURE

- 1.1 Introduction**
- 1.2 Objectives**
- 1.3 Various Service Delivery Approaches**
 - 1.3.1 Cascade System
- 1.4 Homebound Programme**
- 1.5 Growth of Services for Visually Impaired Persons in India**
- 1.6 Pioneers in Services for Children with Visual Impairment**
 - 1.6.1 Work of Foreign Missionaries
 - 1.6.2 Work of Enlightened Persons with Visual Impairment
 - 1.6.3 Work of Employed Persons with Visual Impairment
 - 1.6.4 Work of General Educators
 - 1.6.5 Work of Charitable Organisations
- 1.7 Residential Schools**
- 1.8 Integrated Education - Aims and Objectives**
 - 1.8.1 Factors Contributing to Successful Integration
- 1.9 When and why Integrated Education was Introduced in India?**
- 1.10 What is the Current Status of Integrated Education in India?**
- 1.11 Models of Integrated Education**
 - 1.11.1 Resource Model
 - 1.11.2 Itinerant Model
 - 1.11.3 Combined Plan
 - 1.11.4 Cooperative Plan
 - 1.11.5 Cluster Model
- 1.12 Emerging Strategies**

- 1.12.1 Resource model for thickly populated areas
- 1.12.2 Itinerant plan for scattered population
- 1.12.3 Dual Teaching Model
- 1.12.4 Cooperative plan for multi-impaired children
- 1.12.5 Partial Integrated Programmes
- 1.12.6 Cluster Model for Hilly Areas
- 1.12.7 Multi-skilled Teacher Plan
- 1.13 Key Issues For Adoption**
- 1.14 Advent of Technology**
- 1.15 Unit Summary: Points To Remember**
- 1.15 Check Your Progress**
- 1.16 Assignment/Activity**
- 1.18 Points for Discussion/Clarification**
 - 1.18.1 Points for Discussion
 - 1.18.2 Points for Clarification
- 1.19 References/Further Readings**

INTRODUCTION

In services for visually impaired children, various models are practised in India. The residential type of education was the first one introduced in the country. Before residential approach came into existence, home bound programmes for persons with disabilities were considered to be the possible alternative. The concept of integrated education emerged in the last century to expand services for more disabled children. The integrated education concept is trying to address the objectives of education for all in the case of disabled children. Integrated education in India is implemented through various context specific models. There are many tailor made models too in addition to the standard models of integration.

In this unit, the characteristics of resource, itinerant, combined and cluster models of integrated education are described. The implementation procedures of these models are also enumerated in detail.

1.1 OBJECTIVES

The student teacher, with the use of this material, is expected to :

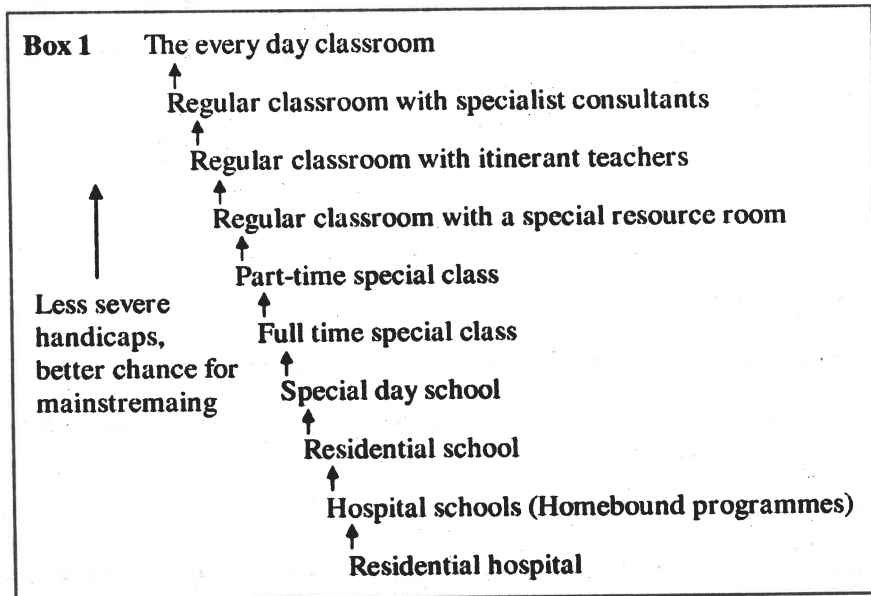
- *Explain the chronological development of the educational plans for visually impaired children.*
- *Explain the nature of residential schools.*
- *Describe the nature of integrated education programmes for visually impaired children.*
- *Compare the effectiveness of various models of integration of visually impaired children in ordinary schools.*
- *Compare the merits and limitations of the educational plans suitable for visually impaired children in the 21st century.*

1.2 VARIOUS SERVICE DELIVERY APPROACHES

1.3.1 Cascade System

The cascade system clearly explains the nature of educational services available for visually impaired children depending upon their extent of disability. It is very clear from the system that the children with less severe handicaps can cope up well in mainstreaming programmes.

The diagrammatic representation of the Cascade System is as follows:



The visually impaired children with additional disabilities can normally get education in the lower half of the ladder whereas other children who have only visual impairment can study in total integrated system.

1.3 HOMEBOUND PROGRAMME

"This programme is meant for children who are physically handicapped also to the extent that they cannot attend a school, or who live where a school suitable for them is not available". The purpose of this school is that the physical incapacity should not and need not create a "mental vegetable". If the children are unable to attend the school, education can be brought to them.

In this approach, specialised teachers are nominated routinely to minimise interruptions in a student's education caused by short or long time confinement to

home. The special teachers in this system are assigned with a caseload, and visit the student in the home on a regular basis. The major responsibility of these teachers is to assist the child's regular classroom teacher in preparing instructional plans and guidelines which can be pursued with the homebound student on one-to-one tutorial basis. It is desirable that the learning environment should be made more compatible to the child's basic physical and emotional needs in this system. The homebound programmes are rarely practised in Indian conditions.

1.5 GROWTH OF SERVICES FOR VISUALLY IMPAIRED PERSONS IN INDIA

Work for children with visual impairment in India is more than a century old. Miss Anne Sharp founded the first school for the blind in Amritsar in India in 1887. One of the largest schools for the blind in India, which is located in Palayamkottai, was started in the year 1890. Though foreign missionaries started the first two institutions, Sri Lal Behari Shah was the first Indian to start the Calcutta Blind School in 1897 (Murickan and Kareparampil, 1995). The growth of special services for disabled children in India has followed the global trends of care and help. The concept of re-birth and the theory of KARMA stimulated people to create homes for the destitute, including persons with disability. It suggests the availability of some form of education and rehabilitation of persons with disability (Jangira and Ahuja, 1993). Besides efforts from the voluntary sectors, the Government too initiated constructive activities towards the development of services for children with visual impairment. In 1942, the Government of India invited Sir Clutha Mackenzie, a World War I veteran from New Zealand to conduct a survey on blindness in India. The recommendations of his famous report on Blindness (1944) have great influence on the programmes for persons with visual impairment in the post-independent period. In 1947, a unit on blindness was set up in the Ministry of Education, which was headed by Sri Lal Advani. This unit became the focal point for expansion of services to other disability areas through the federal government. The unit was also instrumental for the creation of the concept of separate national institutes for the handicapped in India.

The development of Bharathi braille code in India also provided a fillip to the augmentation of services for children with visual impairment. Though the Central Board of Secondary Education (CBSE) initiated the work in 1922, it took a concrete shape only during the first conference on Uniformity of Braille Codes organised in Paris in 1950. Dr. S.K. Chatterjee, Sri P.M. Advani, and Sri Lal Advani represented India at this conference. Subsequent to this workshop which resolved in favour of

phonetic uniformity of braille codes, the first regional conference on the subject was held in 1951 in Beirut. The code agreed upon at this conference was modified to some extent and introduced in schools for the blind in India. The pre-independence period which witnessed the growth of only 32 schools for the blind rose to a remarkable 400 in the post-independence period. Still, the beneficiaries of the services constitute a meagre 5% or less. One of the reasons for the slow pace can be attributed to the fact that services for the blind remained a 'Welfare and Charitable' activity for decades together. In 1973, Government of India initiated effort to develop Hindi braille contractions and this effort was further strengthened with the establishment of the National Institute for the Visually Handicapped in Dehradun in 1979.

1.6 PIONEERS IN SERVICES FOR CHILDREN WITH VISUAL IMPAIRMENT

Five types of persons/organisations in India initiated services for persons with visual impairment.

1.6.1 Work of Foreign Missionaries

In the pre-independence India, foreign missionaries introduced services for the blind in the country. During the British rule, special schools, rehabilitation centres, work on prevention of blindness, etc., were commenced by foreign missionaries. Such missionaries are supporting a large number of present institutions for persons with visual impairment in India. Besides direct services to these persons, the missionaries also assisted the Indian counterparts in attaining skills by undergoing technical courses abroad.

1.6.2 Work of Enlightened Persons with Visual Impairment

The second category of persons who initiated services for the blind are blind persons themselves. For example, Dr. Nilkanthrai Chhatrapati left his medical profession after he became blind at the age of 38 and started a school for the Blind in Ahmedabad in 1900. This school was merged with the Victoria Memorial School for the Blind in 1902 (Murickan and Kareparampil, 1995). Even today, a large number of persons with visual impairment are instrumental for the growth of special education and rehabilitation services. They are serving as role models for

the vast majority of persons with visual impairment and their services are recognised by both Government and private sectors in India. Some of the contemporary visionaries for the emergence of services include Sri Jagadish Patel who started the Blind People's Association in Ahmedabad, and Capt. Desai who was involved in the establishment of the National Association for the Blind. Many such personalities at the regional and state levels can also be cited.

1.6.3 Work of Employed Persons with Visual Impairment

The third category of people was those who were working in the government and other organisations and could influence development of services for persons with visual impairment. A classic example is Sri Lal Advani, who was working as a special officer in the Government of India and was instrumental in the formation of the National Institute for the Visually Handicapped. He then became the first Director of that Institute. Many such blind persons, such as Dr. Rajendra T. Vyas, out of their own life experiences, contributed to the development of services for blind persons in India.

1.6.4 Work of General Educators

Persons belonging to the fourth category are those enlightened general educators who saw a need for the development of services for persons with visual impairment. The first instance goes back to the starting of the school for the blind, Palayamkottai, in Tamil Nadu. When a blind boy was seen in front of the house begging, Ms. Askwith, the Principal of the Sarah Tucker College for Women told him that it was an educational institution and not a place for begging. Then came the reply from the blind person, "Why don't you give me education?". This reply from the blind person prompted Ms. Askwith to start services for the blind in the college campus itself and it became independent in the year 1908.

1.6.5 Work of Charitable Organisations

The fifth category consists of organisations working for the downtrodden sections of the community. One such example is the Ramakrishna Mission. The Mission which basically provides services for the needy and poor of the society included services for the blind too under its fold as a result of its concern for the humanity. This resulted in the starting of the Blind Boys Academy in Narendrapur, Calcutta in

1962 and then the Resource and Development Centre in Coimbatore in 1980. The contribution of the National Association for the Blind is also commendable.

1.7 RESIDENTIAL SCHOOLS

The residential schools are meant only for disabled children who are housed there. Countries have traditionally established residential schools to provide educational experiences for visually impaired children. Just like normal schools, subject teachers are appointed in residential schools to handle various subjects.

In most of the residential schools in India, the curriculum followed is similar to the one prescribed for non-disabled children of the same age group. However, some schools exempt visual oriented concepts in mathematics and science for children with visual impairment. Music, recreation activities, and pre-vocational skills are taught to the children in residential schools in addition to curricular skills. Children with visual impairment in residential schools are provided hostel facilities too at free of cost and most of these schools are located in urban areas.

The growth of the integrated education system is redefining the role of residential schools in India. However, the transition will take a long time. At present, both integration and special school system are found relevant in context specific situations.

1.8 INTEGRATED EDUCATION - AIMS AND OBJECTIVES

Aims : Integration aims at normalising the life and education of visually impaired children in the least restrictive environment. In this system visually impaired children are educated with the seeing children in general schools.

Objectives : The major objectives of integrated education are :

- *To provide educational opportunities and educational experiences for visually impaired children equal to those provided for the sighted children.*
- *To allow visually impaired children and their families, neighbours and sighted peers - to interact socially in normal settings.*
- *To change stereo-typed responses to blindness by demonstrating that visually impaired children are children first and disabled next.*
- *To develop the personalities of visually impaired children so as to provide a natural basis for adult life experiences. In short, to allow these*

children to take their proper places as contributing members in all sectors of society, whatever the society may be.

1.8.1 Factors Contributing to Successful Integration

The major means of attaining successful educational integration are :

- *Provision of specialised teachers to serve as resource teachers at various levels.*
- *Provision of all appropriate educational texts and selected special aids and appliances.*
- *Provision of consultations to regular classroom teachers, school administrators, families, local health authorities and the general public on matters of education of the visually impaired children and*
- *Full utilisation of local consultants, specialists and volunteers for auxiliary services such as reading service and materials preparation.*

1.9 WHEN AND WHY INTEGRATED EDUCATION WAS INTRODUCED IN INDIA?

No specific year could be cited for the introduction of integrated education in India. Special schools were adopting partial integration for disabled children at the secondary level in the beginning of 20th century itself. However, full fledged integrated education programmes emerged only in the beginning of 1980s. Since 1980, the field has witnessed a phenomenal growth of integrated education.

Integrated education emerged out of compulsion rather than option in India. In the process of bringing more disabled children under the umbrella of educational services, integration was considered as the cost-effective approach and therefore, the general education system started accepting special needs children in general schools. The implementation of integrated education programme also addressed the needs of high-risk children who were suspected to be potential dropouts and therefore, retention of such children became high.

In India all types of integrated education models are found. At present, at least 8 models of services could be noticed in India. They are listed as follows :

1. *Resource model where visually impaired children study in general schools and stay in hostels meant for non-disabled children.*

2. *Resource model where visually impaired children study in general schools and stay in hostels of the nearby special schools.*
3. *Resource model where visually impaired children study in general schools and stay in hostels exclusively created for them.*
4. *Resource model where visually impaired children study in general schools and stay with parents at home.*
5. *Semi-resource model or cooperative model where visually impaired children are taught only by the resource teacher in a separate class in a general school.*
6. *Itinerant model where a resource teacher visits the visually impaired child in his/her local school and the child stays with parents.*
7. *Multi-category resource model where disabled children of different kinds are educated in a general school by the regular teachers and a specialist teacher.*
8. *Multi-category itinerant model where one special teacher attends to the needs of visually impaired children of different categories in a particular locality.*

The growth of integrated education provided quality instruction and also enabled socialisation for visually impaired children, but failed to expand access for all. The resource model became popular and blind children in urban areas were mostly benefited. In this model too, hostel facilities were provided in some schools and, therefore, these children had to travel from villages to cities to avail integrated education. As a result, integrated education became as costly as special schools.

1.10 WHAT IS THE CURRENT STATUS OF INTEGRATED EDUCATION IN INDIA?

The centrally sponsored scheme of integrated education which was initiated in 1974 is being implemented in various states of the country. More number of Government institutions are involved in integrated education than the non-government institutes. The enrolment pattern of disabled children at the primary, secondary and higher secondary levels in general schools, as per the Sixth All India Educational Survey (1998), is indicated in tables 1, 2 and 3.

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**Table 1.1 : Enrollment of Disabled Children in Schools
Under Integrated Educational Programme (Stage : Primary)**

Area	Management	Type of Disability					
		Visually Impaired	Hearing Impaired	Orthopaedically Handicapped	Mentally Retarded	Others	Total
Rural	Government	1539	1307	15168	1066	2070	21150
	Non-Government	391	354	2189	188	80	3202
	Total	1930	1661	17357	1254	1250	24352
Urban	Government	896	1420	5072	1694	1382	10464
	Non-Government	982	1877	3959	800	1538	9156
	Total	1878	3297	9031	2494	2920	19620
Total	Government	2435	2727	20240	2760	3452	31614
	Non-Government	1373	2231	6148	988	1618	12358
	Total	3808	4958	26388	3748	5070	43972

**Table 1.2 : Enrollment of Disabled Children in Schools Under
Integrated Educational Programme (Stage : Upper Primary)**

Area	Management	Type of Disability					
		Visually Impaired	Hearing Impaired	Orthopaedically Handicapped	Mentally Retarded	Others	Total
Rural	Government	996	533	6734	369	926	9558
	Non-Government	262	264	1582	67	141	2316
	Total	1258	797	8316	435	1067	11874
Urban	Government	604	904	3781	271	251	5811
	Non-Government	736	581	2293	572	1467	5649
	Total	1340	1485	6074	843	1718	11460
Total	Government	1600	1437	10515	640	1177	15369

	Non-Government	998	845	3875	639	1608	7965
	Total	2598	2282	14390	1279	2785	23334

Table 1.3 : Enrollment of Disabled Children in Schools Under Integrated Educational Programme (Stage : Secondary and Higher Secondary)

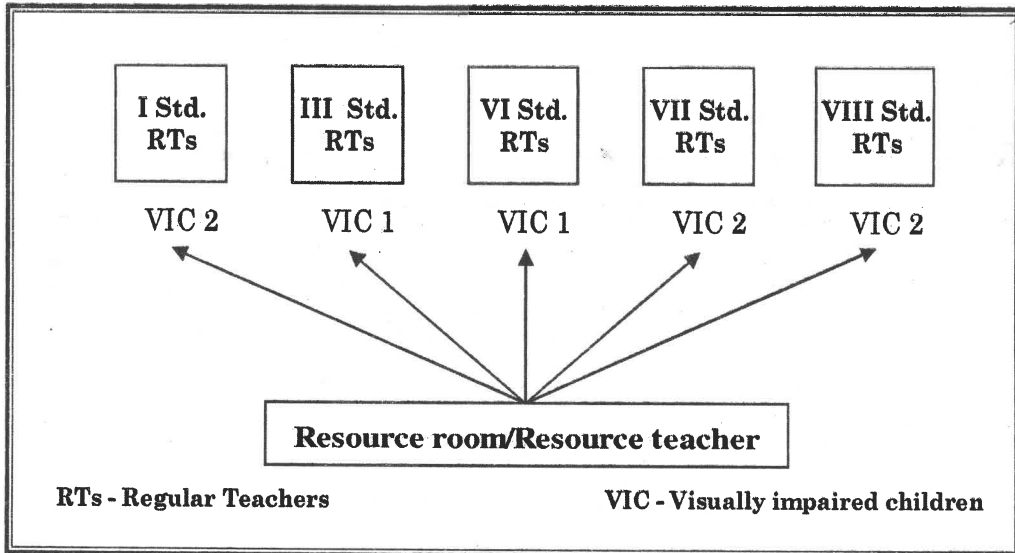
Area	Management	Type of Disability					
		Visually Impaired	Hearing Impaired	Orthopaedically Handicapped	Mentally Retarded	Others	Total
Rural	Government	290	200	5346	137	585	6558
	Non-Government	428	213	2710	65	1283	4699
	Total	718	413	8056	202	1868	11257
Urban	Government	582	473	3416	95	542	5108
	Non-Government	927	319	3144	376	571	5337
	Total	1509	792	6560	471	1113	10445
Total	Government	872	673	8762	232	1127	11666
	Non-Government	1355	532	5854	441	1854	10036
	Total	2227	1205	14616	673	2981	21702

1.11 MODELS OF INTEGRATED EDUCATION

1.11.1 Resource Model

This is an educational plan in which a visually impaired child is enrolled in a regular class. Within the building a special teacher called resource teacher is available to the child along with his regular teacher. The regular teacher assumes major responsibility for the visually impaired child's general programme. The resource teacher is responsible for instruction in special techniques or skills required of the visually impaired child. One full time resource teacher can manage 8-10 visually impaired children in the resource programme. As far as possible, the children should be distributed in different classes/sections, preferably not more than 2 in one class/section.

MODEL PROGRAMME

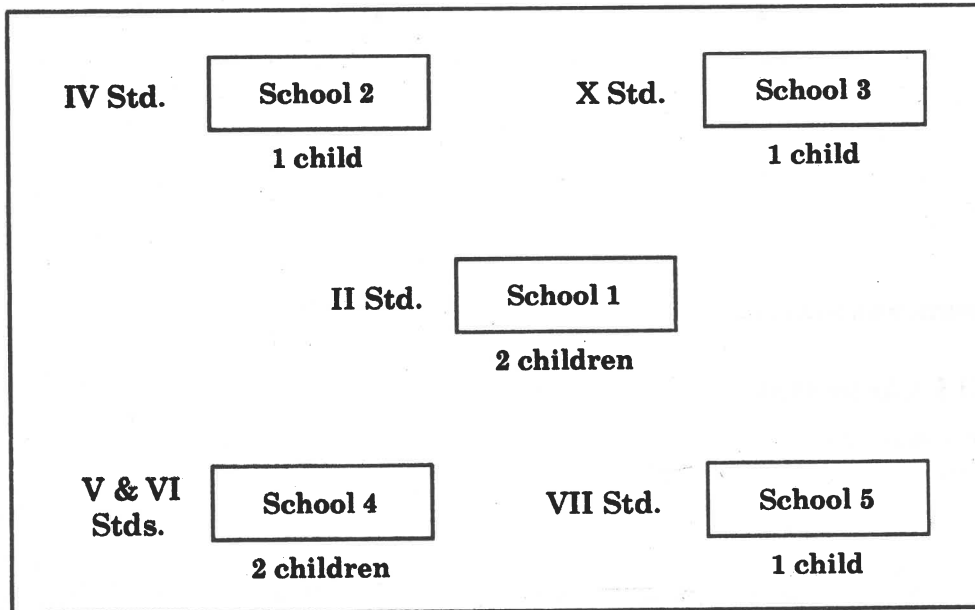


1.11.2 Itinerant Model

This is an educational plan in which the visually impaired child is enrolled in a regular class in his home school where his needs are met through the combined efforts of the **regular teacher** and the visiting **itinerant teacher** qualified to offer special service. The salient features of the itinerant programmes are as follows :

- The children in this programme are distributed in different schools.
- The itinerant teacher has to travel every day to reach the children.

- Each child will be visited by the teacher twice or thrice a week. However, visually impaired children of primary classes should be given frequent visits. In this case, limited number of visually impaired children should be enrolled at the primary level especially in the beginning stages of the itinerant programmed.



- Each school will not be having a resource room. For the itinerant teacher, a resource kit is advisable.
- The schools selected for the programme can be within a radius of 8 kms. However, this distance depends upon the topography of the locality.
- Depending upon the topography, the itinerant teacher should be provided with transportation arrangements - a bicycle or a motor cycle can be given.

1.11.3 Combined Plan

This is an education plan which combines several programme arrangements among teachers or within one teacher's activities. A district may have a combination in which three primary schools are under resource basis and four middle/secondary schools are on itinerant basis; or, one teacher may serve a small group of primary visually impaired children in a resource room setting in one school on a daily basis, mornings only, and serve several visually impaired children at the secondary level

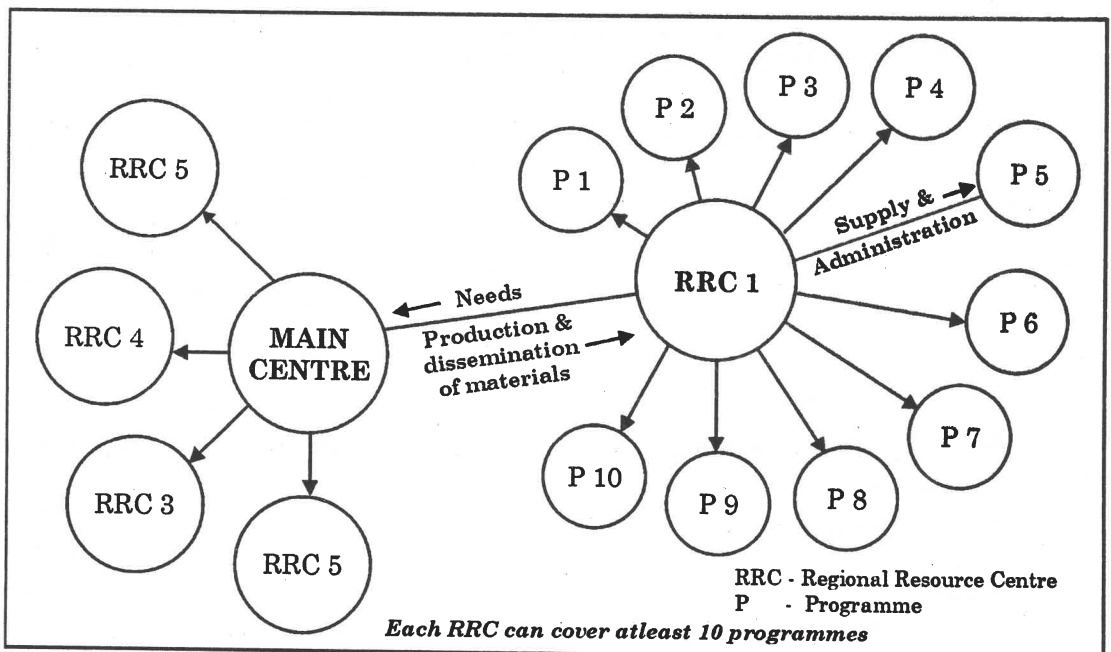
on an itinerant basis in the afternoons, using the resource room of the resource setting as his base. This is known as the **Resource-cum-Itinerant Programme**.

1.11.4 Cooperative Plan

This is an educational plan in which the visually impaired child is enrolled with a teacher of visually impaired children in a special room from which he goes to the regular classrooms for a portion of his day. In this plan, the special room becomes his "home room". The special teacher plans and is responsible for his educational programme in cooperation with regular classroom teachers. The cooperative plan may not be a full-fledged integrated education programme for visually impaired children. This programme is suitable for the late beginners and visually impaired children with additional disabilities.

1.11.5 Cluster Model

There are many hilly areas in the country which have less access to transportation. Reaching from one place to another itself may take days together due to its topography. In places like this, organisation of cluster models is the only viable alternative. This model envisages satellite centres in different regions and the service delivery system is decentralised. While the regional resource centres are responsible for the administration, the main centre can provide overall supervision. The model programme is given under :



1.12 EMERGING STRATEGIES

In the wake of universalisation, a specific approach will not serve the purpose. The approach to educate all visually impaired children should not be one; but there should be many. Designing programme strategies according to the topographical structures of the States of the country would be of paramount importance. India presents a variety of environments, varied resources and various cultures.

The following strategies of integrated education emerge as the *possible alternatives for specific* local situations.

1.12.1 Resource model for thickly populated areas

There are many places in India where visually impaired children are thickly populated. In such places resource programmes can be organised. Regular schools with boarding facilities also can opt for resource programmes.

1.12.2 Itinerant plan for scattered population

Eventhough itinerant programmes look ideal, the administrative aspects are complicated to some extent. In principle, this model is useful for places where visually impaired children are scattered provided the transport facilities are adequate to reach them. Unless definite administrative procedures regarding the planning of work, supervision, work description of the itinerant teachers, administrative hierarchies, etc., are formulated, the programmes may not prosper.

1.12.3 Dual Teaching Model

This is the model which can make the universalisation principle, a reality. Eventhough resource and itinerant programmes can reach a huge number of visually impaired children, there are numerous places where educational services for this population are not existing. For example, an isolated village which has one or two visually impaired children can very well go for the dual-teaching plan. This plan is successful only when the number of disabled children is very limited, not more than two for ideal programming. The regular teachers with the support instructional material and limited competency oriented training can look after visually impaired children in addition to their regular classroom responsibilities. A token incentive may be provided for their additional work with disabled children. A large number of teachers, at least one teacher per school have to be trained through crash programmes of two to three months duration to serve in the dual-teaching plan.

When such arrangements are made, any visually impaired child can avail the educational facility in the local school itself.

1.12.4 Cooperative plan for multi-impaired children

With the growth of integrated education, residential schools for visually impaired children have scope of developing themselves as schools for multi-impaired children. The number of residential schools are very less in number for the huge population of visually impaired children and therefore, all multi-impaired children cannot be benefited by the existing residential facilities. In localities where residential schools are not available, the multi-impaired children can be placed in a separate section of the regular school under the care of a specialist teacher. This can provide educational opportunities for the multi-impaired children too who are currently being deprived of such opportunities.

1.12.5 Partial Integrated Programmes

In India, it could be seen that some residential schools are promoting integration at the secondary level after the preparatory studies at the residential schools. It is understandable that children attend the normal schools for their education and stay in hostels of residential schools. When no alternative is viable and possible, this partial integration programme, at least, could be followed.

1.12.6. Cluster Model for Hilly Areas

There are many hilly areas in the country which have less access to transportation. Travel from one place to another itself may take days together due to its topography. In places like this, organisation of cluster models is the only viable alternative. This model envisages satellite centres in different regions and the service delivery system is decentralised. While the regional resource centres are responsible for the administration, the main centre can provide overall supervision

1.12.7 Multi-skilled Teacher Plan

This is a very critical issue under debate and controversy. While special education demands more skills in the specialist teacher in a particular disability, circumstances are demanding the multi-skilled teachers to serve all kinds of disabled children. The genuine reasons for this plan are as follows :

- *Providing specialist resource teachers for specific disabilities would be too costly for any country.*
- *In countries like India, it is easily found in a locality, a mixture of disabled children. In case, there are two visually impaired children, two children with hard of hearing and two other slow learners, in a particular school, the natural tendency for any administrator is to insist for a single teacher for all these disabilities. This multi-skilled teacher plan is going to be a reality in the long run for the mass implementation of integrated education programmes and therefore, the teachers should have open mind to admit changing approaches in their educational plans.*

1.13 KEY ISSUES FOR ADOPTION

Out of the above mentioned plans of integrated education, the two significant approaches which are likely to take the limelight in the future will be 'dual-teaching plan' and the 'multi-skilled teacher plan'. This transition has to be instilled in the existing teachers. In order to cope up with the changes, the existing specialist teachers with one specific kind of specialisation should be trained to have expertise in other disability areas also. Another important move is to create this awareness among regular teachers who are going to be the main target group in the task of universalisation of education. For facilitating this universalisation theme and make it a reality with the regular teachers, a large amount of instructional material and improvised aids would be necessary. A number of specialist resource teachers are needed to make these materials and prepare instructional manuals to help regular teachers.

The adoption of 'dual teaching plan' and 'multi-skilled teacher plan' does not envisage elimination of all other strategies. Organisations serving visually disabled children have their own choice in selecting a particular model for delivery of services. Therefore, the existing programmes are not going to suffer by the adoption of new strategies. With the success of integration in the past two decades, the country is ready for inclusive education. Inclusion aims at reinforcing better educational practices in the general school system so as to address the educational needs of all children.

1.14 ADVENT OF TECHNOLOGY

Another issue, the special education has to address in the future would be the application of technology. Teachers have to improve themselves in order to cope with the growth of technology. Eventhough the technological developments are not going to affect the education in the immediate future, the involvement of technology

is definite. Therefore, the special education should gradually prepare itself for admitting the innovations in science and technology. Special education is undergoing changes and we have to go along with them.

1.17 UNIT SUMMARY : POINTS TO REMEMBER

- *There is a whole range of services for visually impaired children ranging from home bound programmes to totally integrated approaches.*
- *The main objective of integration is to provide equal educational opportunities as well as equal educational experiences.*
- *Resource model is providing services to children in centrally located schools.*
- *Itinerant teacher plan adopts a visiting teacher service delivery system.*
- *Combined model is a combination of resource and itinerant service delivery approaches.*
- *Cluster model aims at providing services especially in hilly areas which have clusters of schools.*
- *The objectives of universalisation of education for disabled children can be achieved with the adoption of dual-teacher plan.*

1.16 CHECK YOUR PROGRESS

1. As per cascade system,
 - a) The more the handicap, integration is suggested.
 - b) The less the handicap, chances are better for mainstreaming.
 - c) The multi-handicapped are benefited by integrated resource model of services.
 - d) The service programme for each disability area is separate.
2. In homebound programmes, the main responsibility of the special teacher is to be
 - a) Assist the child's regular teacher in preparing instructional plans.
 - b) Tutor the child on full time basis
 - c) Take care of hospital needs only.
 - d) Teach daily living skills only.

3. Integrated education aims at
 - a) most restrictive environment
 - b) least restrictive environment
 - c) 24 hours custodial care
 - d) physical placement of disabled child in the regular class.
4. One resource teacher in an integrated set-up can normally handle,
 - a) 8-10 visually impaired children.
 - b) 2-4 visually impaired children only.
 - c) 15-20 visually disabled children.
 - d) none of the above.
5. In an itinerant plan, the specialist teacher
 - a) belongs to a particular school
 - b) visits different schools where visually impaired children are admitted
 - c) a para professional.
 - d) is a voluntary worker.
6. The regular teacher teaching minimum number of visually impaired children in the normal school comes under
 - a) cooperative plan
 - b) combined plan
 - c) dual-teaching plan
 - d) cluster model
7. The residential schools are meant for
 - a) very poor children
 - b) disabled children who are housed there
 - c) children whose residence are far away from the school
 - d) very bright children
8. For the success of an integrated education programme
 - a) services of the specialised teachers to serve as resource teachers is necessary
 - b) the majority of the students should be disabled
 - c) the total strength of the disabled children should not exceed eight
 - d) hostel accommodation is to be provided

9. The cluster model is suitable
 - a) where specialist teachers are not available
 - b) many schools are clustered around a town
 - c) for hilly areas which have less access to transportation
 - d) when the school has many vehicles
10. Dual teaching model will be successful
 - a) when there are two special teachers in the same school
 - b) when there are two schools in the same town
 - c) when the children with two types disabilities are admitted
 - d) when the number of disabled children is very limited

1.17 ASSIGNMENT/ACTIVITY

1. Prepare a five minutes speech to explain any one of the integrated education models to regular classroom teachers.
2. Write an assignment under the title - "Integrated Education is not envisaging the closing down of residential schools".
3. Write an assignment on the "services of the residential schools and the integrated schools are not competitive but are complementary to each other".
4. The teacher trainee can make a through needs assessment of his/her own area and suggest the educational plan suitable for those visually impaired children (the suggestions should be supported by valid reasons).
5. Interview a Resource teacher and an Itinerant teacher and enumerate the administrative difficulties encountered by them.

1.18 POINTS FOR DISCUSSION/CLARIFICATION

1.18.1 Points for Discussion

1.18.2 Points for Clarification

1.19 REFERENCES/FURTHER READINGS

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**BLOCK 4: IDENTIFICATION AND
ASSESSMENT OF VISUAL IMPAIRMENT**

UNIT 1: INTERPRETATION OF CLINICAL ASSESSMENT OF VISION

STRUCTURE

- 2.1 Introduction**
- 2.2 Objectives**
- 2.3 What is the Need for Inclusion in India?**
- 2.4 Is Inclusive Education Concept New in India?**
- 2.5 To what Extent the Education Documents in India Emphasis Inclusive Education?**
- 2.6 To what Extent is Inclusion Promoted through the PED Act 1995?**
- 2.7 What is the Role of RCI in Inclusion?**
- 2.8 What Types of Services are a Provided in Inclusive Education?**
 - 2.8.1 Essential Services*
 - 2.8.2 Support Services*
 - 2.8.3 Peripheral Services*
- 2.9 How is Inclusion Different from Integration?**
- 2.10 Responsibilities of Different Functionaries in Inclusive and Integrated Setting**
 - 2.10.1 Partnership work
 - 2.10.2 Teacher consultations
 - 2.10.3 Materials preparation
 - 2.10.4 Teaching Plus Curriculum
 - 2.10.5 Remedial teaching by Special Teacher
 - 2.10.6 Remedial teaching by Regular Teacher
 - 2.10.7 Responsibilities of the Head
- 2.11 What will be the Role of Special Schools when Inclusion Expands?**
- 2.12 What Factors are Vital for the Success of Inclusive Education?**
 - 2.12.1 Capacity building in general education
 - 2.12.2 Adopting need-based instructional strategies

2.13 Inclusion Becomes Realistic

2.13.1 Exchange of manpower and material resources

2.13.2 Enlisting parents' and community participation

2.13.3 Improving child-to-child learning

2.13.4 Making the programme for children with disabilities as an integral part of the general educational system :

2.14 India - Way Ahead In Inclusion

2.15 Unit Summary : Points To Remember

2.16 Check Your Progress

2.17 Assignment/Activity

2.18 Points for Discussion/Clarification

2.18.1 Points for Discussion

2.18.2 Points for Clarification

2.19 References/Further Readings

2.1 INTRODUCTION

The ideal system of inclusive education is that the general education itself should make education of disabled children as its integral part. This implies that the general classroom teachers should be equipped with skills to address the educational needs of children with disabilities with minimum or no assistance of specialist resource teachers. This calls for strengthening the preservice general teacher preparation programme with the inclusion of adequate component of the education of disabled children in the curriculum. Therefore, inclusive education means creating effective classrooms where the educational needs of all children are addressed irrespective of ability or disability. Most people feel that educating a child with disability in general school is inclusion but it can be treated as total inclusion only when the general classroom teachers take most of the responsibilities for the education of these children. If the disabled child's needs are taken care of only by a specialist teacher in the general school, it is not total inclusion. Composite Area Approach (CAA) was a methodology used in the Project Integrated Education for the Disabled (PIED) for providing education for all disabled children in an entire block. Mani (1994) in his evaluation report of the PIED indicates that CAA approach was nothing but the inclusive education strategy for facilitating education for all disabled children in India. In this unit, the various features of inclusive education and the responsibilities of different functionaries in this setting are described.

2.2 OBJECTIVES

After going through this unit, the student teachers are expected to

- Define inclusive education programme for visually impaired children in Indian context.
- Enumerate the responsibilities of special teachers in inclusive education programmes.
- Narrate the functions of regular classroom teachers in inclusive education setting.
- List the responsibilities of heads of institutes for the effective functioning of inclusive education.
- Describe the measures to be taken for the expansion of inclusive education for visually impaired children in India.

2.3 WHAT IS THE NEED FOR INCLUSION IN INDIA?

In addressing the issue of why inclusion, the reality in Indian context should be reviewed. Some of the important facts in the Indian scenario are as follows :

Education of visually impaired children in the country is more than 100 years old but the present service delivery systems have not covered even 5% of the clientele. This slow coverage is a serious concern especially when the general education system is aiming at education for all children. How to make education for all disabled children too possible when the present coverage is less than 5%? Inclusive education emerges out as a positive alternative to increase the coverage.

When more than 90% of disabled children are found in the rural areas, majority of special schools as well as integrated education programmes are located in the cities/urban areas. Therefore, the present coverage is benefiting urban based children only. Mani (1997) in his study on microscopic view of services for visually impaired children in the States of Andhra Pradesh, Maharashtra and Karnataka reveals that most of the existing institutes for visually impaired children are located near main railway lines or cities which have access to better transportation. Rural based children have to travel to the cities to avail education. Inclusive education tries to change this unrealistic scenario thereby disabled children get opportunities for education in their own locations.

As far as the standardised models of integration are concerned, one specialist teacher serves 8 to 10 disabled children of the same category. Resource model is a successful approach but it is not practical in rural areas. In most villages of the country, disabled children of different categories are present. Therefore, the disabled child has to depend on the general school for education. As a result, inclusion is inevitable for these children from rural areas.

The extent of disability in each category ranges from mild to severe and profound cases. The mild and moderate cases are more in number than the severe and profound cases. Due to the lack of sensitivity of the general education to the needs of disabled children, even the mild and moderate cases are treated as high risk children who may dropout from schools. This calls for the involvement of general education so that the children who are currently left out of schools or those who are at risk can be served.

2.4 IS INCLUSIVE EDUCATION CONCEPT NEW IN INDIA?

Inclusive education in special education may be a recent concept, but it is an accepted approach in general education in the Indian context. In a general classroom in India, children of different IQ (Intelligence Quotient) levels study together. A classroom teacher usually targets the average learner in his/her teaching, but is also exposed to situations of handling slow learners as well as academically advanced learners. Therefore, inclusive education on the basis of cognitive abilities is already in vogue in general education. General classroom teachers apply this method of teaching without labelling it as 'inclusive education'. Only children at the two extremes of cognitive abilities are classified as 'mentally retarded' and 'gifted children'. Groups of 'slow learners' but not mentally retarded, and 'academically advanced learners' but not gifted children are certainly different from 'average learners' but they are taught by general classroom teachers only. Therefore, inclusion in this category is already taking place. With this philosophic background, inclusion of sensorily impaired children such as the blind and deaf can also be made in the general school system. The major similarity between non-disabled children and disabled children such as visually impaired children and hearing impaired children is their cognitive abilities. This similarity is a very supportive factor for these children to study along with non-disabled children in inclusive education. With the learning of 'plus curriculum' to cope with the particular disability, these children can also compete with non-disabled children.

2.5 TO WHAT EXTENT THE EDUCATION DOCUMENTS IN INDIA EMPHASIS INCLUSIVE EDUCATION?

Introduction of education of children with disabilities in India can be traced back to the dawn of 19th century. Special school services in the country were initiated mostly by foreign missionaries. The concept of inclusion has been finding its reference in many national education documents in the post-independent period. The article 45 of the Constitution of India is assuring better services to persons with disabilities. The Education Commission Report (1964-66) recommended placement of the disabled child, 'as far as possible' in ordinary schools. The National Policy on Education, 1986 (NPE, 1986) included a full chapter on 'Education of the Handicapped' and formulated guidelines for action. The NPE strongly emphasised the need for the expansion of integrated education programmes.

The centrally sponsored scheme of integrated education for disabled children (IEDC) which was introduced in 1974 got a fillip as a result of the NPE. Therefore, efforts for inclusion were persistently made. Though these national documents emphasised the need for services for persons with disabilities, the actual implementation of activities for the disabled was not satisfactory in the past.

2.6 TO WHAT EXTENT IS INCLUSION PROMOTED THROUGH THE PWD ACT 1995?

The issue of the services for children with disabilities is treated as human resources development with the introduction of the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act 1995. As a result of this Act, service for children with disabilities is no more considered a welfare activity; rather it is treated as the right of the disabled child.

The main purpose of the PWD Act is to define responsibilities of the central government and state governments with regard to services for disabled persons. The Act also ensures full life to disabled individuals so as to make full contribution in accordance with their disability conditions. Blindness, Low Vision, Leprosy-Cured, Hearing Impairment, Locomotor Disability, Mental Illness, and Mental Retardation are the seven disability conditions covered under the Act. As per the Act, the central and state governments shall ensure that every child with disability has access to free and adequate education till the age of 18. It also indicates that integrated education and special schools will have to be setup to meet the educational needs of children with disabilities. Introduction of non-formal education, functional literacy schemes, provision of aids and appliances, education through open schools and universities, etc., are also stressed in the Act. It also indicates that the Government should create adequate teacher training facilities to prepare teachers for special and integrated schools. Development of research on assistive devices is also envisaged in the Act. Many schemes are being evolved at the national and state levels to implement this Act. Therefore, the PWD Act 1995 is strongly encouraging inclusive education concepts wherever possible.

2.7 WHAT IS THE ROLE OF RCI IN INCLUSION?

In 1992, the Rehabilitation Council of India (RCI) Act was passed in the Parliament. The Act was created by the then Ministry of Welfare (presently known

as the Ministry of Social Justice and Empowerment) to regulate the manpower development programmes in the field of education of children with special needs. Though RCI does not deal directly with the promotion of services at the school level, it has projected the need for massive manpower for facilitating education for all disabled children. The major responsibilities of the RCI are:

- *To regulate the training policies and programmes in the field of rehabilitation of people with disabilities.*
- *To bring about standardization of training courses for rehabilitation professionals/ personnel dealing with people with disabilities.*
- *To prescribe minimum standards of education and training institutions in the field of rehabilitation uniformly throughout the country.*
- *To regulate these standards in all training institutions uniformly throughout the country.*
- *To recognise institutions/universities running degree/diploma/certificate courses in the field of rehabilitation of the disabled and to withdraw recognition, wherever facilities are not satisfactory.*
- *To recognise foreign degree/diploma/certificate in the field of rehabilitation awarded by Universities/Institutions on reciprocal basis.*
- *To maintain a Central Rehabilitation Register of persons possessing the recognised rehabilitation qualification.*
- *To collect information on regular basis, on education and training in the field of rehabilitation of people with disabilities from Institutions in India and abroad.*
- *To encourage continuing rehabilitation education by way of collaboration with organisations working in the field of rehabilitation of persons with disabilities.*

The RCI has so far developed more than 50 courses and recognised more than 100 institutions to offer special education and rehabilitation manpower development programmes in India. Institutes working in the area of disability are encouraged to develop manpower development programmes in specific categories, and recognition to the institutions is accorded when they comply with the norms prescribed by the RCI. The enactment of RCI Act 1992 goes a long way in accrediting special education manpower development programmes in the country and bringing professionalism in serving persons with disabilities. The RCI's manpower projection is made with the purpose of facilitating education to all disabled children. Therefore, the inclusive education policy is supported by the RCI too.

2.8 WHAT TYPES OF SERVICES ARE PROVIDED IN INCLUSIVE EDUCATION?

In inclusive education programmes in India, three types of services are directly or indirectly required by the disabled child.

2.8.1 Essential Services

The most essential services in an ideal inclusive setting are to be provided by the general classroom teachers, non-disabled children and parents as well. The concept of child-to-child learning, cooperative learning approaches, etc., have demonstrated that true learning can happen through interaction between the disabled child and all entities in the general school.

A sample list of essential services is as follows :

- *Planning instructional strategies for children with disabilities.*
- *Teaching content to them*
- *Maintaining attendance for curricular and plus curricular activities.*
- *General discipline in the classroom*
- *Checking home assignments*
- *Conducting examinations*
- *Evaluation*
- *Facilitating child-to-child learning*
- *Taking progress of the child*
- *Consulting with special teachers about the plus-curriculum needs of disabled children.*
- *Interacting with parents of disabled children.*

In an ideal inclusive setting, the general classroom teachers provide these services to disabled children. The terminology 'essential services' is used here because the disabled child cannot function well in inclusive setting without these vital services. When these vital services are provided by general classroom teachers, the child would be able to get education in the local school itself even if there is no specialist teacher to attend to him/her.

2.8.2 Support Services

The second type of service required in inclusion is the support service given by the fully qualified special teachers. These teachers provide necessary material support and occasional academic support to children with disabilities and also provide the needed consultancy to regular classroom teachers. **The support materials are compulsory but providing academic support by specialist teacher need not be made mandatory.** The support services include the following :

- *Identifying children with disabilities in the community*
- *Teaching skills peculiar to disability wherever necessary*
- *Assisting general classroom teachers if needed*
- *Arranging assessment for children with disabilities*
- *Arranging learning materials for children with disabilities*
- *Arranging aids and appliances*
- *Monitoring the progress of the child through classroom teachers*

2.8.3 Peripheral Services

The third type of services are the one-time peripheral services which are adhoc in nature. Agencies such as Hospitals, Rehabilitation Centers, and Non-governmental Organizations etc., can provide one-time services such as identification, assessment, counselling, etc.

The types of peripheral services are as follows :

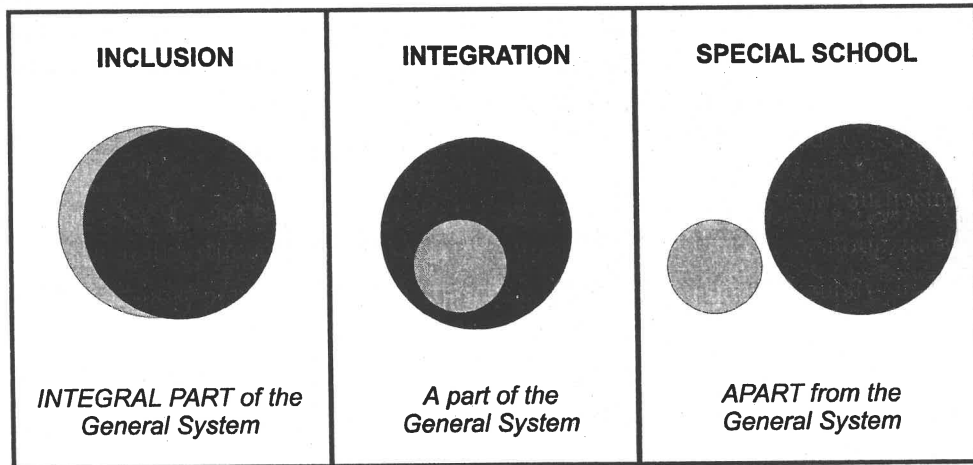
- *Issuing medical reports*
- *Providing social benefits*
- *Arranging sponsorship to educational activities*
- *Counselling to parents*

These peripheral services are to be arranged by the heads of institutes of inclusive education programmes.

2.9 HOW IS INCLUSION DIFFERENT FROM INTEGRATION?

The general educational system is acknowledging the fact that education of all types of children including that of children with disabilities should come under the mainstream. In special school concept, the special education component is APART from the general education system, whereas in integrated approach, it is A PART of

the general education. Inclusive education goes one step further. In this approach, the special education is an INTEGRAL PART of the general education system.



Therefore, 'Special School Concept' to 'Inclusive Education' can be treated as an evolutionary process in services for children with disabilities.

2.10 RESPONSIBILITIES OF DIFFERENT FUNCTIONARIES IN INCLUSIVE AND INTEGRATED SETTING

Though the ideal system of inclusive education will depend on the general teacher, it would take another decade or two for the general education system to fully take responsibilities for education of disabled children. Therefore, special teachers are needed at present to provide support to general classroom teachers in making inclusive education work. In the light of this approach, the responsibilities of different functionaries in inclusive education may be, enumerated as follows :

2.10.1 Partnership work

Inclusive education programme is a partnership work between the regular and the special teacher. Therefore, the question "who is responsible for what?" needs to be answered. The regular teacher is mostly responsible for teaching content areas whereas the special teacher is responsible for developing plus curricular skills.

2.10.2 Teacher consultations

Teacher consultations are very essential in the inclusive education programme for its smooth running. Periodical discussions between the regular teacher and the special teacher may include management of visually impaired child in the regular

classroom, modifications needed in the content for facilitating the better learning of the child, nature of adjustment and adapted instructional materials, types of materials and teaching aids that are to be prepared as support material for the visually impaired child, etc. During these consultations, the day-to-day difficulties could be discussed for designing the most appropriate instructional strategy for the child. These consultations should be more frequent especially during the primary level in which more modifications and adaptations in the instruction are likely to happen in the content areas.

2.10.3 Materials preparation

Provision of the right materials in right time in the right form is one of the contributing factors for the success of the inclusive education programme. Considerable amount of time of the special teacher during his schedule has to be devoted to the preparation/procurement of teaching-learning materials in braille. But due to the cyclic nature of text revision and constant need of materials that are peculiar or special for a particular setting, the special teacher may find it difficult to have all braille materials as his primary mode of learning. Under these circumstances, the special teacher may have to set priority areas for the production of materials in braille. They may be as follows :

- + materials that are necessary
- + materials that are useful *and*
- + materials which are supplementary

The special teacher can also make arrangements for auxiliary services such as reader service, recording service (if necessary) etc., with the help of volunteers in order to help the children through non-tangible materials.

2.10.4 Teaching Plus Curriculum

Plus Curriculum doesn't mean 'extra' but 'compensatory' for the visually impaired child. Plus curriculum means the skills that are peculiar to blindness such as braille reading, braille writing, orientation and mobility, daily living skills, sensory training, use of mathematical devices such as abacus, taylor frame etc., Developing efficiency in curricular skills itself prepares the child for his effective participation in the regular classroom. The efficiency of the child in the plus curriculum builds enormous confidence in the child and help to develop a positive self-image. The acquisition of these plus curricular skills as far as possible may take place at the primary level itself.

2.10.5 Remedial teaching by Special Teacher

Remedial teaching is not necessary for all visually impaired children. Some children may take longer time for assimilating an idea and the special teacher can instruct such children on one-to-one basis and assist. Most of the remedial teaching done by the special teachers should be pertaining to the concept development.

In addition to these responsibilities, the special teacher should involve himself in the following service activities formally or informally.

- Constant guidance and counselling for the visually impaired children, parents and the community will be necessary and the special teacher is expected to provide these services too.
- During the examination time, the special teacher has to transcribe the braille answer books of the visually impaired children into print so that the regular teacher can correct and award marks.
- By maintaining the cumulative records and anecdotal records the special teacher is able to assess the periodical performance of the child.

2.10.6. Remedial teaching by the Regular Teacher

Like sighted children, visually impaired children too might be having difficulties in understanding the content area taught by the regular teacher in the classroom. In such cases, the remedial teaching can be arranged by the regular teacher himself.

Since the special teacher is not supposed to be a specialist in the content area, the regular teacher should bear this responsibility failing which the sufferer will be the disabled child.

2.10.7 Responsibilities of the Head

The head of the institution plays a vital role in the success of the inclusive and integrated education programmes. Following are some of his major responsibilities of the heads of such programmes.

- The head of institution should arrange an orientation programme for the regular teachers with the help of specialists and professionals so that the right type of awareness could be given about integrated and inclusive education programme. This can certainly overcome the apprehensions of the regular teachers to have a visually impaired child in the regular classroom.

- The head of the institution should be aware of the administration of the integrated and inclusive programme such as special teacher's work-load, teacher-pupil ratio, examination procedures for visually impaired children etc.,

In case of visually impaired children staying in the hostels along with the sighted children, the hostel wardens have to be oriented to the behaviour pattern of visually impaired children. The visually impaired children in the hostel should be allowed to mingle with their sighted counterparts. As far as possible, visually impaired children should be encouraged to stay with parents and attend local schools.

The orientation and mobility instructor for teaching mobility skills, psychologists for assessment, a physiotherapist for assessing the physical deformity, if any, can also be involved in the programme. However, these are adhoc services and not recurring in nature. In brief, inclusive education is a joint venture of many with various delineated responsibilities.

2.11 WHAT WILL BE THE ROLE OF SPECIAL SCHOOLS WHEN INCLUSION EXPANDS?

Special school concept is still an accepted model of education for children with disabilities in India and it will continue to be so in the years to come. Presently there are about 3000 special schools addressing persons with different disabilities. It is estimated that there are 900 schools for hearing impaired, 400 schools for visually impaired, 1000 for mentally retarded and 700 for physically disabled children (UNISED Report, 1999). The exact number of special schools is not fully known as there are many NGOs who run these schools and are not yet included in the lists available. With the growth of inclusive education, the responsibilities of special schools are likely to change in the future. Some of the desired changes are :

1. *They are expected to become resource centres to facilitate inclusive education.*
2. *They are in a better position to serve children with multiple disabilities. In the growing concept of inclusion the special schools have a vital role to play. Though inclusion is open to everyone, experiences in India reveal that some children may not cope in the inclusive setting. Children with additional disabilities, orphans, etc., need some alternative settings and special schools may equip themselves to serve these children.*

2.12 WHAT FACTORS ARE VITAL FOR THE SUCCESS OF INCLUSIVE EDUCATION?

2.12.1 Capacity building in general education

For the effective implementation of inclusive education for all types of disabled children, general classroom teachers need training on understanding the educational needs of these children. It is ideal to teach about special needs children in the pre-service teacher preparation course itself. The curriculum framework of the National Council for Teacher Education (1998) indicates that the pre-service teacher preparation course should include content on special needs children. Teachers, thus trained, will be in a position to take care of the educational needs of children special needs too in general classrooms if appropriate disability specific assistive devices are made available. The work of the general classroom teachers may be occasionally assisted by specialist teachers.

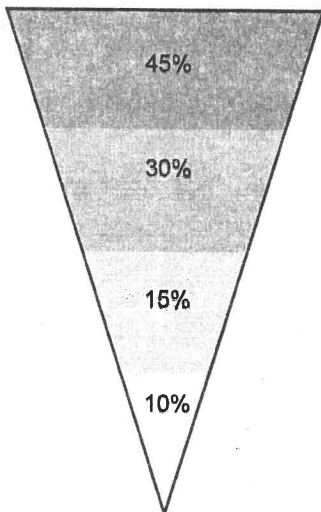
The existing teachers who have no exposure to education of children with special needs can be given inservice training for a period of 5-10 days to learn the following areas.

1. *Definitions - Disabilities*
2. *Psychological implications of disabilities*
3. *Learning behaviours of children with disabilities*
4. *Plus curricular activities*
5. *Assistive devices*
6. *Preparation of teaching aids and learning materials*
7. *Adaptation of existing devices and instructional materials for children with disabilities*
8. *Teaching methods*
9. *Evaluation procedures*

The inservice courses may be offered to at least one teacher to begin with from each school and eventually cover all general classroom teachers in a block. This initial investment on capacity building would be vital for making a strong base for inclusive education.

2.12.2 Adopting need-based instructional strategies

Inclusive education does not mean just enrolling a child with disability in the regular classroom. The child should be given help to cope in the regular classwork. Therefore, child centred approach is needed. The ideal inclusive setting would enrol disabled children of all categories and also of different levels of disability. All of them may not require the same kind of assistance. Some may require guidance rarely whereas some others need continuous help. The children in inclusive education may be classified as follows :



from the special teachers.

- *Children with mild disabilities who can be handled by general classroom teachers with minimal training.*
- *Children with mild/moderate disabilities who need counselling services.*
- *Children with moderate/severe disabilities who need resource assistance including corrective aids and periodical help in academic areas.*
- *Children with severe disabilities who require direct attention/preparatory assistance*

Therefore, need-based instructional strategies are imminent in inclusive setting. The children in category D may require the assistance of special teacher to a large extent at the beginning to learn plus curriculum skills. Therefore, the extent of assistance should be decided on the basis of the instructional needs of the child. With the proper understanding of need based instructional strategies, inclusive education will be successful.

2.13 INCLUSION BECOMES REALISTIC

2.12.2 Exchange of manpower and material resources

The success of inclusive education depends on how effectively all departments concerned can be involved in the total development of the disabled child. Inclusive

education is a community involved programme and therefore, its quality depends upon the extent of interaction between the different functionaries of community development. The District Rehabilitation Centres, the ICDS workers, local hospitals, braille presses, special schools, etc., are to be closely involved in the programme implementation.

2.12.3 Enlisting parents' and community participation

Ideal inclusive education programmes strongly insist the importance of parental involvement in education. Parent-interact groups are important for augmenting the quality of inclusive education. The parental involvement not only enriches inclusion but also brings attitudinal changes about disability in the community.

2.12.4 Improving child-to-child learning

Though general classroom teachers and special teachers are available for providing services to children with disabilities in any locality, the influences of non-disabled children on the educational achievement of disabled children and the vice-versa are noteworthy. In fact, the non-disabled children are the best teachers for enabling disabled children to develop proper concepts. The child-to-child learning also becomes relevant in India where the size of the classroom is fairly large. Inclusive settings should tap the child-to-child learning strategy effectively to improve the achievement of all children including that of disabled children.

2.12.5 Making the programme for children with disabilities as an integral part of the general educational system

As stated earlier, the ideal inclusive education in India would be possible only when all general education teachers are capable of serving children with special needs. Till then, presence of a specialist teacher for a cluster of schools is inevitable. If inclusion is to be successful, the specialist teacher should also be treated as a part and parcel of the general system. Often times, specialist resource teachers in integrated programmes are treated as additional members in the school and therefore, the assistance given by them to disabled children is treated as an add-on component to general education. This scenario should change. The specialist teacher should be treated as a teacher first and specialist next. Until and unless this

happens, total inclusion may not happen. Therefore, inclusion should take place at all levels.

2.13.5 India - Way ahead in Inclusion

India can be proud that education of special needs children is finding a fitting place in the general education curriculum. The RCI prescribed curriculum recommends that a teacher should be trained to get into general education as well as special education. This implies that there would be plenty of teachers with special education background working as general teachers which is most conducive for the promotion of inclusive education. The concept of effective schools will flourish only when the general educators understand the individual learning requirements of special needs children. India has demonstrated that the inclusive curricular development is possible and the work should reach the different frontiers of the globe, especially to those developing countries which are looking for successful models.

In many developing countries, a comprehensive policy on disability issues is missing. While many developed countries talk about human rights for persons with disabilities, many developing nations are concerned with the survival of them as their issues are not given priorities in the political agenda. The Persons with Disabilities Act 1995 may look trivial for a practitioner in India but it is certainly a landmark law aimed at the inclusion of persons with disabilities in the mainstream. As practices are the effects of sound policies, India's recognition and commitment for persons with disabilities are a priority as a result of the enactment of this Act. The mechanism for implementing the Act has also been thoroughly engineered and persons with disabilities in India are treated as human resources. In short, in the policy front, India has demonstrated its commitment. The RCI Act too is another impressive concept in maintaining quality in special education manpower development. Many countries are evincing interest in the process of enactment of these landmark Acts and it is hoped that the rich policy experiences of India would be emulated by other countries of the world.

In terms of practices too, India's achievements are breath taking. It is true that the coverage of children with disabilities in educational programmes in India is not more than 5%. However, there is a danger to compare statistics with other countries

using the percentage of coverage as the criterion. In fact, the population of disabled persons in India is more than the total population of many small countries. In many countries, only a few thousands of children with disabilities are studying in inclusive setting but the figure of about 80000 children with disabilities in India integrated in over 17000 schools is mind boggling to many. In addition to this, a noteworthy aspect of inclusion in India is the variety it presents in the models of inclusive practices. For some countries, a self-contained classroom in the general school means inclusion; for some others, a resource model with full time support of a specialist is inclusion, and still for some other countries, a visiting teacher concept is inclusion. In many developing countries, integration is a recent phenomenon, an effect initiated in the last one decade, that too with the initiative of international bodies but the origin of inclusion in India can be traced back to the last century. Voluntary efforts for integration are evident all over the country in the past three decades. All reported practices of inclusive education are working well in India. The resource models of integration are found in large members in South India, itinerant models are found in most of the integrated programmes in Maharashtra, Gujarat and Rajasthan, the dual-teaching approaches are practised in various States where the UNICEF assisted Project Integrated Education for the Disabled was implemented and cluster models are followed in hilly regions of the countries where transportation is difficult. Even special schools are sending special needs children to nearby general schools for partial inclusion. Therefore, inclusive models are plenty. In addition to these, some organisations supported by the CBM International have initiated bold attempts to provide inclusive education to children with special needs through grassroot level community based rehabilitation workers. The use of grassroot level workers becomes vital in rural areas, where difficulties are experienced to implement other forms of inclusion. As India is largely represented by rural areas, trained para teachers and field workers need to support general classroom teachers to practice inclusion.

In short, all practices of inclusion are in vogue in India and we have the expertise to help other developing nations to develop inclusive policies and practices. The problem of India in inclusion is not in policies and models but in expansion. Inclusion should become a mass movement to include all children with disabilities who are currently excluded. Time is ripe for India to concentrate on the mass

movement instead of looking for successful practices of the west or seeking technical know how to spread inclusion. There is no dearth of technical expertise in India for demonstrating inclusive practices. The need of the hour is to expand inclusion by making it a part of the national agenda. There are initiatives taken by the Government to include special categories such as scheduled castes, tribes, etc in education and welfare programmes. This initiative is successful because it is a national movement. Similar initiative is needed in the disability sector too. If inclusion becomes a national movement, all children with special needs will reap the benefits in another decade or two. As proclaimed by UN-ESCAP in 1999, let the literacy rate among the children with disability be at least on par with the literacy rate of non-disabled children.

For many countries, inclusion of various ethnic groups, and minorities is considered as a difficult problem than the inclusion of persons with disabilities. When such is the task, inclusion of persons with disability from different ethnic and minority groups is still a complicated issue. India remains as an inclusive society for centuries. 'Unity in diversity' is the strength of the country. Before the starting of special schools by foreign missionaries towards the end of 19th century, children with disabilities were in the general school setting only. It is possible that the disabled children in those days did not get proper education because of the lack of skills of the general education teachers about special education, but physical inclusion existed to a large extent in the society. Even today, the rural communities do not exclude disabled persons. In the existing schools too, children of different ability levels are studying. The mild and moderate disabled children are already absorbed in the school system and the general teachers are managing despite constraints. The purpose of sensitisation to the general classroom teachers is for developing the capacity of the teachers to handle these children effectively so that they do not become dropouts because of their disabilities. Lack of quality education may be a problem of the entire system of education but disabled children find inclusion process natural in the present social and educational setting. Disabled children may not come to school, due to lack of awareness, but not certainly due to exclusion. Therefore, the 'culture' issue which is being projected as one of the barriers of inclusion in many countries is not a major barrier as far as India is concerned. India is an inclusive society and it would continue to be so in the years to come.

In short, there is no barrier of policy for including special needs children in India. Lack of knowledge about practices too is not a barrier. The culture issue is not an hindrance for inclusion of all children in India. Therefore, India is far ahead of the countries of the world in the process of inclusive education. The problems encountered by the western world to facilitate inclusion are different from that of

India. When the society in India is inclusive, education which is a small component of the society would also be inclusive. Therefore, there is no attitude barrier in the minds of people for the promotion of inclusion. The problem is with regard to expansion.

2.15 UNIT SUMMARY : POINTS TO REMEMBER :

- Inclusive education approach aims at creating effective schools where the educational needs of disabled children are addressed.
- In inclusive education, the essential services are provided by general classroom teachers whereas the specialists provide support services.
- The success of the visually impaired child in inclusive setting depends on his/her mastery over plus curricular skills.
- Inclusive education works better when there is a combination of single category and multi-category specialists.
- To make inclusive education a reality, State Governments should assume responsibility for the education of children with disabilities.
- For the success of Inclusive Education support materials are compulsory.
- Inclusive education may work out well where integrated education has not given the desired result.
- In inclusive education the responsibility of the regular teacher increases.
- PWD Act favours inclusion.
- Inclusive education concept already in practice in case of learning disabled children.

2.16 CHECK YOUR PROGRESS

2. The following are major responsibilities of the specialist resource teacher in inclusive education programmes.
 - a)
 - b)
 - c)
 - d)
3. The regular teacher of the inclusive education programme has the following responsibilities.
 - a)
 - b)
 - c)

- d)
4. Remedial teaching on the content will be given by the.....teacher.
 5. Preparation of braille materials can have the priority areas as follows :
 - a)
 - b)
 - c)
 6. Apart from the resource and regular teachers, the following personnel can be involved in the integrated education programme.
 - a)
 - b)
 - c)
 - d)
 - e)
 - e)
 - f)
 7. Inclusive education can be expand through the following strategies :
 8. The new name for the Ministry of Welfare is.....
 9. The essential services refined for an ideal inclusive setting are
 - a)
 - b)
 - c)
 - d)
 10. Plus curricular means
 - a) extra-curricular activities
 - b) compensatory curriculum for the disabled child
 - c) training given to week students after collecting an additional fee
 - d) curriculum of higher secondary school
 11. Inclusive education can be successfully implemented
 - a) very rich countries
 - b) developing countries
 - c) small countries
 - d) in any country

2.17 ASSIGNMENT/ACTIVITY

6. Prepare a list of the frequently answered questions by general teachers in educating a visually impaired children in the integrated and inclusive education programmes. (The list can be prepared through an interview) and prepare the suitable answers for those questions.
7. Make a survey of how much time the special teachers of the primary and secondary inclusive education programmes spend in a week for preparing braille materials.
8. Observe how inclusive education programmes for visually impaired children are implemented.
9. Discuss the social factors which contribute to the development of inclusive education in India.
10. Discuss how inclusion can expand in the Indian context.

2.18 POINTS FOR DISCUSSION/CLARIFICATION

2.18.1 Points for Discussion

2.18.2 Points for Clarification

2.19 REFERENCES/FURTHER REDINGS

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UNIT 2: FUNCTIONAL ASSESSMENT OF VISION: CONCEPT, NEED AND METHODS

STRUCTURE

- 1.1 Introduction**
- 1.2 Objectives**
- 1.3 Defining Curriculum**
 - 1.3.1 What are the parameters of good curriculum?
 - 1.3.2 What are the functions of curriculum?
- 1.4 Need for Curriculum Adaptation for Visually Impaired Children**
 - 1.4.1 Curriculum for Integrated Schools
- 1.5 “Direct” and “Indirect” Services – Need and Nature**
 - 1.5.1 Direct services at Primary Level
 - 1.5.2 Indirect services at Secondary Level
- 1.6 Material Development and Presentation**
 - 1.6.1 Right Material
 - 1.6.2 Right Method
 - 1.6.3 Right time
- 1.7 Principles of Instructional Methods**
 - Duplicate
 - Modify
 - Substitute
 - Omit
- 1.8 Unit Summary: Things to Remember**
- 1.9 Check Your Progress**
- 1.10 Assignment / Activity**
- 1.11 Points for Discussion / Clarification**
 - 1.11.1 Points for Discussion
 - 1.11.2 Points for Clarification
- 1.12 References / Further Readings**

1.1 INTRODUCTION

The word 'adaptation' refers to the creation of a process suitable for a new use, need, situation etc. In the context of visually impaired children, adaptation refers to the adjustments in the general curriculum meant for sighted children in regular schools. It bridges the gap between sighted and visually impaired children in the process of attaining learning experiences and opportunities on par with sighted children. The emphasis of this approach is the analysis of the climacterics of visually impaired children in understanding the concepts, acquiring skills and obtaining lively experiences, which are not very different from their fellow beings. The very aim is not to change the set up already in existence, but to plan as how best the available sources through our methods, instructions and material management can be utilised for visually impaired children without changing the normal atmosphere. To quote the Encyclopaedia of Educational Research (1960), "From the very beginning of educational facilities for blind children, it was an accepted proposition that the subject matter taught to blind children should be the same as that included in the curriculum for seeing children with as few omissions and modifications as possible."

In this unit, what is curricular adaptation? what are the direct and indirect services offered for curricular transaction? What are the principles involved in the instructional methods for the curriculum of visually impaired children? Etc., are discussed.

1.2 OBJECTIVES

After going through the unit you will be able to:

- state the meaning of curriculum
- explain the aspects of good curriculum
- describe the functions of curriculum
- identify the need for curriculum adaptation for visually impaired children
- explain the curriculum for integrated schools
- describe the need and practice of "Direct" and "Indirect" services
- narrate the material development and presentation
- apply principles of instructional methods in adaptation of curriculum.

1.3 DEFINING CURRICULUM

According to the Secondary Education Commission (1952-53), "Curriculum does not mean only the academic subjects traditionally taught in the school but it includes the totality of experience that a pupil receives through the manifold activities that go on in the school, in the classroom, library, laboratory, workshop, playgrounds and in the numerous informal activities and contacts between teachers and pupils.

David Pratt (1980) says that a curriculum is an organised set of formal educational and/or training intentions.

1.3.1 What are the parameters of good curriculum?

A good curriculum should have the following aspects:

- i) Curriculum exists only in the experiences of the children.
- ii) Curriculum includes more than the content to be learnt. Content does not constitute the curriculum until it becomes a part of the child's total experiences.
- iii) The school curriculum is an enterprise in guiding living.
- iv) The curriculum is a specialised learning environment deliberately arranged to direct the interests and abilities of children towards effective participation in the life of the community and the nation.

1.3.2 What are the functions of Curriculum?

The functions of the school curriculum are determined by two factors:

1. Taking into account the varying capacities and the endless potentialities for good or evil in the life of the community and the nation (Social goals).
2. Problems encountered by the individual for living in society (Individual goals).

The curriculum is the instrument through which these two factors are brought together; it consists of experience through which children achieve self-realisation and at the same time learn to contribute to the building of better communities and a better nation.

1.4. NEED FOR CURRICULUM ADAPTATION FOR VISUALLY IMPAIRED CHILDREN

The whole gamut of the curriculum for children in school and community is centered around two significant aspects, "THE OPPORTUNITY" and "THE EXPERIENCE". Often children are provided with opportunities; but the mere provision of opportunities does not mean the acquisition of experience. The understanding of the self and the world is not a 'whole' when experience is denied.

Sighted children have an edge over visually impaired children in the acquisition of knowledge through experience. The vision, which brings an enormous amount of information in just a glimpse, enables sighted children to have rich experiences in a "NATURAL WAY". They learn the experience as a "WHOLE". But the learning of visually impaired children is not "WHOLE" but in "PIECES" of information. Thus there is a significant difference between the two groups, the sighted children having "NATURAL LEARNING" and the visually impaired children having "MEDIATED LEARNING" (Mani, M.N.G., 1987). There is, therefore, a need for adaptation in curriculum for visually impaired children.

1.4.1 Curriculum for Integrated Schools

A visually impaired child in the regular class is one among many children in that class. The curriculum meant for visually impaired children in integrated schools should be more LIKE than UNLIKE that of sighted children. Most information is received by the visually impaired child through "TOUCH" and "HEARING". Hence these experiences must be planned to facilitate the acquisition of at least the near-normal experience acquired by other children through "VISION". *Hence, there is no need for a special curriculum for visually impaired children who are in the general classroom but special approaches based on multi-sensory experiences are needed.* To learn the general curriculum, the visually impaired child should possess some skills, which are peculiar to blindness and those skills are attained through "PLUS CURRICULUM".

1.5 DIRECT AND INDIRECT SERVICES – NEED AND NATURE

The classroom management of the integrated class involves both resource teacher and the regular teacher. By organisation, the resource teacher does not become a teacher within the context of the regular class activity; he teaches independently before or after the regular class. His responsibility is to help the regular teacher to

plan an activity which is mutual benefit and perfectly appropriate for visually impaired children. Hence, within this framework, visually impaired children are benefited by the services of both the resource and the regular teacher. The education imparted by these two teachers may overlap. But the main areas of these two types of teachers in teaching the visually impaired child in the integrated framework may be given as.

1. Development of necessary skills required by the visually impaired child – resource teacher.
2. Teaching of content as for sighted children – regular teacher.

By “direct” and “indirect” services in an integrated education programme, we mean the nature of services offered by the specialist resource teacher. On some occasions, the resource teacher provides instruction to the visually impaired child on an *individual basis*. This type of assistance is known as “direct service”. On other occasions, the child may not expect the teacher to pay him individual attention, but the mere provision of support would help the child to function normally in the regular classroom. These *supportive services* offered by the specialist resource teacher are known as the “*indirect services*”.

Appropriate skill development in visually impaired children enables them to a great extent to get into the mainstream in academic aspects, as well as social integration. What a sighted person feels “simple” and “unimportant” may have to be taught to the visually impaired child, with clear “step-by-step” instruction. Hence, the learning of the visually impaired child may take a longer time in the initial stages. Take this example: Reading is an important skill for any child. Sighted children, after learning alphabets and word structures, read with ease by merely scanning the pages. Visually impaired children also need to read braille effectively for educational purposes. For this purpose, they should develop a good braille mechanism, which means the proper finger position and movement of the hands over the braille dots. Prior to braille teaching, development of pre-requisite skills such as the handling of books, turning of pages, recognising differences in the presentation of the material are imperative. Unless proper reading skills are developed the child may not be able to cope with his education. This type of individual-oriented skills has to be taught individually by the resource teacher. Hence, there is a need for “*direct service*” for the visually impaired child in the integrated framework.

As the visually impaired child progresses in his skills, the withdrawal of the specialist teacher in providing direct services is a must. The child should study within the framework of the regular class. The regular teacher, while teaching the class, should not let the visually impaired child do his work as he likes. The

treatment should be the same for all children in the class including the visually impaired child. This is essential in the integrated setting. To create this environment, the visually impaired child should be provided with the appropriate material in the regular class. Preparation of this material and technical assistance to regular teachers have nothing to do with the visually impaired child directly, but all these support services enrich the experiences of the visually impaired child. This helps the regular teacher to expect the same number of skills from the visually impaired child. Hence, there is a need for supportive “*indirect services*” especially after the development of appropriate skills in the child. The indirect services provided by the resource teacher will help the regular teacher to teach the content to the child in a better way.

1.5.1 Direct Services at Primary Level

Teaching of all plus curriculum activities comes under direct services at primary level. The visually impaired child has to spend his maximum time in the RESOURCE ROOM with the resource teacher to learn the necessary skills. The child’s participation in the regular class will be minimal at the preparatory stages. At this stage, the child can participate in the regular class for social experience, story-telling, singing and other moral instruction. In observing the child spending the maximum time in the resource room with the resource teacher, some teachers develop the wrong impression that the resource teacher is responsible for the visually impaired child’s entire learning. This misconception should be corrected. Gradual increase of the time of participation in the regular class should be emphasised by the resource teacher when the child has developed the required skills.

The following are the important directed services at primary level:

- i) Introducing Braille and Braille reading of the visually impaired child,
- ii) Braille writing
- iii) Development of the child’s tactile tolerance by introducing concepts like small, big, long, short, thin, thick, hard, soft, fast, slow.
- iv) Development of auditory tolerance in the child by teaching the skills in reconstructing life situations through auditory perception.
- v) Teaching of the daily living skills appropriate to different age groups. Proper eating habits, bathing, toilet, personal grooming and manners are some of the skills to be taught by the resource teacher.

- vi) Teaching pre-cane mobility skills.
- vii) Teaching mathematical concepts and the use of the abacus.

1.5.2 Indirect Services at Secondary Level

Visually impaired children integrated from the outset can participate in regular classroom activities for most of the time at secondary level. The participation in the regular class will increase gradually. When the child acquires the necessary skills, his dependence on the resource teacher for direct service is reduced. The child should be provided with services indirectly by the resource teacher whereas direct service are in the form of teaching by the regular teacher i.e. the teaching of content in the regular class to both the visually impaired and sighted children.

To increase his participation the following indirect services must be provided to the visually impaired child by the resource teacher:

- i) Preparation and dissemination of the learning material in braille for visually impaired child.
- ii) Preparation and provision of appropriate aids for visually impaired children.
- iii) Transcription of the child's braille answer papers into print so that the correction is done by the regular classroom teacher.
- iv) Technical assistance to the regular teacher regarding the management of visually impaired children in the regular class.
- v) Provision of reader and recording services.

Even though there are more indirect services at secondary level, the resource teacher has to provide some direct services depending upon the needs of children. However, direct service at secondary level is not an ongoing process. It is to suit the needs of individuals only. Important *time-to-time direct services* at secondary level are as follows:

- i) Teaching of mobility skills using the long cane.
- ii) Provision of before and after classroom instructions.
- iii) Teaching of certain mathematical concepts and embossed diagrams.
- iv) Remedial teaching for slow-learning visually impaired children.

Graphical Representation

The following is a graphical representation of the time spent by the resource teacher in offering direct and indirect services at primary and secondary level integrated education programmes.

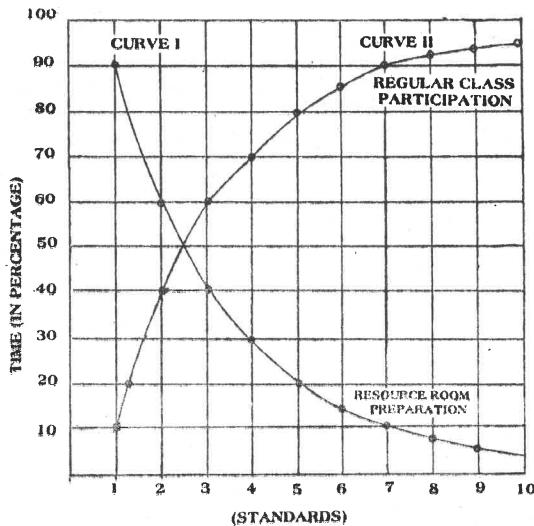


Figure:
**Resource Room Utilization
by Visually Impaired Child**

Source:
**Adopted from 'Source
for Teachers of Visually**

**Book
Impaired' by Mani, M.N.G.**

Note: Curve I shows the participation of the visually impaired child in the resource room. Curve II shows the participation of the child in the regular class.

From the graph, it will be observed that the visually impaired child has to spend approximately 90% of the time in the resource room and 10% in the regular class during the first year. After standard I, there is a steady decrease in the participation in the resource room.

From standard IV onwards; the child's participation in regular classes is more than 60%. This is the stage when the resource teacher should provide more indirect services.

Though visually impaired children spend a considerable time in the resource room in the early stages, even the little time they spend with sighted peers is useful. The peer groups experience attained by the children is of enormous value. They flourish in a natural way when they are given this assistance.

1.6 MATERIAL DEVELOPMENT AND PRESENTATION Provision of right materials in the right method at the right time makes education of visually impaired children possible on par with sighted children in general school. Preparation of materials is not an easy task because of many reasons such as limited resources, the cyclic nature of textbook revision, problems of braille production and distribution, the changing need for materials suitable to different settings. One of the basic requirements is that the teacher should prepare the materials for the day today requirement of the learners. The selection of what, and when, and the presentation of the material in the appropriate form is major task of the special teacher. Therefore, right material, right method and right time are the fundamental principles for development and presentation of materials to the children with visual defect. Let us discuss how these principles are contributing to the curriculum transaction for the visually impaired children.

1.6.1 Right Material

Visually impaired children, whether in classes for the blind or in the regular classes, differ from each other as much as or more than the sighted children in the regular class. This is prominently determined by their deficit in their eye sight. Lack of vision limits their perception and cognition. This causes knowledge gap between sighted and the children with visual impairment. The visually impaired child becomes aware of this world through senses other than sight – this is, through the senses of hearing, touch and smell. In understanding the world around him he cannot perceive objects as much as the sighted by dint of remaining senses either because of physical inaccessibility or of social restraints. For example, Hills and Mountains, Space and relationship to one another are abstract things to the visually impaired children. Most of those are to be explained to the child orally or by the experiences to what they can hear, feel and manipulate.

So if he is to understand the reality around him, it is necessary that he be presented with concrete object which can be touched and manipulated, heard and discriminated. Tactual perception is highly helpful for him to understand the haptic world. Here we should understand that this may not be a complete substitution for the experience gained through visual perception. He should not be left incidental. When the presentation is a distortion to the child, the

teacher should explain it to child. A model of a house, for example, can be easily understood by the child if its dimensions are explained to the child related to doors, windows and other parts of a house which he can touch and feel in reality.

As far as the materials are concerned, the special teacher should take special care in providing the materials which suit to the need of the visually impaired children. To provide appropriate materials for the children the selection of the materials is imperative. For the effective integration, the teacher assumes the responsibility of giving the materials which enable the child to cope with the regular classroom activities. The teacher provides the materials in three folds:

1. **Tangible Materials**
2. **Audible Materials**
3. **Special Appliances and Equipments**

The above said assistive services are offered through:

- a) **Braille Text Books**
- b) **Embossed Diagrams**
- c) **Tactile Pictures**
- d) **Models of objects (enlargements in the case of too small one and contractions if they are too large)**
- e) **Special device like Abacus**
- f) **Special audible equipment like Rattle Ball**
- g) **Special Equipment like Dictophone.**

It is important for the teacher to choose among these materials:

Which is necessary?

Which is useful?

Which is supplementary?

This analysis will certainly help him to select the **Right Material** for the use of visually impaired children.

1.6.2 Right Method

The experiences over the years have shown that the visually impaired children are more like sighted children than unlike. There are more similarities than dissimilarities than dissimilarities. When this is accepted in methods of learning of visually impaired children, we should not forget to know where, when and how they differ from the learning behaviours of sighted peers. While this is highly realised, it is meaningless either to over-estimate or to under-estimate the visually impaired children.

Sighted children learn things in a natural way but the way of learning of the visually impaired child is mediatory. He understands the concepts through step by step approach. He perceived through piece by piece information. Due to the visual loss, the visually impaired child has acquired poor or no visual imageries. As a result of this, he takes longer time to learn and needs more repetitions to understand. This naturally requires careful analysis, systematic planning and logical approach in presentation of the materials for visually impaired children. After the selection of right materials the teacher has to look on the following to decide the methods of teaching which enable the child to use his remaining senses.

1. Readiness of the child
2. The academic capability of the child
3. The degree of blindness
4. The age
5. Time consumption for the preparation of materials
6. The nature of the content (For example, if it is the history of Akbar, it is meaningless to draw the diagram of Akbar as in printed book.)

Before presenting the materials, the resource teacher should have to see as to what type of experiences to be given and what type of activities can stimulate these proposed experiences without affecting the regular system of education..

The teacher of visually impaired children must take into account the following issues in choosing right method:

1. **Individualisation**
2. **Concreteness**
3. **Unified instructions**
4. **Additional stimulation**
5. **Self activity**

1.6.3 Right Time

The right time means when to give formal learning for visually impaired children and what is the appropriate period which creates a healthy climate for visually impaired children to start learning in the way that the sighted peers do. Choosing the right time is the useful exercise for any teacher who wants to give right material by right methods. The rich material and appropriate methods may seem to be valid only when it is applied in right time. As far as the integration of visually impaired children is concerned, all the possible experiences proposed for the children should be started '*as early as possible*'. In short, earlier is the best. This will help the child to flesh out the adjustment and readjustment problems along with the social and emotional problems caused by the visual deficit. This will help them to get along with other sighted counterparts as total as possible.

When imparting knowledge and training to visually impaired children for their adult life practice, the very pertinent question is, When to provide? Before giving formal learning, the teacher should see the following.

1. **Pre-experiences of the child in the subject to be taught.**
2. **The extent of opportunities, motivation already experienced by the child.**
3. **Necessary pre-requisite skills.**
4. **Expected post-skills.**

A sheer assessment should be made which may include social and emotional problems of the child. As a matter of fact, the children suffering

from additional disability in addition to visual impairment may be slow or show less progress. It means they need time to get ready for the formal learning. It is quite obvious that teacher is the right person to decide what is the appropriate time to teach and to evaluate the performance of the child.

1.7 PRINCIPLES OF INSTRUCTIONAL METHODS

As we discussed earlier, there is no need for change of entire curriculum of the school for visually impaired children, but the curriculum should be adapted for gaining the learning experience as that of sighted peers. The general curriculum that contains more “*visual experiences*” and less “*non-visual experiences*” must be analysed to convert visual to non-visual experiences for the betterment of the concept development of the visually impaired child. In doing so, four significant steps are to be adopted and those are given in the hierarchy of preferred management of “*educational experiences*”.

1. We give **DUPLICATE** experiences
If it is a rhyme like
“Twinkle Twinkle little star
How I wonder what you are”,

it can be brailled and practised without any change in the format.

When the duplication is not possible we

2. **MODIFY** experiences sometimes:
These modifications may be in terms of:
 - CONTENT
 - METHOD OF DISPLAY
 - TYPE OF MATERIAL USED
 - RESPONSE EXPECTATIONS FROM THE CHILD

For example, in print books different pictures may be given to the child to distinguish the difference between singular and plural.

This is dog
That is a pen

These are dogs
Those are pens

These concepts can be explained to visually impaired children by real objects and wider use of materials like buttons and sticks. The very purpose of giving pictures is

just for stimulating children to learn. Hundred such concepts can best be taught to visually impaired children by using the hand language. When there is no chance for such modification we

3. **SUBSTITUTE** one kind of lesson for visually impaired children which as closely as possible that presented to the sighted children. For example, if it is the lesson about coins, the real coins can be made available for the child. When the pictures of such things give no sense to the visually impaired child, the real objects give substituted experience to the child. But in the first year of the child, we may sometimes.
4. **OMIT** a lesson. Pictures such as moon, star and other complicated pictures may be omitted and oral explanation provided.

Recent research studies done in the above principles have revealed that the rate of duplication is very less during the early schooling of the visually impaired children. They need more modified and substituted experiences. When the standard increases, the duplication starts increasing.

These four principles are very important in giving experiences to the visually impaired child through multi-sensory material. It has been found by experience that higher the academic standard, easier it is to produce the material exactly.

This pattern shifts quickly, and in no time at all, omissions are rare, substitutions are infrequent; modifications continue to be desirable; but of the greatest importance is the fact that more and more duplicate experiences are possible.

1.8 UNIT SUMMARY: THINGS TO REMEMBER

- Adaptation refers to the adjustments in the general curriculum meant for sighted children in regular schools.
- Curriculum includes the totality of experience that a pupil receives through the manifold activities that go on in the school.
- Sighted children learn the experience in a 'natural way' as a 'whole', but visually impaired children learn in 'pieces' of information.
- Curriculum meant for visually impaired children in integrated schools is more 'like' than 'unlike' that of sighted children.
- There is no need for a special curriculum for visually impaired children who are in the general classroom but special approaches based on multisensory experiences are needed.

- The skills, which are peculiar to blindness are attained through 'plus curriculum'.
- The classroom management of the integrated class involves both resource teacher and regular teacher.
- Resource teacher provides instruction to visually impaired children on an individual basis called 'direct service'.
- The supportive services offered by the special teacher are known as 'indirect service'.
- The participation of visually impaired children in the regular class will be minimal at the preparatory stages, because the children have to spend maximum time in the resource room to learn plus curriculum.
- Provision of right materials in the right method at the right time makes education of visually impaired children possible on par with sighted children in general school.
- There are four principles such as duplication, modification, substitution, and omission involved in the instructional methods for curriculum transaction to visually impaired children.

1.9 CHECK YOUR PROGRESS

1. Curriculum means the
 - (a) content taught in the classroom.
 - (b) experiences acquired at home.
 - (c) totality of experiences of the child in his day-to-day life.
 - (d) all content and experiences deliberately planned for educational purposes.
2. Visually impaired children
 - (a) learn in pieces.
 - (b) learn the content as a whole.
 - (c) learn like sighted children.
 - (d) learn the content with more omissions.
3. Visually impaired children in integrated education programme need
 - (a) the same curriculum meant for sighted children.
 - (b) the curriculum for special schools.
 - (c) the same curriculum meant for sighted children with various approaches.
 - (d) a different curriculum.

4. More duplicated experiences may be provided for the visually impaired child at
 - (a) the primary level.
 - (b) the secondary level.
 - (c) the pre-school level.
 - (d) the college level.
5. The skills peculiar to blindness are known as
 - (a) co-curriculum
 - (b) extra curriculum
 - (c) plus curriculum
 - (d) core curriculum
6. Explain the need for adapted curriculum for visually impaired children?
7. What are the significant aspects in the curriculum for integrated schools?
8. How are the 'direct and indirect services' essential for curriculum transaction to visually impaired children.
9. What are the salient features of material development and presentation for visually impaired children?
10. What are the principles involved in the instructional methods for curriculum transaction to visually impaired children?

1.10 ASSIGNMENT / ACTIVITY

1. Take one lesson from each subject of IX or X Standard and write the instructional objectives, adaptations needed for giving necessary learning experiences with reference to the content and these instructional objectives and the learning outcomes.
2. Choose any one of the school subjects say mathematics and make an analysis for each unit or lesson on how many concepts are involved. Out of them how many are visual, how many are non-visual, how many concepts can be duplicated, how many concepts can be modified and how many concepts can be substituted and how many concepts should be omitted?

1.11 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 those points below:-

1.11.1 Points for Discussion

What are the outcomes of the analysis of duplication, modification, substitution and omission in a particular textbook?

1.11.2 Points for Clarification

1.12 REFERENCES / FURTURE READINGS

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UNIT 3: TOOLS OF FUNCTIONAL ASSESSMENT OF VISION AND SKILLS: FUNCTIONAL SKILLS INVENTORY FOR THE BLIND (FSIB), LOW VISION ASSESSMENT BY JILL KEEFFE, LEA TESTS, AND PORTFOLIO ASSESSMENT

STRUCTURE

- 2.1 Introduction**
- 2.2 Objectives**
- 2.3 What is Educational Technology?**
- 2.4 Criteria of Appropriate Technology in the Selection of Materials**
- 2.5 Two Approaches to Technology for Visually Impaired Children**
- 2.6 Locally Available Materials**
 - 2.6.1 Advantages of Teaching Aids
 - 2.6.2 Preparation of Aids for Visually Impaired Children
 - 2.6.3 Materials for Teaching Aids
 - 2.6.4 Aids of Different Nature
- 2.7 Traditional Appliances**
 - Educational
 - Computational
 - Recreational
 - Mobility
 - Other Appliances
- 2.8 Modern (High-tech) Appliances**
 - 2.8.1 Modern Appliances for Reading and Writing
 - 2.8.2 Modern Appliances for Mobility
 - 2.8.3 Modern Appliances for Mathematics
- 2.9 Scientific Graphic Aids**
 - 2.9.1 Inch and Centimeter Graph Sheets
 - 2.9.2 Fibre Base-Board for Reading Graphs and Maps

2.9.3 Computer Base and High Technology Devices for Graphics

2.10 Computerization

2.10.1 Microcomputers

- Add-on Devices for Visually Impaired Children

2.10.2 Advantages of Microcomputer

2.10.3 Talking Computer

2.10.4 Talking Computer Opens Avenues

2.10.5 World of Internet

2.11 Unit Summary : Things to Remember

2.12 Check Your Progress

2.13 Assignment / Activity

2.14 Points for Discussion / Clarification

2.14.1 Points for Discussion

2.14.2 Points for Clarification

2.15 References / Further Readings

2.1 INTRODUCTION

Technological advancement has entered every field and increased quality of life of human beings. Education is significantly enhanced by the application of advanced technology. Technology has created an impact on the education and rehabilitation of visually impaired children as that of non-disabled children. No doubt, technology has played a very important role in mitigating the limitations imposed by a disability. The modern technology has given an amazing experience for visually impaired children to understand this unseen world through non-visual media. It includes the teaching learning materials including the modern appliances such as Computer and other appliances that are emerging. The ultimate aim of applying the high-tech which occupies the modern world in almost all the fields including education, is to explore the possibilities of making them reachable to visually impaired children. As far as the visually impaired children are concerned, the technology is useful only when it is helping them to reduce their handicapping nature due to the visual deficit. In this unit, let us deal in detail, the role of appropriate technologies in the education of visually impaired children.

2.2 OBJECTIVES

After completing this unit you will be able to:

- Define and understand the meaning of educational technology in the education of visually impaired children.
- List the use of appropriate technologies in the education of visually impaired children.
- Use locally available materials for preparation of improvised teaching aids.
- State the traditional appliances used for the education of visually impaired children.
- Discuss the modern appliances available for visually impaired children for reading, writing, mobility and mathematics.
- Be aware of the scientific graphic aids used for the learning of visually impaired children.
- Explain the role of computerisation in the education of visually impaired children.

2.3 WHAT IS EDUCATIONAL TECHNOLOGY?

“Educational technology is defined as the development, application and evaluation of systems, techniques and aids to improve the process of learning.”

-National Council of Educational Technology, London (1967).

Educational technology can be defined as “any innovative educational practice”

(Mani, M.N.G., 2000).

The role of educational technology will be:

- Improving the efficiency of the teachers
- Reducing the cost of education
- Improving the quality of education
- Decreasing the duration in the realisation of educational objectives
- Bringing more number of children under the umbrella of education
- Developing the scientific temper in the learner etc.,

As far as visually impaired children are concerned, the Educational Technology , the development of materials (devices and appliances), techniques which are useful for the visually impaired children to cope with the unseen world by using their remaining senses and thereby reducing their handicapping nature caused by the loss of eye sight. It should also help the teachers to come out the traditional way of pouring information and pave the way for teaching through multi-sensory approach.

Give your own definition in the space provided:

You might have defined technology for education of visually impaired children as one of the following or something similar:

- application of scientific knowledge about learning and conditions of learning to improve the effectiveness and efficiency of teaching and training.

- facilitation of learning by manipulation of media and methods and control of environment.
- concerning with the knowledge of what is taught, how and to whom, it should be taught.

2.4 CRITERIA OF APPROPRIATE TECHNOLOGY IN THE SELECTION OF MATERIALS

The following five criteria are important in choice of technology in the selection of materials:

- Availability:** It is essential that technology selected should be well established in the local environment so that sufficient trained manpower is available to facilitate the continuous reliable use of media.
- Accessibility:** In principle, the selected technology should be universally available for all students.
- Acceptability:** The attitude of both academic staff and students must be favourably disposed towards the use of technology. Without such a positive orientation, the success of the medium will be severely limited.
- Economics:** It is evident that technologies will not be selected if they are everly expensive. The technology selected should have cost-effectiveness.
- Validity:** The technology selected must be appropriate for the instructional objectives and subject matter content that constitute the forms of the courses being taught by the institution.

2.5 TWO APPROACHES TO TECHNOLOGY FOR VISUALLY IMPAIRED CHILDREN

Special educationists categorise the concept of technology for visually impaired children into two approaches namely the 'Low-tech' and 'High-tech'. The high-tech is based on the application of engineering principles for developing electro-mechanical equipment for instructional purposes. Tape recorders, computers, etc are called high-tech. This high-tech is the result of impact of scientific and technological development in recent times. High-tech appliances are high priced too.

The low-tech is known as 'Traditional Technology'. Braille books, improvised aids by using of locally available materials, traditional appliances like slate and stylus, abacus, etc are coming under low-tech. Low-tech materials and appliances are low-priced and used for educational, computational, recreational, mobility and activities of daily living.

2.6 LOCALLY AVAILABLE MATERIALS

Locally available materials are used for preparation of teaching materials. The importance of locally available materials is that they are:

- easily available in the environment;
- easily purchased in the local market;
- collected within our time limit;
- used by the teacher to produce improvised teaching aids;
- low priced; and
- used by all children.

Let us now discuss how these locally available materials are used for producing teaching aids.

2.6.1 Advantages of Teaching Aids

Teaching aids are vital tools to enhance learning of basic concepts. They play a significant role in teaching – learning of visually impaired children. The difficulties encountered by the child in understanding a concept could be overcome by the correct use of teaching aids. Certain fundamental questions should be asked before the preparation of teaching aids: what is the purpose of the aid? To whom, is it useful and when? Clarifications to these questions may help the teacher to frame his specific objectives for the task.

- Teaching aids make teaching effective and simultaneously make the learning interesting and profitable.
- Aids quicken the pace of learning, foster its development and help to overcome the hurdles in learning.

- Aids provide first hand concrete experience to the child. One aid is equivalent to thousand words when a child has difficulties in forming a concept.
- Aids bring variety to the learning of the visually impaired child which is more in demand for his education. In fact, visually impaired children need varieties.
- Good collection of aids motivates the teacher for better teaching. The ideas involved in the aids evoke the creativity of the teacher.

2.6.2 Preparation of Aids for Visually Impaired Children

1. A number of aids can be prepared subject-wise. But it should be borne in mind that some of the aids are not very important and some others are very vital. Judgement regarding the selection of the aid is one of the most important skills of the teacher. The aids should be more selective.
2. A particular teaching aid should be prepared in such a way that the visually impaired child is able to explore, discriminate and recognise it without much confusion. First the child must be able to examine the aid carefully and investigate thoroughly. Secondly, he must be able to perceive the differences between the different textures, forms, etc. used in the aid and distinguish one from another. Thirdly, he should be able to perceive details of appearances so as to identify the names for the parts of the aid or the aid itself for recognition.
3. The next important rule to be observed is that the aids, which prepared should withstand the manipulation of the little hands of the children. When the aid is prepared in a hurry, the very touch of the object may dislocate the parts. Therefore, it should be strong enough to have longer durability.
4. Validity and preciseness are factors, which make the aid more effective and time saving. The aid should be tactually as attractive as possible because visually impaired children are devoid of visual attraction.
5. Innumerable hours of preparation of teaching aids must be avoided. A teacher should not spend too much of time for an aid which has very little value for visually impaired children. Appropriate use of time is very imperative as the teacher has to attend to other activities too in the educational programme for children with visual impairment.

6. The teacher should be tactful enough in preparing an aid in such a way that when it is prepared, it should be useful for teaching more than one concept. This little attention saves time, energy and cost.
7. Principle in the preparation of aid may be "Make it cheap; use it well and change it often". Newness and novelty will always attract the children. The teacher should know the art of improvising aids by using low cost materials readily available at the local markets.

2.6.3 Materials for Teaching Aids

It is hard to confine the nature of material to be used for preparing teaching aids. 'Anything and everything can be used if the teacher knows the secret of conveying the central idea through that teaching aid'. Prospective teachers of visually impaired children do not prefer sophisticated aids with less use. They prefer cheaper aids with more utility. Hence the teacher tends to judge the aids mainly from the utilitarian point of view.

2.6.4 Aids of Different Nature

1. The readymade aids are like globe, models of animals, building etc. These take lot of time to prepare and are commercially available. It is not desirable to spend too much time and prepare these aids. If such aids are very necessary and if there is a budget, those can be procured.
2. Some aids are helpful for a longer time. For example, the tactile maps, important diagrams, etc. may be used by more than one child. Such aids can be prepared by the teacher with the help of the carpenter. However, the materials used must as far as possible be cheaper. Then only, a teacher can opt for as many aids as needed for children.
3. There are some instant aids which are useful for teaching a particular idea in between the teachings. Most of such explanations could be explained through diagrams. For example, when the child needs explanation for the triangle, the teacher can draw series of triangles with various sizes using the tracing wheel and explain. These aids do not cost much.
4. Available objects should as far as possible be used as aids. For example, while teaching the thermos flask, a real flask can be borrowed or purchased and the concept can be developed in the child. The ability of utilising the available resources as teaching aids adds more credit to the teacher.

5. When we think of low cost materials, pebbles, marbles, sticks, small beads, coins, buttons, papers, card-board, cheap textile materials, etc, which do not need much finance can be used.

Small toys and models of different objects can be thought of in consultation with other teachers and experts in the preparation of aids. Their suggestions may be of immense value.

2.7 TRADITIONAL APPLIANCES

In India, most visually impaired children are still provided with traditional appliances only because most of these appliances are low priced. The traditional and low-tech appliances are useful for visually impaired children for their education, computation, mobility, recreation and daily living purposes. The following are some examples of such appliances:

- (1) *Educational*
 - Braille slate, both inter-lining and inter-pointing (wooden or plastic)
 - Stylus – plastic or aluminium with different shapes like ball head, bull head, concave head, etc.
 - Pocket frame
 - Tactile diagram board
 - Braille
- (2) *Computational*
 - Taylor frame with arithmetic/algebra types
 - Abacus
 - Geometry set
 - Measuring tape
- (3) *Recreational*
 - Chess board
 - Draught board
 - Peg board
 - Playing cards
 - Puzzles – cross puzzle board (scrabble board), peg in puzzle
 - Audible ball (cricket, football, etc.)
- (4) *Mobility*
 - Folding stick

- Long cane
- (5) *Other Appliances*
- Signature guide
 - Needle threader
 - Braille shorthand machine with paper roll.

2.8 MODERN (HIGH-TECH) APPLIANCES

Shukla, (1999) points out that the impact of modern technology, which is volatile and ever-changing, is yet to be experienced by a majority of the visually impaired in India. At times the changes are so rapid that it is really difficult to keep pace with them. High-tech aids are now available – though at a high cost, even exorbitant in certain cases. But these devices have significant impact in education and employment of the visually impaired persons.

Mani, (2000) points out, “The technology is capable of reducing the handicapping conditions. What we need today is the development of indigenous technology which is cost-effective in nature and easily affordable by a common man so that more and more visually impaired children and youth can be benefited.”

Thus we must have the main aim of providing appropriate technology to visually impaired children to minimise their handicapping condition.

2.8.1 Modern Appliances for Reading and Writing

Modern high-tech devices are useful for the education and rehabilitation of visually impaired children. The following are some of the reading and writing appliances meant for visually impaired persons.

1. OPTACON (Optical to Tactile Converter)

Optacon is about the size of a dictionary, weighs about eight pounds, and operates on batteries. The probe performs much like a television camera, except that instead of handling images of 2,50,000 points it handles images of only 144 points. The probe has a little window through which it can “see” an area about the size of one letter. The image received through the probe is then magnified and displayed on an array, or mosaic of 144 tactile pins. The activation of these pins produces a vibratory image of the letter from the page on about half the area of the finger. The probe is moved across the line of the print, left to right, each letter being recognised through the moving vibratory

image on the tactile display. By this device, the ink-print can be changed into tactual form for the reading of visually impaired children.

2. **Text Reading Machine:** The Australian company Robotron is now selling a. comprehensive, user-friendly reading machine namely 'GALILEO'. It is a combination of the computer and text reader with clear English accent and in-built hard disk and floppy disks, and floppy disk drive. It reads all sorts of printed text, books, magazines and stores 20,000 pages of scanned text, transfer the same to a floppy or records it into an audio-cassette. It has the ability to read multiple languages and Indian languages can also be introduced along with English as soon as the Indian language software is developed.
3. **Braille Operated Portable Talking Computer:** ARIA is the size of a video cassette and has features like Word-processing, Note-taking, Clock, and Calendar, Diary, Telephone directory (with tone dialler), etc. It uses a PCMCIA memory card and has serial and parallel ports for modern and printer.
4. **Electronic Brailier:** MOUNTBATTEN is the product name for electronic Brailier. In India, the integrated system of education is fast gaining momentum. The MB Brailier is an ideal solution for integrated education system for visually impaired children. Right from pre-school to higher classes this machine is useful in teaching braille, learning maps, charts and diagrams. It converts Braille to print when attached to a standard printer and print to Braille when attached to a PC. The student will now be able to type his examination papers in braille and take a normal text printout so that his teacher who generally would not know braille can access him along with the other class and also prepare braille copies of the question papers.
5. **INDEX 4X4 PRO:** In India, inadequacy of braille text books among the schools where the visually impaired children are admitted is a very common problem as the large braille houses are not able to cater to a variety of text books in different subjects and low volumes. Therefore, the visually impaired students have to wait over 5 to 6 months to receive their braille books making it extremely difficult for them and their teachers to complete and cope up with the syllabus on time. This printer takes care of this problem which is cost effective and at the time high production with automatic and easy to produce braille text books. For example, the high speed and ease of binding makes braille text books available on command. A hundred page braille text book

will be ready (embossed, stapled, folded, and ready to go) in less than twenty minutes.

6. **SuperBraille:** BLACKSTEN & Associates, a U.S. Company, is now marketing a computer that has 40 – character Braille display and 8 – dot Braille. SuperBraille is designed to provide information in Braille on all the computer commands.
7. **CALL (Computer Aided Language Learning):** This software package provides drill and practice emphasizes pronunciation, reading, spelling, grammar, vocabulary and fluency. Graphics and a digitized voice that speaks the words are included as is a management system that keeps a record of student responses.
8. **SOFTWARE AUTOMATIC MOUTH (SAM):** SAM is an all-software speech synthesizer for the Apple and Atari microcomputers. The disk is capable of producing speech, and has an unlimited vocabulary and fully adjustable pitch and rate. Although SAM understands a phonetic spelling system, the disk comes with Reciter, an English text-to-speech conversion programme, so that users can type in ordinary English spellings of words. SAM also allows the user to add speech to BASIC programmes.

2.8.2 Modern Appliances for Mobility

Russell Path Sounder

It is a device, hanged on the chest near neck. It provides a beam of ultrasound on a head the user. If the beam hits an object is reflected the sound in device and it is electrically converted audible sound. This helps the visually impaired persons to locate the object.

Laser Cane

Laser Cane helps the blind traveler to find path free of obstacles, because it gives advance warning of steps down.

Bliss Passive Detector

This device converts optical images into vibrations or sound signals used like a flashlight.

Sonic Guide

Sonic guide gives three kinds of information about an object, its direction and its distance. This guide must be used with the long cane or dog guide.

Binaural Sensory Aids

This device gives protection from below the waist to above the head.

Touch Traffic Light System

Touch traffic light system helps the blind or low vision while crossing the road. A mini receiver is fixed into the blind person's stick and the signals are felt by the blind.

Mowat Sensor

Mowat sensor is used in a particular area to locate the object. If the object is within the beam, sense of the ultrasound is reflected back and picked up by sensor which gives vibrating and if the object is on the floor it rotates until the object is located.

Mobility Assisting Software

There is a mobility assisting software (available on CD) that takes you on an auditory journey to your place of visit. You inform the program where you are and where you want to go. Later, the program maps out the best route leading to your desired destination. It prepares a detailed auditory map, speaking out important landmarks and details of the route. This system is as yet not available in our country, but it is just a matter of time.

MoBIC

The Mobility of Blind and Elderly people Interacting with Computer (MoBIC) system, developed in Birmingham in the English Midlands, is a computer programmed guide which can conduct a blind or low vision person on any journey he or she might want to undertake.

2.8.3 MODERN APPLIANCES FOR MATHEMATICS

Talking Calculator

Talking calculator is an electronic device similar to the calculators what we use, but it voices when the numbers are pressed and computation is done. This talking calculator is very much useful for visually impaired children to do mathematical calculations.

NUMBERS (Nemath Users' Mathematical Braille Effortless Reproductive System):

Both text and mathematical equations entered from a Braille device can be printed out in English on a special dot matrix printer with use of this programme.

Computer with Voice Synthesizer

Computer with voice synthesizer is useful for doing mathematics by visually impaired children. Computer with voice synthesizer is known as 'talking computer'. (Please refer to the heading 'Computerization – Talking Computer').

2.9 SCIENTIFIC GRAPHIC AIDS

2.9.1 Inch and Centimeter Graph Sheets

A set of graph sheets with distance between the coordinates as one inch and one centimeter should be prepared in tactile form and given to the visually impaired children. The purpose of providing the centimeter graph sheet is that the visually impaired child could not differentiate the points/coordinates in the graph sheets when the distance between the ordinates is too small.

In teaching, like the introduction of graphs for sighted children, the concepts of X – axis and Y – axis, ordinates etc. could be explained to the visually impaired child. He can be asked to feel the graph sheet and understand. Afterwards, the graph sheet can be fixed upon a fibre board. For fixing the points in the graph sheet, push pins can be used. For showing a line in the graph, a small rubber band can be used to connect the two points.

Thus teaching of graphs to the visually impaired child can be made easy for them with the embossed graph sheets.

2.9.2 Fibre Base Board for Reading Graphs and Maps

This fibre base board acts as a slate for visually impaired children during the early years of his schooling. In the initial days, the reading materials such as maps, graphs and the diagrams are provided in tactile form to the child in sheets rather than the whole books. For this purpose, the plastic relief sheets are used which allow the tactile impressions tangible. Thus the child needs a flat surface where the sheet can be fixed and read. The fibreboard is a cheaper and a very handy one for such a purpose. The relief sheets with tactile impression can orient the child to the various graphical concepts. Though the child is not expected to draw the maps and graphs in the examination, this type of materials help to get clear visualisation of the scientific graphical notions.

2.9.3 Computer Base and High Technology Devices for Graphics

Indian Association for the Visually Handicapped (IAVH), Mumbai has introduced computerbase and hightechnology devices for providing education in different graphics useful for different purposes.

1. Quantum Tactile Image Enhancer

This device is useful to convert the print formats of graphs, maps, charts, pictures and diagrams into tactile formats.

2. Nomad Audio Tactile Processor Touch Pad

The visually impaired children can touch the maps/diagrams/pictures and understand them by having the audio feedback coming from these graphics. This device is really a boon to the visually impaired children as it helps to get rid of the difficulties caused by the absence of visual stimuli.

3. Pentium P.C. and Multimedia Kit (with sound blaster).

Pentium P.C. and Multimedia Kit with sound blaster and software support are used for presenting the different types of maps and graphs to the visually impaired children in the braille format along with audio directions.

- Software support such as Braille Translation software for conversion of text into braille format and also conversion of P.C. Key board into Perkins Keyboard to type and print any Indian Braille language.
- Screen reading software to facilitate audio feedback of text on screen, Picture Braille with handheld scanner for scanning of pictures, diagrams, maps, for easy conversion into Braille format.

2.10 COMPUTERIZATION

Visually impaired children were not able to use a computer in the past because of their absence of vision. Today, the scenario is different. There are computers that can talk back to the visually impaired person, and this facility of interaction helps the visually impaired individual to perform as much as the sighted children. The computer can uniquely enhance the curriculum and augment the communication in

such a way that many more handicapped children will be able to be integrated into the mainstream and into the society at large. Green et.al. (1982) have shown how the microcomputer can be used in special education. Let us discuss about the use of computers for the visually impaired children.

2.10.1 Microcomputers

Add-On Devices for Visually Impaired Children

There are also several add-on devices which can provide easy access to the microcomputers for the visually impaired children.

1. Concept Keyboard and Overlay keyboard

The concept keyboard is a separate keyboard connected to the micro by means of a cable and plug. In place of the normal keys it has large pressure sensitive areas. The keyboard is provided with a close fitting and clearly marked overlay, pressure on any marked area will produce an input to the computer. Concept keyboards vary in design, the best known being is either 20X28 cm. or 43X28 cm. with 128 pads. Individual layouts or overlays can be designed with letters, words and pictures. For visually impaired children, embossed overlays may be used.

2. Microwriter

A hand-held keyboard with just six keys using different combinations, it is possible to type all the normal letters and numbers as well as controlling other computer functions with one hand. The microwriter is a computer in itself and can be used as a word processor on its own or in connection with other computers. There are also a number of adapted versions for people with handicaps, for example, a scanning microwriter which can be used with one switch. This is effectively used by the children with limited vision and orthopaedically impaired children.

3. Quinkey

A completely different form of keyboard is the quinkey, which is plugged into the micro like a concept keyboard and replaces the QWARTY keyboard. It is a single hand device having only five keys (

one for each finger) and a lower command key. Combinations of the keys enable the letters, numbers and punctuation of the QWARTY keyboard to be selected. This new form of keyboard is extremely simple to use and high speed can be achieved. This is very effective for children with limited vision or blind children (Obrist, 1985).

4. Touch Sensitive Screens

A special surround to the monitor screen which make it appear to be sensitive to being touched by a finger or pointer. It works by means of infra-red light rays which are broken when the screen is touched. These screens are very useful for those who find it difficult to related the activity on the screen to actions on the keyboard and for children with visual impairment, to train visual discrimination and eye tracking.

5. Alphavision

Aids are also available to enable people who are lowvision to read normal prints. 'Alphavision' is able to enlarge between 2 to 75 times. It also reverses the image, the print being white on anblack background, which makes it easier to read.

6. Versabraille and Brailink

These are both portable machines on to which the user can type and store notes, which can then be played back on refreshable braille pins. Both can be connected to a printer to produce a 'hard copy'.

7. Speech Synthesizer

NAMAL TYPE and TALK SPEECH Computers available in the Cambridge Microcomputer Centre, are speech synthesizer which can be connected to any computer with a centronic or serial interface. It offers the following features instant conversion of typed into speech, number pronouncing facility, adjustable speed of speech, unlimited vocabulary and so on. This is very useful for those involved in teaching reading skills to handicapped and speech retarded learners. It is also of immense value to the blind when used in with a BEC Computer which has a braille keyboard.

2.10.2 Advantages of Microcomputer

A part form being an excellent teaching tool, microcomputer has following advantages:

1. It initiates motivation and sustains the interest on the task.
2. Teaching with the help of micro is based on play way method and immediate knowledge of result is provided.
3. Micro provides opportunity for one-to-one interaction.

4. It ignores failure and reinforces correct responses and encourages learning through success experiences. This enhances the self-confidence of the children.
5. It continues drill and practice lessons without losing interest of the children.
6. Children can provide clean and perfect documents with the help of word processors.
7. Children can learn according to their own pace.

Thus, the microcomputer has immense utility as a teaching aid for visually impaired children.

2.10.3 Talking Computer

Computer spreads its charm into the lives of the visually impaired persons. Any computer of the PC family, when hooked to a voice synthesiser coupled with suitable software, transform itself into a full-fledged talking computer.

2.10.4 Talking Computer Opens Avenues

A talking computer opens up a struggle free world of opportunities for visually impaired children to interact to the sighted world as if they are seeing children. Using a word processor, one can easily take up a stenographer's job, indulge in creative writing and put down one's thoughts in black and white, or run columns in newspapers. Students, teachers and researchers can maintain notes with it. At the work place, data can be accessed using database and spreadsheet packages. Accounts can be kept track of using financial accounting packages. A talking computer can also be very useful for professionals like lawyers, consultants, etc. Those who are really interested can even venture into designing and developing software. Everyday correspondence, phone numbers, addresses, diaries and personal organisers can be handled.

Books, periodicals, etc. can be easily read using scanners and suitable software. A scanner coupled with a talking computer acts as a reading machine, and the disability to read print is thus overcome.

2.10.5 World of Internet

Internet is accessible to the persons with visual impairment too. Information on any conceivable topic in the world can be obtained in no time. Books that have already been transcribed, popularly known as electronic books, can be effortlessly downloaded and read. One can read newspapers and periodicals, and also listen to special materials for the blind in real audio besides being able to listen to popular channels. One can be in touch with subjects of one's interest by subscribing to mailing lists and can solve one's problems by seeking advice and assistance from members of these mailing lists. The e-mail facility is very useful and one can send and receive mail to any Internet address all over the globe. The e-commerce is one more advantage of Internet in which one can set up business and trade over the net. Blind people can work as medical and legal transcribers from their homes. Doctors and lawyers do this on a routine basis, benefiting mutually because of low transcribing costs in our country.

2.11 UNIT SUMMARY: THINGS TO REMEMBER

- Educational technology can be defined as “any innovative educational practice”.
- Five criteria such as Availability, Accessibility, Acceptability, Economics and Validity are the choice of technology in the selection of materials.
- Locally available materials are used for preparing teaching aids, which are cost-effective and teacher made improvised teaching aids.
- Teaching aids make teaching effective and simultaneously make the learning interesting and profitable.
- Teaching aids for visually impaired children should be more selective, exploratory, discriminatory and recognizable.
- Principle in the preparation of aid may be “Make it cheap, use it well and change it often.”
- Anything and everything can be used if the teacher knows the secret of conveying the central idea through that teaching aid.
- Today's need is the development of indigenous technology which is cost-effective in nature and easily affordable by a common man so that more and more visually impaired children and youth can be benefited.
- There are computers that can talk back to the visually impaired person, and this facility of interaction helps the visually impaired individual to perform as much as the sighted children.

- Internet facilities such as e-mail, e-commerce, etc are advantageous to the visually impaired persons.

2.12 CHECK YOUR PROGRESS

1. Techniques which are useful for visually impaired children to cope with the unseen world by using their remaining senses and thereby reducing their handicapping nature can be called
 - a. Educational Technology for visually impaired
 - b. Technology of educational practice
 - c. Technology of teaching
 - d. Multi sensory approach for visually impaired
2. "The attitude of both academic staff and students must be favourably disposed towards the use of technology". This is called
 - a. availability
 - b. acceptability
 - c. adaptability
 - d. acceptability
3. The technology which is based on the application of engineering principles for developing electro-mechanical equipment for instructional purposes is known as
 - a. high tech.
 - b. Low tech.
 - c. Teaching methods
 - d. Instructional strategy
4. Optacon is a
 - a. Reading device
 - b. Writing device
 - c. Mobility Aid
 - d. Speech synthesizer
5. Bliss Passive Detector is used for
 - a. converting the print text into braille
 - b. converting optical images into sound signals
 - c. converting ink-print into sound signals
 - d. converting sound into tactile impressions

II. Answer the following questions:

6. Explain the meaning of educational technology and its application to the education of visually impaired children.
7. How will you use locally available materials for preparation of improvised teaching aids.
8. The use of traditional appliances is inevitable in the education of visually impaired children today -Justify.
9. What are the modern appliances that you know for the use of visually impaired children in reading, writing, mobility and mathematics?
10. *Explain the scientific graphic aids used for the learning of visually impaired children.*
11. Describe the importance and accessibility of computerisation for visually impaired children.

2.13 ASSIGNMENT / ACTIVITY

1. List the traditional appliances that are used in Indian schools for the education of visually impaired children.
2. List the modern appliances that are used in Indian schools for the education of visually impaired children.
3. List the software available for the use of visually impaired children in reading graphs, maps and pictures.

2.14 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 those points below:

2.14.1 Points for Discussion

2.14.2 Points for Clarification

3

2.15 REFERENCES / FURTHER READINGS

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UNIT 4: TOOLS FOR PSYCHOLOGICAL ASSESSMENT OF THE VISUALLY IMPAIRED: VITHOBA PAKNIKAR PERFORMANCE TEST, A SHORT SCALE IQ MEASURE FOR THE VISUALLY IMPAIRED BASED ON WISC-R, ADAPTED EPQ, ADAPTED BLIND LEARNING APTITUDE TEST, CONCEPT DEVELOPMENT FOR BLIND CHILDREN, READING PREFERENCE TEST, CORNELL MEDICAL INDEX FOR VISUALLY HANDICAPPED CHILDREN

STRUCTURE

- 3.1 Introduction**
- 3.2 Objectives**
- 3.3 Role of Teachers in Curriculum Transactions**
 - 3.3 Material Preparation
 - 3.4 Teacher Consultations
 - 3.5 Remedial Teaching by Resource Teacher
 - 3.6 Teaching Content Areas by the Regular Teachers
 - 3.7 Auxiliary Services by the Resource Teacher
 - 3.8 Direct and Indirect Service by Resource Teacher
- 3.4 Text Books – Evaluations and Adaptations in the Local Context**
 - 3.4.1 What is a Good Braille Textbook?
 - 3.4.2 Adaptations in the Local Context
- 3.5 Teaching Plus Curriculum**
 - 3.5.1 Plus Curriculum- Concept and Meaning
 - 3.5.1 Components of Plus Curriculum
 - Braille Reading
 - Braille Writing

- Arithmetic
- Daily Living Skills – Graded Activities
- Orientation and Mobility
- Conceptualisation

3.6. Need and Significance of Plus Curriculum

3.7 Unit Summary – Things to Remember

3.8 Check Your Progress

3.9 Assignment / Activity

3.10 Points for Discussion and Clarification

3.11 References / Further Readings

3.1 INTRODUCTION

Learning is a complex process in which a gamut of factors relating to the child, learning task, teacher-related factors and learning environment play an important role. Curriculum is the total experiences received by the student through manifold activities both inside and outside the classrooms in the innumerable formal and informal contacts between the teacher and the students. A sighted child starts learning as soon as he is born. But the environment, which he cannot see, cannot stimulate visually impaired children. His learning experiences are restricted and this loss continues to affect his learning at all ages and stages. Planned and systematic teaching and learning activities can stimulate the visually impaired child and enable him to learn nearly at the level of the sighted because they are more like the sighted children than unlike. The curriculum, which involves more compensatory skills, will provide them least restricted environment and thereby they could receive normalisation in their life and education. In providing unseeing world as seeing world, the role of the personnel involved in the integrated education programme is vital. The success of this programme does not depend upon a single factor. It is the product of joint and cooperative activities of the teachers. Systematic and planned curriculum transactions will cater to the specific requirements/special needs of the visually impaired children. In this let us see, the various aspects of curriculum transactions that occur in the integrated education programme of the visually impaired children.

3.2 OBJECTIVES

After going thorough this unit, you will be able to:

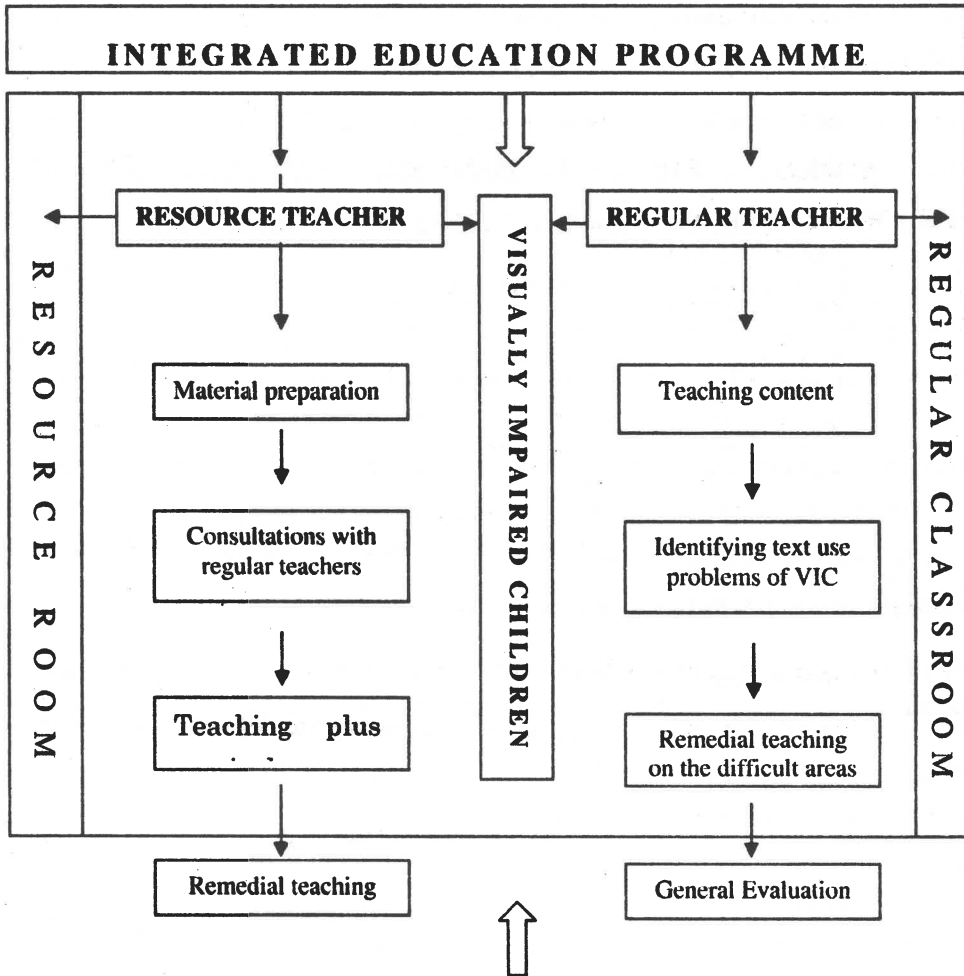
- Describe the role of researchers in curriculum transactions
- Explain the recent trends in special education researches
- Narrate the role of resource teacher in the curriculum transactions in the integrated education programme
- Narrate the role of regular teacher in the curriculum transactions in the integrated education programme
- Identify the areas of curricular adaptations for the visually impaired children

- Evaluate the textbook for the visually impaired children
- State the concept and meaning of plus curriculum
- List the curricular components of plus curriculum
- Understand the purpose and significance of plus curriculum

3.3 ROLE OF TEACHERS IN CURRICULUM TRANSACTIONS

In the integrated education programme, the role of resource and regular teachers is very important. The success of this programme largely depends on the combined and coordinated efforts of resource teachers and regular teachers. The educational needs of the visually impaired children of the integrated education programme are met by the partnership work of both regular and resource teachers. The regular teacher assumes the responsibility taking care of general programme of the child and the resource teacher assumes the responsibility of teaching the skills peculiar to blindness, which is called as '*plus curriculum*'.

The following is the diagrammatic representation of the responsibilities of resource teachers and regular teachers in the integrated education programme.



3.3.1 Material Preparation

Provision of the right material in the right time in the right method ensures the maximum participation of visually impaired children in the regular class. The resource teacher must spare considerable time in preparing the materials for teaching and learning of the visually impaired children. Due to the paucity of time and manpower in preparing all the materials in braille, it is essential for the teacher to have a schedule of material preparation according to need assessment.

3.3.2 Teacher Consultations

A teacher consultation between the resource teacher and regular teachers is one of the important activities in the programme. Periodical discussion is very much essential for:

- analysing the content areas to be taught to visually impaired children
- managing of visually impaired children in the regular class
- modifying the content for facilitating the better learning of visually impaired children
- analysing the nature of adjustment and adapted instructional materials
- preparing the support materials such as teaching aids, embossed and tactile diagrams etc.,
- discussing the day to day difficulties of the visually impaired children and plan for a better instructional strategy.

The consultations between the resource and regular teachers are more frequent in the case of primary level visually impaired children as more modifications and adaptations are likely to happen in their learning.

3.3.3 Remedial Teaching by Resource teacher

The resource teacher offers remedial teaching when the children need it. Some children may take longer time to understand some ideas for which the resource teacher instructs them on one to one basis with the materials especially prepared for them. Most of these instructions are on the concept development of visually impaired children.

3.3.4 Teaching Content Areas by Regular Teachers

The regular teacher is responsible for teaching the content areas (subject matters) to the visually impaired children just like he takes care of sighted children in the regular class. However, he is doing this activity with the assistance of resource teacher particularly in the subject matters, which involve more visual concepts. In addition to the teaching content areas, he is also expected to give remedial teaching to the visually impaired children whenever necessary.

3.3.5 Auxiliary Services by Resource Teacher

The resource teachers should involve themselves in the following activities formally or informally.

- Constant guidance and counselling for the visually impaired children, parents and the community will be necessary and the resource teachers are expected to this service too.
- Arrangements for voluntary reader and recording service in the integrated education programme
- During examination time, the resource teacher has to transcribe the braille answer books of the visually impaired children into print so that the regular teacher can value and award marks.
- Maintaining the cumulative records and anecdotal records of the visually impaired children to assess the periodical performance of them.

3.3.6 Direct and Indirect Service by Resource Teacher

The resource teacher undertakes the direct and indirect services for the visually impaired children. When the service is offered by him on individual basis, it is termed as direct service. Teaching braille reading, braille writing, development of tactile skills, auditory skills, daily living skills, abacus and pre-cane mobility skills come under direct services. The children at the primary level need more direct services.

The support service offered by the resource teacher is known as indirect service. The secondary level children need more support services. The indirect services include preparation of learning material for the visually impaired children, appropriate teaching aid (most of them are in tactile form), transcription of the child's braille materials to print form, providing reader and recording of talking books service and the technical assistance to the regular teacher in managing the visually impaired children in the regular class room etc.,

3.9 TEXT BOOKS – EVALUATIONS AND ADAPTATIONS IN THE LOCAL CONTEXT

Report of the Textbook committee of the Central Board of Education points out, "A modern system without textbooks is as difficult to imagine as Hamlet without the Prince of Denmark". Textbooks cannot be dropped from any sound system of education. They constitute the base from where both the teachers and the taught may start and continue to work. The efficacy of any educational system can rightly be assessed from the quality of textbooks provided to our students. The textbooks can provide

the minimum essentials to be achieved by the students of all categories, without which a teacher cannot move toward a desired goal. The textbooks contain the intellectual deposit of academic experiences.

Textbooks and instructional materials play a key role in the educational system. It functions as a teaching and learning aid, an instrument for improvement and dissemination of knowledge. "The educational research indicates that the teacher and instructional materials are the two main basis for effective learning. In the teaching learning process the teacher and the learner depend upon the instructional material. Even when the teacher teaches, he/she reads out, explains and analyses textbooks. Thus, transaction of curriculum is primarily based on textbooks and hence the quality of education" (Educational Technology, News magazine from AIET, June, 1996.)

Braille textbooks play a key role in providing academic experiences as gained by the sighted children. These textbooks are in no different from the textbooks used by the sighted children except its braille form and the adapted instructions on visual ideas. Integrated education system urges the need of quality based text material in braille form for visually impaired children. One of the purposes of integration is to give the impaired child the same curriculum, same mode of instruction and in general the same academic experience as those enjoyed his seeing classmates.

3.4.1 What is a Good Braille Textbook?

- A good braille textbook should be prepared on the basis of a through analysis of visual and non-visual concepts involved in the textbooks.
- In the case of visual concepts, necessary adaptations should be made in the braille textbook by following the principles of material preparation such as duplication, modification, substitution and omission should be followed.
- The braille text materials should be prepared as tactually attractive as possible. For example, the braille page number, print page number, the indications for the start and finish of each lesson should be given.
- The visual oriented diagrams given in the print textbooks should be transformed into tactile/embossed diagrams in the braille textbook.
- In the case of a big diagram, efforts should be taken to make it within the reach of the visually impaired children.
- When more than two pictures are involved in a page, care must be taken to see that it is not crowded with more information, which may confuse the child.

3.4.2 Adaptations in the Local Context

Depending on the need and nature of visual concepts, the resource teacher may need to have adaptations in the local context. For example, the instruction given in the print book may be supplemented by the 3D model for the visually impaired children. Similarly, in the social science textbook, single map may contain much information. Under such circumstances, the resource teacher may give same information in two maps so that the visually impaired child may not have confusions when it is given in one map in the print textbook. These types of local adaptations are always necessary for effective curriculum transactions.

3.5 TEACHING PLUS CURRICULUM

Teaching plus curriculum to the visually impaired children is the important responsibility of resource teachers. You will study the meaning and other details of plus curriculum in the final part of this unit. Developing efficiency in curricular skills itself prepares the child for his effective participation in the regular class. The efficiency of the child in the plus curriculum builds enormous confidence in the child and helps to develop a positive self-image. The acquisition of these plus curricular skills as far as possible may take place at the primary level.

3.5.1 Plus Curriculum- Concept and meaning

Plus curriculum does not mean 'extra' but compensatory experiences for the visually impaired children in the integrated education programme. Plus curriculum means the skills peculiar to blindness such as braille reading, braille writing, orientation and mobility, daily living skills, sensory training and the use of mathematical devices such as Abacus, Taylor frame etc.,

3.5.2 Components of Plus Curriculum

The following are the components of Plus curriculum.

Braille Reading

A. Reading Readiness

- Braille mechanics
- Turning pages
- Positional concepts
- Vocabulary development
- Use of marking system

B. Reading

- Reading for details
- Reading for general information
- Independent word-attach skills (analysis and synthesis)
- Oral reading
- Silent reading
- Speed reading
- Use of contractions at all levels
- Knowledge in the braille codes used in mathematics, science and languages.

Braille Writing

- General interest in writing
- Use of writing frame, slate and stylus
- Self-correction
- Use of writing board
- Note-taking
- Using punctuation
- Using contractions and symbols

Arithmetic

- Number awareness
- Numeral vocabulary
- Use of ordinal and cordinal numbers through 10
- Initial braille mathematics notations
- Management of linear and columnar presentations
- Initial braille frame and stylus writing of numerals to 10
- Use of number lines
- Use of Abacus for addition, subtraction, multiplication, division, decimals and fractions
- Mental arithmetic
- Measurements such as length, volume and estimating
- Set theory concepts
- Advanced use braille notations for mathematics
- Graph and chart reading

Daily Living Skills – Graded Activities

1. *Eating:*

- Holding food
- Eating with fingers
- Proper posture
- Manners and custom
- Use of utensils as appropriate
- Washing eating equipment

2. *Toileting:*

- Appropriate locations
- Positioning
- Cleaning
- Using common toilet

3. *Dressing:*

- Unbuttoning
- Unzipping
- Untying
- Folding
- Putting away in designated places
- Buttoning
- Zipping
- Tying
- Locating and putting on

4. *Body Hygiene - Cleanliness:*

- Drawing water
- Washing hands and face
- Cleaning teeth

5. *Body Hygiene – Personal grooming:*

- Combing hair
- Personal hygiene

6. *Bathing:*

- Drawing water
- Applying soap
- Proper washing
- Total bath
- Locating and identification of clothes

7. *Washing clothes*

- Procedures in washing (washing collar first, hands next, then body etc.,)
- Applying soap
- Rinsing
- Drying the washing clothes

8. *Handling money:*

- Identification of coins
- Identification of rupee notes
- Counting money

9. *Shopping:*

- Selecting appropriate material
- Giving money
- Checking the changes
- Checking the amount of materials or the items purchased

10. *Using Electrical Appliances (if necessary)*

- Using iron box
- Tuning the radio
- Using the cassette tape recorder
- Using a table fan
- Operating the appropriate switches on the board

11. *Shaving :*

- Using blade and razor
- Clean shaving
- Avoiding cutting while shaving

12. Food preparation:

- Selection of material
- Cutting and preparing
- Using appropriate heat
- Handling cooking equipment and vessels
- Serving(if necessary)
- Cleaning up

13. Using medicines:

- Identification of appropriate tables and capsules
- Taking correct measure of medicines
- Getting right medicines from the shop

Orientation and Mobility

- Identification of body parts (simple)
(e.g.) Hand, ear, mouth, feet etc.
- Identification of body parts (complex)
(e.g.) wrists, thighs, shoulders
- Identification of body planes (top, bottom, side, front and back)
- Identification of body planes in relation to other objects in the surroundings
- Knowledge of directions in relation to one's own body
- Knowledge of directions in relation to objects and other persons
- Posture and gait
 - equilibrium
 - foot placement
 - head carriage
 - hand-foot coordination
 - **Posture and gait**
- Using a Sighted Guide
 - Hand grip
 - Anticipating changes in elevation
 - Door ways
 - Narrow paths and obstacles
 - **Resisting techniques for 'pushers'**
- Independent Travel in unfamiliar environment
 - Trailing(act of using the back of fingers to follow slightly over a straight surfaces) e.g. wall, desks, tables, etc.,
 - Use of gross body guard

- Squaring off (Directing taking)
- Elevation clues
- **Changes in surface texture**
- Room familiarisation
- Whole gamut of cane techniques
- Use of remaining senses and mental memory.

Conceptualisation

- Understanding embossed diagrams
- Translation and interpretation of learning
- Generalisation
- Transfer of learning
- Analysis and synthesis ability
- Judging and reasoning ability

In a nutshell, the above said skills are considered to be the subject matters of plus-curriculum meant for the visually impaired children in the integrated education programme.

3.6 NEED AND SIGNIFICANCE OF PLUS CURRICULUM

The nature of learning of sighted children is natural. In the case of visually impaired children, it is mediatory. They have the fragmentary way of learning; they learn through pieces of information. Because of the visual deficit, visually impaired children may miss much visual oriented information, and so their way of learning must be adjusted in such a way that the visual limitations may not deprive them from getting optimum experiences. Plus curriculum gives visually impaired children the necessary skills and abilities to gain compensatory experiences in the visual oriented areas, which will help them to cope with the unseen world. It further ensures their full or maximum participation in the integrated education programme.

3.7 UNIT SUMMARY – THINGS TO REMEMBER

- The curriculum which involves more compensatory skills will provide them least restricted environment and thereby they could receive normalisation in their life and education
- The educational needs of the visually impaired children of the integrated education programme are met by the partnership work of regular and resource teachers.
- The regular teacher assumes the responsibility of taking care of general programme of the child and the resource teacher assumes the responsibility of teaching the skills peculiar to blindness, which is called as '*plus curriculum*'.
- The service offered by resource teachers on one to one basis is called direct service and the support service offered by him is called indirect service.
- The resource teacher provides more direct service to the primary level children and more indirect service to the secondary level children in the integrated education programme.
- The principles of material preparation are: duplication, modification, substitution and omission.
- Depending on the need and nature of visual concepts, the resource teacher may need to have adaptations in the local context.
- Plus curriculum means the skills peculiar to blindness such as braille reading, braille writing, orientation and mobility, daily living skills, sensory training and the use of mathematical devices such as Abacus, Taylor frame etc.,
- The nature of learning of sighted children is natural. In the case of visually impaired children, it is mediatory.
- Plus curriculum gives visually impaired children the necessary skills and abilities to gain compensatory experiences in the visual oriented areas, which will help them to cope with the unseen world.

3.8 CHECK YOUR PROGRESS

I. Choose the most appropriate answer from the alternatives given for each item:

1. 'inclusive education' means
 - a. all children learn together
 - b. education specially for impaired children
 - c. including visually impaired in the general schools
 - d. including the disabled in the integrated education programme
2. Curriculum means
 - a. total experiences
 - b. syllabus
 - c. subject matters
 - d. classroom teaching
3. The regular teacher is responsible for teaching
 - a. skills for learning in the regular classroom
 - b. content areas
 - c. plus curricular skills
 - d. reading and writing skills
4. The resource teacher assumes the responsibility of teaching
 - a. skills peculiar to blindness
 - b. daily living skills
 - c. orientation and mobility
 - d. subject matters
5. Plus curriculum means
 - a. extra subject matters
 - b. additional information
 - c. skills peculiar to blindness
 - d. special learning experiences
6. Braille mechanics is associated with
 - a. Braille writing
 - b. Braille reading
 - c. Reading speed
 - d. Writing speed
7. The service offered by the resource teacher on individual basis is called as
 - a. direct service
 - b. indirect service
 - c. support service

- d. special service
- 8. Teaching pre-cane mobility skills comes under
 - a. direct service
 - b. indirect service
 - c. special delivery
 - d. auxiliary service
- 9. Visually impaired children in integrated education programme need
 - a. the same curriculum meant for the sighted
 - b. special curriculum followed in special schools
 - c. same curriculum with modified approaches
 - d. a different curriculum
- 10. The nature of learning of visually impaired child is mediatory. It is because of their
 - a. visual deficit
 - b. poor cognitive development
 - c. slow learning
 - d. poor memory

II. Answer the following questions:

- 11. Explain the role of teachers in curriculum transactions for the integrated education programme.
- 12. What is the importance of braille textbooks for the visually impaired children in the integrated education programme?
- 13. What do you mean by adapted instructional material for the visually impaired children? What are the principles of material preparation?
- 14. Explain the concept of adaptations in the local context. Why do we need adaptations in the local context?
- 15. What do you mean by plus curriculum? Explain the various components of plus curriculum.

3.9 ASSIGNMENT / ACTIVITY

Make a list of various activities of a teacher as a researcher in the education of visually impaired children.

3.9.1 The various activities of a regular teacher as a researcher of the learning problems of visually impaired children in the integrated education programme are

3.9.2 The various activities of a resource teacher as a researcher of the learning problems of visually impaired children in the integrated education programme are :

4

3.9.3 Prepare a graded activities for teaching a particular daily living skill to a visually impaired child

4

3.9.4 Various ways of providing better curriculum transactions in the integrated education programme for the visually impaired children are :

3.9.5 Various mobility skills that can be taught by the resource teacher inside the resource room are :

3.10 POINTS FOR DISCUSSION/CLARIFICATIONS

3.10.1 Points for discussion

3.10.2 Points for Clarification

4

3.11 REFERENCES / FURTHER READINGS

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3. National Council of Educational Research and Training, Central Resource Centre (PIED) (1987). Source Book for the Teachers of Visually Impaired. New Delhi: NCERT.
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UNIT 5:REPORT WRITING

STRUCTURE

- 4.1 Introduction**
- 4.2 Creative Arts for the Visually Impaired Children**
- 4.3 Definition of creative arts for Visually Impaired Children**
- 4.4 Need for the creative arts for the disabled**
- 4.5 Nature of creative art activities**
 - 5.1 Language arts
 - 4.5.2 Music
 - 4.5.3 Craft work
- 4.6 Manual skills in various creative art activities**
- 4.7 Challenges in implementing creative art activities**
 - 4.7.1 Result may change as a result of change in objective
 - 4.7.2 Need for a comprehensive programme
 - 4.7.3 Assessment of available facilities
 - 4.7.4 Need for creating more employment opportunities
 - 4.7.5 Uniformity of the programme
 - 4.7.6 Stereotypic attitude towards blindness
- 4.8 How can we improve the creative arts education for the disabled?**
- 4.9 Physical education for visually impaired children**
- 4.10 Some definitions of physical education**
- 4.11 The aims and objectives of physical education**
- 4.12 Need of physical education for the visually impaired children**
- 4.13 What is adapted physical education?**

- 4.14 Sound programme of adapted physical education**
- 4.15 Activities suitable for visually impaired children**
- 4.16 Physical education in residential schools**
- 4.17 Physical education in integrated education programme**
- 4.18 Orientation and mobility training, and physical education**
- 4.19 Teaching method in physical education activities**
- 4.20 Strategies for coping with stress and health related problems**
- 4.21 Yoga and visually impaired children**
- 4.22 Major factors that cause stress and health related problems in visually impaired children**
 - 4.22.1 Physical factors
 - 4.22.2 Unconscious factors
 - 4.22.3 Social conformity
 - 4.22.4 Segregation of visually impaired children
 - 4.22.5 Lack of guidance and counselling
- 4.23 Strategies to coping with stress and health related problems**
- 4.24 Unit summary – Things to remember**
- 4.25 Check your progress**
- 4.26 Assignment/Activity**
- 4.27 Points for discussion/clarification**
 - 4.27.1 Points for discussion
 - 4.27.2 Points for clarification
- 4.28 References /Further readings**

4.1 INTRODUCTION

The concept of 'equality' is interpreted in many ways. As far as education of visually impaired children are concerned, the equality refers to the provision of all educational experiences to the visually impaired children with modified approaches. It is a question of satisfying the need of the individuals. Now, it is widely accepted that the children with physical limitations should not be considered as the children with problems but they are the children with special needs. In this unit, let us discuss the possibilities of providing creative arts and physical education activities and the strategies for coping with stress and health related problems of visually impaired children in special schools and integrated settings.

4.2 CREATIVE ARTS FOR VISUALLY IMPAIRED CHILDREN

Every one of us either knowingly or unknowingly is creative. Some of us may get appreciation when the products come out more successfully. But in most occasions, things are not coming out because of the lack of guidance and identity. This becomes quite reasonable when the persons with sensory limitations find difficulties to know where they are, what they CAN mostly and what they CANNOT rarely. As stated by the psychologists when more than one sense is involved, the learning will be more effective and leading to a creative process which in turn helps them to have elaboration, originality in the manipulation of their ideas.

4.3 DEFINITION OF CREATIVE ARTS FOR VISUALLY IMPAIRED

Creative education is a novel idea to the visually impaired as it gives him an opportunity to bring out his latent potentialities. As far as disabled are concerned creativity is the quality which leads to production o something new and desirable. The new product may be new to the society or merely new to the individual who creates it. In this context if anything which helps to bring him social status, a sense of independence, it is the Creative Arts for the disabled. For the child with

disability needs attention and appreciation more than sympathy. It is well taken if anything helps the impaired child to achieve this.

4.4 NEED FOR THE CREATIVE ARTS FOR THE DISABLED

The very aim of education to the disabled child is to give knowledge about the realities of the world, the confidence to cope with these realities and accepting him in his own capacity as a contributing member of the society. Art education is one of the desired areas, which could help to achieve the above. It finds benefits in:

- Developing self confidence in their own potentialities
- Activating the skills in the disabled child, which will induce to do socially productive work for their subsistence.
- Influencing the individual to develop the qualities and values such as co-operation, responsibility of finishing their work and self confidence.
- Creating attunement to the school atmosphere, which will naturally fit into the unseen environment when he is adaptive.
- The by-product of creative art activity is the support of the para-professionals. When the parents find their children independent by their earnings with the effective management of their learned skills and competencies, they fully recognise and accept their children. Their efficiency and interest help them not only for their rehabilitation but also to ward-off domestic stress and tension family caused by their sedentary condition of being 'handicap'.

4.5 NATURE OF CREATIVE ART ACTIVITIES

When the teacher in the educational programme helps the visually impaired children in providing optimum experiences, the skills acquired by him in course of time, will cast the vocation itself which may seem fun today for him but it will become an important source to offer him a better livelihood in future. With this aim in view, let me list out the skills and competencies that should be attained by the visually impaired child to get on with creative art activities.

4.5.1 Language Arts

Language is one of the areas where the visually impaired children come out from the environmental deprivations. In most occasions, the visually impaired child is curious to know the world around him. There are many children who are interested in writing essays, composing poems, and taking part in oratorical competitions. The teachers should identify these children and give more opportunities to bring them up. The following activities will be useful to develop the skills in language arts:

- arranging oratorical competitions
- group discussions
- organising drama
- developing appropriate verbalism

In the integrated setting, the above said arrangements are fully possible. For example, the teacher may ask the attributes of “NIGHT”. Now, let us see as how to identify the children who show a progress in creativity in the vocabularies with reference to the above example.

‘Dark’

‘Yellow’

‘Pale yellow’

These may be the interpretations of the children. This reveals the development of vocabularies in the children. When this is the answer from many children, if anyone of them says the night appears “cool”, it is highly appreciable and more opportunities to raise up such children can be designed.

4.5.2 Music

Music is, of course, the most enjoyable art. As we know, the very schooling starts with nursery rhymes, our experiences have detailed the truth that when the age increases, the attitude to sing loudly declines. However, this may not be applicable to the children with good vocal voice and most commonly, the professionals. It is also noteworthy that many visually impaired persons opt for music. Music aptitude

and musicality can be developed in them through more systematic and planned approach, which require some fundamental auditory and listening skills.

After the development of these skills in a child, the following may be of prime importance. At the beginning, more opportunities can be provided to develop the ability to reproduce the sound. This will continue to reverberate in his future attempt in developing musical aptitude. Later, this is expanded to:

- music rather than the musical reproduction
- attention to different tunes by listening to radio, music programmes which may be instrumental and vocal.
- experience of band marching, physical exercise etc. according to music.

4.5.3 Craft Work

Craft work involves many skills of manipulation of materials and handling of tools. In the case of visually impaired children, it increases the physical independence and self-satisfaction. They can shine well as it leaves more hope to the sense of touch. At present, the educational institutions having these facilities are very limited. But at the same time, we cannot keep our hands crossed by saying we have no adequate facilities. Then **what we have to do?** We have to plan our activities so as to keep them ready to learn the basic skills in manipulation of the different materials and in handling tools. The child should learn certain basic motor skills (e.g. winding, gripping, pressing, screwing, pushing, pulling etc.).

Wide use of variety of materials increases the child's manipulative skills and expands his understanding of things to do and things to use in this world. For example, card board, beads, string, paper, pebbles, cloth remnants, shells and the like can be exposed to the wide use in the tiny hands of the visually impaired children. The training in manipulation of activities may be given formally and informally. It should be started right from the kindergarten level. The children at the primary level may be given training in recognition of likeness and differences.

- In tactual recognition from gross to more refined (say from rough to smooth in paper)
- In size from large to small

- In form (regular and irregular shape)
- In kind (matching or sorting such as cloth)

The visually impaired children can be encouraged to categorise or arrange in sequence. For example, wood blocks, cloth, coins, buttons and other locally available objects. Play way method may be immense use for doing such activities.

4.6 MANUAL SKILLS IN VARIOUS CREATIVE ART ACTIVITIES

Finger manipulation and manual dexterity skills can be developed through:

- exercises to fingers and wrists
- developing hand-foot coordination
- body coordination
- developing motor abilities by physical exercises
- general orderliness of the body parts
- sensory training involving remaining senses.

4.7 CHALLENGES IN IMPLEMENTING CREATIVE ART ACTIVITIES

4.7.1 Result may change as a result of change in objectives

While addressing the immense use of creative art activities for the visually impaired children and the wide acceptance on the part of the society, how many creative art activities can be introduced in the school? Over the years of experiences, it has been found that despite the many activities for the visually impaired children, they suffer from a serious set back from the training and delivery point of view in a school situation. Sometimes the children, who have put their efforts in academic excellence, may not show interest in creative art activities. On the other hand, the children who have shown scant attention in academic performance are placed in the training vocations like mat weaving, handloom weaving, caning etc., In such

circumstances, it is better to find ways through both of them find their choices and get benefited.

4.7.2 Need for a comprehensive programme

In many occasions, the visually impaired children are dumped in different creative art activities ignoring their skills and competencies for what tasks they are suitable. When they observe no access, they are out interest. It requires a comprehensive and unique programmes, which could develop skills and competencies in a variety of activities they opt for.

4.7.3 Assessment of available facilities

Before the start of the programme, it is always necessary to assess the existing facilities. But unfortunately, many programmes suffer for the dearth of trained teachers, materials that are the base for the smooth running of the programmes. A sound programme always needs a sound input assessment before launching it.

4.7.4 Need for creating more employment opportunities

When the bread winning of the visually impaired persons is highly questioned after schooling, it is worth considering that the activities developed for the visually impaired children should give them more employment opportunities. The research studies done in the recent past have revealed the fact, music is the most useful and remunerative creative activity for the visually impaired children. And also the creative activities such as clay modelling, paper folding, gardening and dancing offer less job opportunities for the visually impaired persons but provide a sense of satisfaction and reduces tension caused by the effect of blindness.

4.7.5 Uniformity of the programme

It is obvious that various creative art activities are now provided to the visually impaired children, more sporadically, sometimes that too with a failure to evaluate the progress more carefully and the self satisfaction of those who are left with no choice than to choose a particular activity either by his master in most occasions or by himself on several occasions.

4.7.6 Stereotypic attitude towards blindness

It is the conventional behaviour of the public towards blindness that we call it as stereotype attitude i.e. Over estimation about visually impaired children that they have extra sense , for example, all the visually impaired children are good musicians. This is because of less experience or no experience with blind children.

4.8 HOW CAN WE IMPROVE THE CREATIVE ARTS EDUCATION FOR THE DISABLED CHILDREN?

The following are some of the activities and strategies that will increase the creative art abilities of the visually impaired.

- Strategies must be framed to train the personnel who are supposed to take the task of training the disabled children in different creative activities.
- There should be more research activities for identifying the skills of visually impaired children in different areas of creative art activities. This will help to explore the possibilities of introducing many more activities for the visually impaired children.
- The following activities can be introduced in the schools after the field experimentation.
 - i. Music
 - ii. Chair caning
 - iii. Wire bag works
 - iv. Language arts
 - v. Clay modeling
 - vi. Paper folding
 - vii. Palm leaf work
 - viii. Bead work
 - ix. Plastic wire bag and baskets making
 - x. Wood work
 - xi. Knitting
 - xii. Fine arts
 - xiii. Mono acting and dramatisation

- While the institutions offering vocational education are very limited, it is very reasonable for other institutions to give opportunities on developing pre-vocational skills in the school itself. This will widen their scope when they need to put up in rehabilitation centers some time later. The term “pre-vocational education’ is concerned with gaining skills with varied materials and tools, but emphasising human elements of safety measures, organisation, work habits, attitudes, leading to possible vocational education choices. For example, tools like hammer, chisel, hatchet, carver etc., must be exposed to the visually impaired children in their early schooling itself, but under the supervision of a trained teacher. This will prepare him/her for the professional training and employment in future. Helping them to handle such instruments will bring enormous utility value and self- confidence in the young minds of visually impaired children.

4.9 PHYSICAL EDUCATION FOR VISUALLY IMPAIRED CHILDREN

Physical education is considered part and parcel of education activities of pupils. It gives physical fitness, social fitness, moral fitness and emotional balance. The development in physical education not only enables him good physique but also the co-curricular educational activities. It is a very important co-curricular activity, which helps for the overall personality development of young generations.

4.10 SOME DEFINITIONS OF PHYSICAL EDUCATION

- J.F. William contends that, “physical education is the sum of man’s physical activities selected as to the kind and conducted as to outcomes”.
- According to J.P. Thomas “ physical education is education through physical activities for the development of total personality of the child and its fulfilment and perfection in body, mind and spirit”.
- To R. Cassidy “physical education is the sum of changes in the individual caused by experiences in motor activities”.
- J.B. Nash says, “ physical education is that phase of the whole field of education that deals with muscular activities and their related responses”

4.11 AIMS AND OBJECTIVES OF PHYSICAL EDUCATION

The following are the main aims and objectives of physical education:

- Development of the Neuro-muscular system and particularly in its relation to control over certain fundamental skills.
- Providing facilities for the growth and development of body and mind.
- Development of social qualities and wholesome reactions which enable them to develop spirit of co-operation, loyalty, obedience, fellow feeling, sportsmanship, honesty, courage, leadership and proper spirit of joy and defeat.
- Development of organic system of individual through physical activities. In addition it should check bad posture and develop strength, endurance and organic vigour.
- Conservation of health and to develop resistance to diseases.
- Development of hygienic habits and importance of cleanliness.

4.12 NEED OF PHYSICAL EDUCATION FOR VISUALLY IMPAIRED CHILDREN

The physical development needs of disabled children are the same as those of non-disabled children. But the fact that visually impaired children do not see normally restricts their play activity in numerous instances. Often they are noticeably retarded in their physical development. Fear of injury and lack of confidence often reduce their interest not only their physical education activities and also their daily moving from one place to another place. As a consequence, they hesitate to run, walk, jump, and climb which are very common among the seeing children even in their early ages. The aims and objectives of physical education are the same to seeing children as well as children with physical limitations. For too long, visually impaired children have been denied access to the regular physical education programme of their schools. It is therefore, very important that the visually impaired children are provided with a suitable programme of physical education so as to enable them to derive the benefits of physical activities.

4.13 WHAT IS ADAPTED PHYSICAL EDUCATION?

Glaudine Sherill says, “ The major purpose of Adapted Physical Education is the same as that of regular physical education to change psychomotor behaviour thereby facilitating self actualisation, particularly as it relates to understanding and appreciation of the body and its capacity for movement. This psychomotor behaviour may be primarily cognitive, affective or psychomotor.”

Adapted Physical Education is defined as “a diversified programme of developmental activities, games, sports, and rhythm suited to the interest, capacities and limitations of students with disabilities, who may not safely or successfully engage in unrestricted participation in the vigorous activities of the general education programme.”

4.14 SOUND PROGRAMME OF ADAPTED PHYSICAL EDUCATION

A programme of adapted physical education should include:

- Suitable physical activities
- Essential facilities and equipment
- Suitable methods of teaching and class management
- A proper evaluation procedure
- Intramural and extramural activities

4.15 ACTIVITIES SUITABLE FOR VISUALLY IMPAIRED CHILDREN

- Developmental exercises
- Mime, story plays and singing games
- Drill and marching
- Indigenous activities – yogic exercises, dance and baithake
- Light exercise apparatus – dumbbells, Indian clubs, wand and pole drills
- Rhythmics – folk dance, Kummi and Kollatam
- Gymnastics and rope activities
- Wrestling and combative contests

- Minor games and relays
- Games in athletics
- Aquatics (wherever facilities are available)

4.16 PHYSICAL EDUCATION IN RESIDENTIAL SCHOOLS

There are ample opportunities for designing specific games and sport activities for children with specific abilities. Bearing in mind, the absence of vision, many activities that are organised for sighted children can also be well organised for the visually impaired children by proper adaptation of the rules and regulations of the games. Adaptations like the provision of auditory clues instead of visual clues, adaptations in the environment, etc., are imperative for visually impaired children. In a special school setting, organised sports can be conducted with special equipment, special approaches and with special facilities. Eventhough the adapted games are always slower than that of the original games, this may not affect in principle, in the residential setting because the games are played only by visually impaired children.

4.17 PHYSICAL EDUCATION IN INTEGRATED EDUCATION PROGRAMME

As far as the physical education of the visually impaired children particularly in the integrated education programme, the following are the main issues.

Box- 1 Common issues of physical Education for visually impaired children

- Can we neglect visually impaired children in physical education in the regular schools?
- If not, to what extent they can participate?
- If yes, to what extent they cannot?
- What are the criteria in assessing the performance of visually impaired children?
- Should assessment be on par with the seeing children? Or
- Should assessment be among the visually impaired children only?

The following discussions will throw some light on the above issues of physical education for the visually impaired children in the integrated education programme.

- We cannot make visually impaired children in the integrated education to participate in all the activities of physical education and they cannot compete with the sighted children.
- It does not mean that visually impaired children have to be sedentary. There are games where they can participate satisfactorily. Weight lifting, bull ups and similar activities, which need no vision can be introduced to such children.
- Fully integration is quite possible in slow games. But for the fast games, playing among the visually impaired children is better. In such circumstances, suitable and appropriate performance assessment is possible.
- Should visually impaired child be compared with another child of the same category or with a sighted child? – The visually impaired children should not be compared with another child of the same category or with sighted children. A visually impaired children should be compared with himself.
- A visually impaired child should be compared with himself? What does it mean? – Suppose, a visually impaired child is admitted in a school in the month of June, his performance in the month of August may be compared and his progress may be taken into account.
- The physical education for the visually impaired child should not mean only the efficiency in the sports and games but it is the development of stamina and skill in visually impaired child.
- Some of the advocates of physical education programme for the visually impaired child in the integrated education programme have the opinion that attempts should be made to provide adapted devices such as sound ball. Visually impaired child can also take part in running when there is a provision for iron strings in the running track, leaving a groove on the ground, tyre swings in the trees etc., In games and competitions, where the necessary adaptations are made, visually impaired children can participate and enjoy the fruits of physical education like sighted children. “This could not be made possible for the child in integrated setting because, the ground could not be modified for the needs of a few visually disabled children in the programme” (M.N.G. Mani, 1986).

- The visually impaired children should be grouped together among themselves where the mix of sighted children and visually impaired children is found less value particularly in fast games such as cricket, foot ball, basket ball etc., The visually impaired children can be grouped with sighted children in slow games such as weight lifting, pull-ups, asanas, skipping etc.,
- The games, which have less hope for the visually impaired children, can be oriented orally to the visually impaired children and this awareness may help them to enjoy along with the sighted peers. "The children who thoroughly understand the rules and regulations of the game are able to take part in the discussion of the game with their sighted companions in social gatherings" M.N.G. Mani (1986).

Though the integrated education programme advocates the provision of equality and equal opportunity, in the area of physical education the visually impaired children cannot compete with sighted children. Now the question arises, Why they cannot?

The reasons are:

- By nature, sighted children who are using the sight as the primary mode of information are used to the fast movements of the game. Since the auditory clues and information on an account cannot match the visual information, the sighted children are reluctant to play with the visually impaired children. It is very vital to note that this isolation is not caused because of blindness but of the game.
- The curiosity motive, explorative motive and manipulative motive have little place in the case of visually impaired children as they are affected by the objective effects of blindness such as reduction in range and variety of experience, reduction of control over the environment and the self in relation to it and the reduction in the mobility to move about.
- In sports and games, team activity is very significant. Every individual is expected to be sensitive and alert to the situation. The coordination and the team spirit contribute to a greater extent for the success. Including visually impaired child in a group of sighted peers may cause unhappiness and naturally it reduces the tempo and rhythm of the activity. In such circumstances, full integration is not possible.

4.18 ORIENTATION AND MOBILITY TRAINING, AND PHYSICAL EDUCATION

The relation between the skills in orientation and mobility and physical education is inseparable. Many research studies have proved the mutual relationship between these two. The mobility skills such as squaring off (direction taking), clock concept, veering (the tendency to move or turn slightly to the right or left rather than to walk in straight line), visualisation (making mental picture or map of the environment by combining verbal descriptions and sensory impressions) contribute to a greater extent for the physical education activities of the visually impaired children.

4.19 TEACHING METHOD IN PHYSICAL EDUCATION ACTIVITIES

Since the visually impaired children largely depend on the auditory and tactile senses, the instructor must be cautious about the systematic planning in developing the aural and tactile skills in the children. Many a times, the child needs one to one teaching and graded activities in performing physical education activities. One of the important teaching media of visually impaired children is kinesthetic sense, which refers to the involvement of muscular activity in teaching and learning situation. Using the kinesthetic sense, the child is able to be aware of the direction of the motion of his body in the unseen environment. This is very much required by the child to perform various physical education activities, which need the motion of the bones, joints and muscles. Play way method is more suitable for the primary level children. The teachers have to develop various listening and toactile skills both in formal and informal ways.

4.20 STRATEGIES FOR COPING WITH STRESS AND HEALTH RELATED PROBLEMS

Visually impaired persons face the same emotional hazards that all persons do. In most cases the process of adapting to the unseen environment creates additional tension that when superimposed upon the normal stresses of living increased mental

health risks. The emotional developments of those born blind or blind early in life in fraught with special dangers. These dangers include negative parental attitudes toward blindness, thwarted learning opportunities, in adequate stimulation and segregate treatment. This causes stress and strain on the part of visually impaired children. In adolescence, additional hazards appear at such crisis points as the development of sex curiosity, the beginning of dating interest, the emerging need for greater mobility in an automobile conscious culture and the growing concern of the blind teen ager about marriage and his future society.

The mental health problems associated with blindness tend to reduce the coping capacities of the individual at a time when he needs emotional strength and stability. He will be learning new and unfamiliar techniques of living, developing relationships with professional personnel and peers, exposing himself to possible frustration and stress and defeat in undertaking the assigned job and abandoning the comfort of dependency.

When adjustments should be viewed as the base for managing stress and health related problems, now it is a question that adjustments should be in-groups or individuals. "It is fruitless to view the adjustment of blind persons in group terms. Individual factors are the major determiners of emotional adjustment in blind persons", Minnesota Multiphasic personality Inventory (1958).

4.21 YOGA AND VISUALLY IMPAIRED CHILDREN

The meaning of the word "Yoga" is to bind together, to integrate and to make a whole. As the body, the mind and the spirit become more integrated and balanced, something happens within the person. This is because, there is an inner growth or release, and therefore, a realisation of one's self as a person takes place. This is something good for the visually impaired children.

Most of the exercises in yoga have to do with keeping the spine supple and as the central nervous system flows through the spine, the result is an improved circulation in that area. When there is improved functioning of the whole nervous system, the body will automatically have an increased feeling of well being, and energy. As the impaired children practice yoga, the pairs of opposite currents, the heating and cooling the air and the fire become harmonised. Tensions drop away and

practitioners will become more tolerant, understanding and compassionate. In fact as the result of yoga practice, their nature changes and a nicer side seems to come to the fore. The beneficial effect of yoga awakens the perceptive sides of people. Yoga is helping the people with lot of ailments.

4.22 MAJOR FACTORS THAT CAUSE STRESS AND HEALTH RELATED PROBLEMS IN VISUALLY IMPAIRED CHILDREN

The major factors that cause stress and health related problems of visually impaired children can be discussed as follows:

4.22.1 Physical factors

Seeking sound and touch cues that will guide the responses of a visually impaired children and can be continuing strains and tension. So much behaviour is shaped by the stress of having to attend to non-visual stimuli, which count for little in the life of the more relaxed sighted peers.

4.22.2 Unconscious factors

In fact, the loss of sight may be perceived as a castration experience and as punishment for sinful acts. Since these reactions are not on the conscious level, the visually impaired persons may be perplexed by apparent irrational behaviour that when viewed in the context of unconscious impulses.

4.22.3 Social conformity

Visually impaired persons feel the stress and strain of social pressures towards adapting the behaviours of sighted persons in such activities as eating, walking and relating to others. Unfortunately some "socially acceptable" responses may not be personally acceptable to a disabled individual. Similarly some common behaviour standards established by the sighted society may be inappropriate, even dangerous, for the visually impaired individual. For example, when the visually impaired child

tend to show his happiness by clapping and jumping, it is many times labelled as blindness.

For long, the public has the stereotype attitude towards blindness and expects every visually impaired child to be over cautious or over talented because of his extra sense. As a result of this attitude, the society may have overestimation or underestimation. Naturally this will cause stress in the minds of the persons who are not able cope with these expectations. This type of experiences of the visually impaired individual in the unseen environment may create feelings of bitterness in him/her and may intensity not only mental health problems and also physical health problems.

4.22.4 Segregation of visually impaired Children

Social motives play an important role in shaping the behaviour of an individual. Group affiliation and group acceptance are the human motives that can be looked upon as general states that lead to many behavioural changes on the part of individuals. In many occasions, they determine much of what a person does. Every individual has a need for affiliation and a need to make friends in the society. It is not only the need of an individual and it is also the need of the living society. When the visually impaired children are segregated from mainstreaming just because they are blind, it naturally causes unnecessary strain in the minds of the visually impaired children and it will be reflected through their out-group behaviour. As a result they are unable to cope with the sighted world.

4.22.5 Lack of guidance and counselling

Many a times, the visually impaired are guided by the sighted people and they see and understand this world through them particularly during their childhood. Most of the parents are not aware of the implications of blindness and they do not know what to? and how to do? As result of either ignorance or the negligence of the parents, the children are suffering either from overprotection and no care of them. This naturally causes stress in the young minds of visually impaired children and they will not be interested in any activity. The parents and the persons working for the blind should properly be oriented about the blind people and the blindness.

4.23 STRATEGIES TO COPING WITH STRESS AND HEALTH RELATED PROBLEMS

- Coordination and uniformity between education and rehabilitation programmes.
- Coordination between the educational and health service programmes. For example, the eye camp, early intervention programme can be conducted in educational institutions so that it brings awareness to the society as well as visually impaired individuals.
- *Segregation to inclusion.* All visually impaired children who are academically capable should be given opportunities in the regular schools.
- *Protection to liberation.* Visually impaired children should be free, from over protection both in home and schools. Parents and teachers must be oriented to the various aspects of blindness and blind children.
- *Mere book learning to normalisation.* Visually impaired children should be allowed to get maximum experiences and they should be treated on par with sighted children.
- *Learning together.* All that is needed by the sighted children are needed by the visually impaired children too and so educational experiences in the least restricted environment help him to become a contributing member of the society. They should have all the opportunities to interact normally in social setting.
- *Learning to know.* Visually impaired children should have equal educational experiences through varied curricular approaches.
- *Learning to do.* Visually impaired children are shown sympathy, which they don't want but they need attention, appreciation and affection. This will make them ready for mainstreaming.
- *Orientation to personnel.* The personnel involved in the programmes of visually impaired children should be trained properly and they should have thorough knowledge in the various aspects of blindness and the blind people.
- *Guidance and Counselling.* Each educational programme should have a guidance and counselling unit so that the visually impaired children should be guided properly in education and vocation facilities in various places.

4.24 UNIT SUMMARY – THINGS TO REMEMBER

- Creativity is the quality, which leads to production of something new and desirable. The new product may be new to the society or merely new to the individual who creates it.
- The very aim of education to the disabled child is to give knowledge about the realities of the world, the confidence to cope with these realities and accepting him in his own capacity as a contributing member of the society.
- Arranging oratorical competitions, group discussions, organising drama, and developing appropriate verbalism are the useful activities in developing language skills of visually impaired children.
- Music aptitude and musicality can be developed in them through more systematic and planned approach, which require some fundamental auditory and listening skills.
- Craft work involves many skills of manipulation of materials and handling of tools. In the case of visually impaired persons, it increases the physical independence and self-satisfaction. They can shine well as the craftwork leaves more hope to the sense of touch.
- The children at the primary level may be given training in recognition of likeness and differences.
- Finger manipulation and manual dexterity skills can be developed through: exercises to fingers and wrists, developing hand-foot coordination, body coordination, developing motor abilities by physical exercises, general orderliness of the body parts, and sensory training involving remaining senses.
- Adapted Physical Education is defined as “ a diversified programme of developmental activities, games, sports, and rhythm suited to the interest, capacities and limitations of students with disabilities, who may not safely or successfully engage in unrestricted participation in the vigorous activities of the general education programme.”
- In Yoga, a realisation of one’s self as a person takes place which is something good for the visually impaired children.
- In a special school setting, organised sports can be conducted with special equipment, special approaches and with special facilities.
- We cannot make visually impaired children in the integrated education to participate in all the activities of physical education and they cannot compete with the sighted children.

- The visually impaired children should be grouped together among themselves where the mix of sighted children and visually impaired children is found less value particularly in fast games such as cricket, foot ball, basket ball etc., The visually impaired children can be grouped with sighted children in slow games such as weight lifting, pull-ups, asanas, skipping etc.,
- The children who thoroughly understand the rules and regulations of the game are able to take part in the discussion of the game with their sighted companions in social gatherings.
- Many research studies have proved the mutual relationship between orientation and mobility, and physical education.
- Many a times, the child needs one to one teaching and graded activities in performing physical education activities.
- The major factors that cause stress and health related problems in visually impaired children are : physical factors, unconscious factors, social conformity, segregation of visually impaired, lack of guidance and counselling.
- Strategies to cope with stress and health related problems of visually impaired children are: coordination and uniformity between education and rehabilitation programmes, coordination between the educational and health service programmes, segregation to inclusion, protection to liberation, mere book learning to normalisation, learning together, learning to know, learning to do, orientation to personnel and guidance and counselling.

4.25 CHECK YOUR PROGRESS

I. Choose the most appropriate answer from the alternatives given for each item given below:

1. The word equality means
 - a. Provision of same materials
 - b. Satisfying the need of all individuals
 - c. Admitting visually impaired in general schools
 - d. Absence of special facilities

2. Eye-foot coordination is
 - a. Academic skill

- b. Tactile skill
 - c. Kinesthetic sense
 - d. Manual skill
3. Stereo type attitude means
- a. Conventional behaviour
 - b. Unhealthy behaviour
 - c. Aggressive feeling
 - d. Favourable towards blindness
4. Adapted physical education is
- a. a diversified programme of sports and games
 - b. new physical education programme
 - c. special programme
 - d. a different physical education programme
5. Mental picture of the environment combining verbal descriptions and sensory impressions is called
- a. squaring off
 - b. veering
 - c. visualisation
 - d. perception

II. State true or false for each of the following statements.

- 6. Full integration of visually impaired children is not possible in the major games such as cricket, basket ball, foot ball in the integrated education programme
- 7. The listening skills can be developed in visually impaired children because they have extra sense.
- 8. Segregation of visually impaired from mainstreaming causes stress and health problems
- 9. According to R. Cassidy, "physical education is the sum of changes in the individual caused by experiences in motor activities".

III. Answer the following questions:

- 10. What do you mean by 'creative art'? Explain the various creative art activities suitable for visually impaired children.

11. What are the challenges in implementing creative art activities for the visually impaired children?
12. Give your suggestions for the effective implementation of creative art programmes for the visually impaired children?
13. What do you mean by adapted physical education? Explain the various aspects of physical education programmes in the residential and integrated education programmes.
14. Narrate the various factors that cause stress and health related problems in visually impaired children.
15. What, according to you, are the strategies to cope with stress and health related problems of visually impaired children?

4.26 ASSIGNMENT/ACTIVITY

Make a list of various creative art activities that can be implemented in residential schools.

4.26.1 The various activities of a regular teacher as a researcher of the learning problems of visually impaired children in the integrated education programme.

4.26.2 The various creative art activities that can be introduced in the integrated education programmes.

4.27

4.27.1 Prepare graded activities for teaching listening skills to the visually impaired children.

4.27.2 Prepare a list orientation and mobility skills that contribute to the physical education activities.

4.27.3 Suggest the various activities that are helpful to develop motor skills of visually impaired children.

4.27 POINTS FOR GENERAL DISCUSSION AND CLARIFICATION

4.27.1 Points for Discussion

4.27.2 Points for Clarification

4.28 REFERENCES /FURTHER READINGS

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**BLOCK 5:
ASSESSMENT OF
LEARNING NEEDS OF
CHILDREN WITH
VIMD**

INTRODUCTION

In a broader perspective, rehabilitation should meet four essential needs of a disabled person, viz., education (formal, non-formal), skills (mobility skills, social skills, work skills, etc), employment and integration. Appropriate education of the blind changes his own perspective in the society, social awareness about him and makes the visually impaired academically suitable, physically fit, mentally alert, economically independent and socially amicable.

Unit 1 discusses about the pre-requisite skills for the successful rehabilitation of visually impaired, the role of multi-purpose rehabilitation workers, the linkages needed between education and rehabilitation professionals and its importance.

Unit 2 deals with the status and incidence of blindness in India. the welfare and rehabilitation programmes of the Government, the national initiatives for poverty alleviation of persons with visual impairment, the legislation provision for empowerment of persons with disabilities with regard to education and rehabilitation, and, the governmental programmes and initiation with regard to poverty alleviation of persons with visual impairment.

UNIT 1: CONCEPT AND DEFINITION OF VIMD

STRUCTURE

- 1.1 Introduction**
- 1.2 Objectives**
- 1.3 Meaning of Pre-Requisite Skills**
- 1.4 Pre-Requisite Skills for Successful Rehabilitation of Visually Impaired Children**
 - 1.4.1 Stimulation
 - 1.4.2 Daily Living Skills
 - 1.4.3 Sensory Training
 - 1.4.3 Orientation & Mobility
 - 1.4.5 Communication Skills
 - 1.4.6 Language Development
 - 1.4.7 Memory Building
 - 1.4.8 Basic Education
 - 1.4.9 Vocational Skills
- 1.5 Multi-Purpose Rehabilitation Workers and their Role**
 - 1.5.1 Multi-Purpose Rehabilitation Worker – Who?
 - 1.5.2 Role and Responsibilities of Multipurpose Rehabilitation Worker
 - 1.5.3 Role of Multi-Purpose Rehabilitation Worker for the Persons with Visual Impairment
- 1.6 Linkages between Education and Rehabilitation Professionals**
- 1.7 Unit Summary: Things to Remember**
- 1.8 Check Your Progress**
- 1.9 Assignment /Activity**
- 1.10 Points For Discussion / Clarifications**
- 1.11 References /Further Readings**

1.1 INTRODUCTION

Education, in general, changes the behaviour of an individual in a desired manner, but the education of the blind changes his own perspective in the society and social awareness about him. An appropriate education programme makes the visually impaired children academically suitable, physically fit, mentally alert and socially amicable. Education and rehabilitation are of the two sides of the same coin. Good education brings out a better rehabilitation for persons with disabilities. When we look into the broader meaning of the term 'Rehabilitation', it is a process in which the four essential needs of a disabled person is met, viz., Education – formal, non-formal, Skills encompassing mobility skills, social skills, work skills, etc., Employment and Integration.

The prime aim of any education and rehabilitation programmes for the persons with visual impairment should be to impart skills, which are suitable for their independent living in the community. Dealing with children having visual defects is a challenging task for which the role of trained personnel and professionals is very important.

In this unit, what are the pre-requisite skills for the successful rehabilitation of visually impaired? What is the role of multi-purpose rehabilitation workers? What linkages do we need between education and rehabilitation professionals, etc., are discussed.

1.2 OBJECTIVES

After thorough reading of the present unit, one can able to:

- narrate the importance of pre-requisite skills for the successful rehabilitation of visually impaired children.
- describe about each skills needed for the children with visual impairment.
- specify the role of multi-purpose rehabilitation workers.
- rationalize the need of multi-purpose rehabilitation workers.
- explain why the linkage is essential between education and rehabilitation professionals.
- focus what would be achieved by joining of education and rehabilitation professionals.

1.3 MEANING OF PRE-REQUISITE SKILLS

Pre-requisite skills refer to skills required for the visually impaired children to live in a better way in the community in terms of self-confidence, personal liberty,

individuality, economic independence, family acceptance, social integration etc.
Such skills are:

- stimulation
- daily living skills
- sensory training
- orientation and mobility
- communication skills
- language development
- memory building
- basic education
- vocational skills

1.4 PRE-REQUISITE SKILLS FOR SUCCESSFUL REHABILITATION OF VISUALLY IMPAIRED CHILDREN

Owing to absence of sight, the children are deprived of gaining information through eyes. Special educationists agree that about 85 percent of the information are received through our eyes and remaining 15 percent of the information are from other senses. As stated by Berthold Lowenfeld, blind faces three objective effects of blindness such as reduction in range and variety of experiences, reduction in ability to move about, and reduction in control of environment and of self in relation to it. To overcome the disability, a person with visual impairment should be trained in special skills peculiar to blindness.

The following are the pre-requisite skills for the successful rehabilitation of visually impaired children.

1.4.1 Stimulation

It is now an accepted fact that the process of learning begins much earlier in a child's life than what it is believed to be. Though in the first couple of years the child gives little indication, which may be a proof of learning, it is assimilating information from the life experiences. Though its power of action is subject to physical limitations, the child is mentally very active and receptive. The exposure given to the child in these years has a considerable impact on the learning abilities of the child in later years.

In case of blind children, it is often observed that they are kept in seclusion and given very little exposure to the day-to-day activities of the family. They may be made to sit in some corner apparently without much stimulation. A conducive environment for the education of blind children can be created in the family primarily by encouraging the parents and others to give the child sufficient exposure and experiences. It must be impressed upon them that a blind child too can assimilate information from life's experiences and hence must not be excluded from any of the family activities, events and ceremonies. A blind child must witness and be made to participate in all the festive occasions, marriages, religious ceremonies and even funerals. An older child may be asked to give a verbal description of the usual event to the blind child. It is only stimulation and exposure which can establish a strong foundation for further learning.

1.4.2 Daily Living Skills

Activities of daily living include all those things that people do every day: getting dressed, bathing, using the latrine, washing clothes, shopping, cooking, eating, cleaning the house, etc. Sighted persons learn to do these activities informally by watching other people. The basic skills involved in making beds, for instance, or sweeping the floor, shaving are usually learned by watching one's parents do these activities.

For blind people, some of these daily living skills can be difficult to learn. Because they cannot see, they cannot learn informally by watching the actions of others. They may hear someone making a bed and realize what that person is doing, but may not know the procedures involved. They may hear someone stirring food at the stove and smell the vegetables cooking, but this does not teach them how to prepare and cook vegetables. Because blind people cannot learn to do things by watching others, they must be formally taught.

Often blind people do not have to learn any special techniques for these activities of daily living. They can follow the same steps as a sighted person and need only to be taught the correct procedure. In bathing, for instance, there is no difference between the way a blind person and a sighted person wash themselves. They both must use soap and water; the procedure is the same.

Sometimes, however, a special technique may help the blind person do some activities more easily. These techniques usually make use of the other senses: touch, hearing, tasting, or smelling. To fill a glass of water, a sighted person pours water into the glass and stops when he sees that the water is almost to the top rim; a blind person must use either a tactual or a hearing clue to know when to stop. If a sighted person wants to wear a yellow shirt, he can easily pick it out by using eye sight; the blind person must have some kind of tactual clue to differentiate the yellow shirt and the white one.

It is important for blind person to master as many of these daily living skills as he can, so that he need not depend on others. If he cannot do these activities he must wait until someone else can help him. This is an inconvenience not only to others but also to blind person himself.

Remember these five rules when teaching daily living skills:

- Gather all materials and equipment before starting the activity.
- Be sure that the blind person knows where these materials are and can locate them easily.
- Be certain that the person can use each implement or piece of equipment correctly and safely.
- Have a work plan that tells you the correct procedure to use and lists each step in the proper order.
- After the activity is completed, be sure that your client cleans and returns all equipment and supplies to their correct storage space so they can be easily located later.

1.4.3 Sensory Training

If one of the senses is disfunctional, the loss of experiences will have to be compensated to the extent possible by improving the sensitivity and receptivity of the other senses. As the blind may be incapable of receiving the visual stimuli, they should be promoted to activate and channelize the remaining senses in order to perceive, comprehend and then exercise control over the environment. Parents must be given proper guidance, which would enable them to design activities for sensory training.

A normal domestic day-to-day life offers infinite scope for this purpose. Innumerable activities can be suggested which can promote sensory development with special emphasis on touch and hearing. It is only the family, which can carry out the responsibility effectively with the support from the professionals at regular intervals.

1.4.4 Orientation & Mobility

A blind child can feel at ease in a given environment only when he is oriented about different aspects, which characterize that environment. A sighted child can see his surroundings and get oriented automatically, but a blind child will require assistance. He must be taken to all rooms that comprise its home and also to be the adjoining areas. He must be made familiar with doors, windows, corners, staircase

and even the furniture in different parts of the house. It should also be oriented with the kitchen, toilet, bathroom, verandah, etc.

Similarly, it should then be taken around the house in order to explore and understand the surroundings such as the courtyard, garden etc. orientation must be done with sighted assistance and gradually the child may be encouraged to move on its own within the house and also in the adjoining premises. Indoor mobility within the home and also a little in the neighbourhood will instill self-confidence. He will automatically start exploring the environment, which will facilitate learning. Orientation & mobility is the basis of self-learning and hence adequate attention and importance should be given to these areas.

With training, blind persons can learn to move safely around their villages and environment. This allows them more freedom and makes them less dependent on family and friends. Children can learn to walk to school and adults can learn to walk to work. When blind persons can travel safely in familiar surroundings, they can become more active in family and community activities.

The training that teaches blind children to move about safely and independently is called as “orientation and mobility”.

- **ORIENTATION:** The ability to locate oneself in one’s environment.
- **MOBILITY:** The ability to move in the environment from one place to another.

Blind persons can use three methods to travel safely: walking with a sighted guide; walking alone without a cane or sighted guide; walking by oneself with a long cane. Each of these methods has special rules and techniques that must be learned. It is important for blind people to know these special techniques and to use them every time they move place to place.

1.4.5 Communication Skills

Man is a social animal and hence the need and power to communicate with others is largely inborn. A child due to physical limitations and in the absence of any language development has access to the basic channels of communications only. It expresses most of the innate human emotions and responses by facial expressions, body language or by making monosyllable sounds. Gradually by observing and imitating those around him, he familiarizes himself with more complex channels of communication such as speech, gestures, movements of the eye etc. His communicative ability in the latter part of his life has a tremendous impact on his performance in all sectors of his life, namely academics, profession, family and social life, etc. Early education must thus pay considerable attention to the development of communication skills.

A blind child faces the greatest handicap in his early life with respect to communication. His inability to see the expressions of friendliness and love on the faces of those around him makes him afraid of social contacts. Such a child may cling to the mother always, finding warmth, security and reassurance in her arms. Anyone else approaching the child may evoke fear and uneasiness. Even after the child begins to speak it may be put to considerable embarrassment not knowing when people are addressing him. Similarly, absence of vision may trigger facial expressions, which may seem ugly or irrelevant.

In the initial years, communication with the blind child must be through direct physical contact. Once he feels secure and perceives the environment as cordial, he will be more receptive to learning. Whereas language development can more or less follow the same course as that in sighted children, much special attention is required for training him in non-verbal communication. He should understand the correlation between a particular movement of the face or the body and what it communicates. This process requires a lot of effort and perseverance, but is indispensable for normal functioning in society.

1.4.6 Language Development

Speech is one of the most important medium of communication for all, specially so for the blind. There being limited scope for non-verbal communications, they have to rely on the verbal medium. The sighted have a number of sources for gaining information, many of which are visual, which as for the blind verbal exchange is the only source. It is thus very essential that they acquire mastery over language. Early influence can greatly boost language competency.

The family members must be encouraged to talk to the blind child, even before to comprehend words. Talking about the surroundings will offer much useful help but should be reinforced by other sensory experiences. The blind child must be closely guarded from indulging in verbalism (talking without experience). Every verbal input which relates to objects in the environment must be initially backed by concrete experiences – tactile, auditory and even olfactory. Language development and experience must go hand in hand for concept formation in early education of blind children.

1.4.7 Memory Building

In the future course of his life, a blind child may have access to several technological devices for storing and retrieving information. However, in Asian countries, such devices are not very common and beyond the reach of rural masses. A blind person necessarily has to rely upon his memory for performing the wide range of functions at home, school and the work-place. Special training must thus be offered them right through the initial years for developing the power of memory.

Recitation of songs, poems, stories, tables and a variety of memory games can serve as an effective media.

1.4.8 Basic Education

All children should go to school because with an education they are better prepared to develop their minds, learn about the world around them, and become useful members of their communities. Like other children, disabled children need education, either formal or nonformal, so they can learn to be independent, active, contributing, and self-supporting members of society.

Some blind children attend residential schools designed for blind children only. These schools have dormitories where the children stay. Other blind children go to regular schools with sighted children; this is called integrated education. They receive extra services from a specially trained teacher of the blind, who regularly visits them in their school. The special teacher trains them in the following areas:

- Reading and writing
- Arithmetic
- Science
- Language
- Sports and recreation
- Improving the remaining senses
- Improving turns, directions, and awareness of distance, etc.

1.4.9 Vocational Skills

Work is at least as important for blind people as it is for the sighted, and for much the same reasons:

- Work gives people a sense of self-satisfaction.
- Work keeps people active.
- Work allows the blind to meet other people.
- Work gives people a chance to earn money.
- Work helps the blind become independent.

Most jobs done by sighted persons can also be done by blind people, but they may have to use different techniques. Whereas sighted persons can use their vision to

perform and check a work activity, the blind person must use other senses, especially the sense of touch.

A blind person will need training before he can do a job. Such kind of training should be given to blind persons in the community. Blind persons can work together in groups, either with sighted or with other disabled persons. When helping a blind person pick a vocational skill, we have to make sure that the following conditions exist:

- Client is interested in the skill.
- The skill is needed in the community.
- The person has access to the needed materials.
- The blind person has the necessary pre-skills: if the vocational requires walking, for example, the person should have good orientation and mobility skills.
- The person can learn how to use the materials correctly and safely.
- The person can be taught the correct steps to do the work activity.

We can help our client become organised if we analyse the vocational skill before we start the training. First, we have to examine each step that a sighted person would follow in undertaking the activity. Second, we have to decide which of these steps would be difficult for a blind person. Finally, we have to decide what adaptations are needed if the blind person is to do the activity safely and well:

- Write down the name of the vocational skill.
- List all materials needed. Are they available?
- Write down, in the correct order, each step needed to complete the activity.
- Put a mark by those steps that would be difficult for a blind person.
- Write down the techniques or adaptations of techniques that the blind person might use to accomplish the difficult steps.

Pre-requisite skills should be developed to overcome the limitations caused due to visual impairment and are imparted to the blind persons as early as possible with the assistance and guidance of trained personnel or professionals.

1.5 MULTI-PURPOSE REHABILITATION WORKERS AND THEIR ROLE

1.5.1 Multi-purpose Rehabilitation Worker – Who?

Multi-purpose Rehabilitation Worker is a personnel who got proper training to deal with **all categories of disabilities** in the community, works for the combined and coordinated use of medical, social, educational and vocational measures for training or retraining the individual to the highest possible level of functional ability.

1.5.2 Role and Responsibilities of Multipurpose Rehabilitation Worker

The Multi-purpose Rehabilitation Worker assumes the following role and responsibilities:

- a. Door-to-door survey
- b. Referral for medical inputs
- c. Initial assessment
- d. Extending individual need-based services to the disabled person
- e. Seeking participation of community at all stages
- f. Extending concessions and benefits to the individuals
- g. Maintaining all the individual, joint and group records
- h. Participating in the weekly review meetings
- i. Sharing progress, achievements and experience in the meeting
- j. Participating in the refresher courses
- k. Involving the local administration in service delivery
- l. Creating awareness regarding the needs of the disabled persons.

1.5.3 Role of Multi-Purpose Rehabilitation Worker for the Persons With Visual Impairment

The multi-purpose rehabilitation worker is the key functionary in the service for the visually impaired in the community. He or she has direct contact with the beneficiary. The success of the project depends upon performance, integrity, sincerity and devotion of the worker. The multi-purpose rehabilitation worker is expected to perform the following functions:

Identification: The rehabilitation worker should carryout the following aspects for the identification of persons with visual impairment by having proforma which includes all the details.

- Door-to-door survey
- Arranging vision screening by ophthalmic personnel
- Summary of vision screening
- Baseline data
 - Curable cases
 - Incurable cases
 - Summary of baseline data
- Individual case file for each case

Extension of Direct Services

The multi-purpose rehabilitation worker does the following direct services:

Selecting and giving intensive rehabilitation training to five cases at any int of time

Schedule services in the following sequence:

- Individual and family counselling
- Orientation and mobility
- Daily living skills and home economics
- Training in household work
- Concessions and facilities
- Training in rural crafts, household activities
- Monetary assistance as subsidy, launching grant, etc.
- Any other need based services
- Seeking community participation in all these activities
- Involving local administration in all the relevant activities
- Creating public awareness about the project and achievements

Referral Services

- Referring all the persons with eye ailments etc. to local eye care agency or and eye hospital.

- Referring children of school age to the educational programmes.
- Referring other categories of disabled persons to relevant organisations in the area.
- Referring all the persons with multiple-disabilities to the residential institutes or such field programmes devoted to such persons.

Establishing Contact with Beneficiaries

The rehabilitation worker should observe the following procedure of establishing contacts with the beneficiaries:

- a. *Counselling*: The multi-purpose rehabilitation worker should approach the visually impaired person and his family and convince them of his or her credentials.
- b. *Introduction of self & agency*: Give a brief introduction of the project, the project implementation agency, and himself or herself.
- c. Explain the aims and objectives of the project and purpose of visit to the home of the person.
- d. Give illustrations of successful cases of complete rehabilitation using visual aids and the print materials.
- e. Convince the family that the visually impaired person can do meaningful work and be independent by demonstration of work under blind-fold and giving relevant examples and information.
- f. Understand the socio-economic environment of the visually impaired.

1.6 LINKAGES BETWEEN EDUCATION AND REHABILITATION PROFESSIONALS

What do the education professionals do for the visually impaired persons?

Education professionals concentrate mainly on admission of visually impaired children in the formal school system. These professionals also involve in doing survey of the children with visual defect. After the survey, they do referral service to get medical treatment and certificate. The children who do not have adequate vision to study the book prints are taken care of by the teachers for special education service. The children who are admitted in educational programmes such as special schools, integrated education programmes and inclusive schooling, are comfortable and being in the school up to school ending. After completion of school studies, the children are left out from the service of the special teacher. The school outgoing students are having confusion where to go and what to do next? Most of the students with visual defect become the dropouts without seeking higher education due to their poverty, ignorance and helplessness. Another limitation is also there in the service of the education professional that he/she makes admission for 8 children only because the teacher pupil ratio is fixed as 1:8 ratio. After getting the required strength, the special teacher is concentrating only on the admitted students but not for the students left remain in community.

What do the rehabilitation professionals do for the visually impaired persons?

Rehabilitation professionals mainly concentrate on survey, referral for ophthalmic treatment, skill development in the areas like orientation & mobility, daily living activities, sensory training, etc., and certain vocational aspects. Their botheration is to train them in some vocational skills and rehabilitate them in the community. They involve very minimum in educating the children and adult through formal and non-formal education.

Why do we need linkage between education and rehabilitation professionals?

As we understood from the introduction of this unit, education and rehabilitation are the two sides of a coin which means that each should go hand in hand to achieve the goal of enhancing the life of visually impaired persons in the community by the way of good education and proper rehabilitation measures. When these professionals unite together the following aspects can be achieved.

1. Medical intervention, preventive measures on visual impairment, awareness about visual impairment, educational programmes and future career can be carried out.
2. Early intervention programme would be designed to the needs of the visually impaired.

3. All children and adult with visual impairment would be brought under the educational systems such as formal and non-formal methods.
4. Community based education and rehabilitation (CBER) is quite practical.
5. Multi-disabled children and adult can also avail service in the community.
6. Joining hands of both the professionals will succeed parental counselling, societal awareness and involvement of community for the wellbeing of persons with visual impairment.
7. Visually impaired persons can be gained equal opportunities and equal rights as that of non-disabled by way of education and employment.

In toto, linkage of education and rehabilitation professionals makes the persons with visual impairment to become the contributing citizens by means of comprehensive rehabilitation, which includes education, social integration, family acceptance and employment.

1.7 UNIT SUMMARY: THINGS TO REMEMBER

- Education and rehabilitation are of the two sides of the same coin. Good education brings out a better rehabilitation for persons with disabilities.
- The broader meaning of the term 'Rehabilitation' is a process in which the four essential needs of a disabled person is met, viz., Education – formal, non-formal, Skills encompassing mobility skills, social skills, work skills, etc., Employment and Integration.
- Pre-requisite skills refer to skills required for the visually impaired children to live in a better way in the community in terms of self-confidence, personal liberty, individuality, economic independence, family acceptance and social integration.
- To overcome the disability, a person with visual impairment should be trained in special skills peculiar to blindness.
- A conducive environment for the education of blind children can be created in the family primarily by encouraging the parents and others to give the child sufficient exposure and experiences.
- Activities of daily living include all those things that people do every day. Sighted can learn informally all the skills by sight, but blind child can learn with the help of concrete experience and exposure.
- As the blind may be incapable of receiving the visual stimuli, they should be promoted to activate and channelize the remaining senses in order to perceive, comprehend and then exercise control over the environment.

- The training that teaches blind children to move about safely and independently is called as “orientation and mobility”.
- His communicative ability in the latter part of his life has a tremendous impact on his performance in all sectors of his life, namely academics, profession, family and social life.
- Language development and experience must go hand in hand for concept formation in early education of blind children.
- Most jobs done by sighted persons can also be done by blind people, but they may have to use different techniques.
- Multi-purpose Rehabilitation Worker is a personnel who got proper training to deal with all categories of disabilities in the community, works for the combined and coordinated use of medical, social, educational and vocational measures for training or retraining the individual to the highest possible level of functional ability.
- Linkage of education and rehabilitation professionals makes the persons with visual impairment to become the contributing citizens by means of comprehensive rehabilitation, which includes education, social integration, family acceptance and employment.

1.8 CHECK YOUR PROGRESS

I. *Choose the most appropriate answer from the alternatives given for each item given below:*

1. Good education brings out for the visually impaired person
 - (a) socialization.
 - (b) a better rehabilitation.
 - (c) family acceptance.
 - (d) higher studies.
2. Pre-requisite skills can be imparted for the persons with visual impairment from
 - (a) early days of child development.
 - (b) adolescent period.
 - (c) adulthood period.
 - (d) late childhood period.

3. Experience and expose are given primarily to the visually impaired child
 - (a) by teacher .
 - (b) by peer group.
 - (c) by parents.
 - (d) by siblings.

4. The ability to locate oneself in one's environment is known as
 - (a) orientation.
 - (b) daily living activity.
 - (c) sensory training.
 - (d) mobility.

5. The ability to move in the environment from one place to another is called as
 - (d) orientation.
 - (e) daily living activity.
 - (f) sensory training.
 - (g) mobility.

6. Every verbal input which relates to objects in the environment must be initially backed by
 - (a) concrete experiences.
 - (b) abstract experiences.
 - (c) verbal descriptions .
 - (d) non-visual experiences.

7. Communication with the blind child in the initial years must be through
 - (a) direct physical contact
 - (b) facial expression
 - (c) imitation
 - (d) dialogue

8. Blind children go to regular schools with sighted children which is called
 - (a) special school .

- (b) residential school
 - (c) integrated education
 - (d) day care center
9. Multi-purpose rehabilitation worker concentrates on
- (a) blind children alone
 - (b) multi-disabilities
 - (c) education
 - (d) rehabilitation
10. Linkages between Education and Rehabilitation Professionals make the disabled persons to become
- (a) educationists
 - (b) rehabilitation professionals
 - (c) contributing citizens
 - (d) employees

II. State true or false for each of the following statements.

- 11. Visually impaired child alone needs stimulation for learning.
- 12. Blind persons do not have to learn special techniques for all the activities of daily living.
- 13. 'Orientation and mobility' (O&M) is essential for independent living of the visually impaired persons.
- 14. Multi-purpose rehabilitation worker does very less service to single category disabled persons when compared to single category rehabilitation worker.
- 15. Linkage of education and rehabilitation professionals makes the persons with visual impairment to become the contributing citizens.

III. Answer the following questions:

- 16. What do you mean by 'Pre-requisite skills' for persons with visual impairment? Explain the various pre-requisite skills imparted for visually impaired children.
- 17. In what way daily living skills and orientation & mobility skills contribute for the development of visually impaired persons?

18. Who is multi-purpose rehabilitation worker? What are the responsibilities he/she can undertake for the service of the disabled persons in the community?
19. Narrate the role of Multi-Purpose Rehabilitation Worker for the persons With visual impairment.
20. Distinguish the service of education professionals and rehabilitation professionals for the service of visually impaired persons. What will they contribute when they jointed together for the service?

1.9 ASSIGNMENT/ACTIVITY

1.9.1 Prepare a list of pre-requisite skills to be taught for visually impaired children.

1.9.2 List the rules to be followed while teaching daily living activities for visually impaired children.

1

1.9.3 Pinpoint the role and responsibilities of multipurpose rehabilitation worker.

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1.9.4 "Linkage between education and rehabilitation professionals is the need of the hour" – Justify.

1

1.10 POINTS FOR DISCUSSION / CLARIFICATIONS

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

1.10.1 Points for discussion

1.10.2 Points for Clarification

1.11 REFERENCES /FURTHER READINGS

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UNIT 2: ETIOLOGY OF VIMD

STRUCTURE

- 2.1 Introduction**
- 2.2 Objectives**
- 2.3 Awareness about Status and Programmes on Visual Impairment in India**
- 2.4 National Initiatives for Poverty Alleviation of Persons with Visual Impairment**
 - 2.4.1 Legislation
 - 2.4.2 Financing
 - 2.4.3 Tax Deduction
 - 2.4.4 Rewards
 - 2.4.5 Involvement of National Institutes
 - 2.4.6 Barrier-free Environment
 - 2.4.7 Education
 - 2.4.8 Training and Employment
 - 2.4.9 Prevention of the Causes of Disability
 - 2.4.10 Rehabilitation Services
 - 2.4.11 Assistive Devices
 - 2.4.12 Self-help Organizations
 - 2.4.13 Need of the Hour
- 2.5 Unit Summary: Things to Remember**
- 2.6 Check Your Progress**
- 2.7 Assignment / Activity**
- 2.8 Points for Discussion /Clarification**
- 2.9 References / Further Readings**

2.1 INTRODUCTION

The promotion of sustainable livelihoods for persons with visual impairment involves increasing their access to social and economic opportunities. This access is restricted by individual, social and environmental barriers. The ability of people with visual impairment to make social and economic contributions, and thus achieve sustainable livelihoods, is determined by the extent to which they are able to overcome these barriers and pass through the following three stages of physical and social integration:

- Adapting to the disabling condition and maximizing functional capacity;
- Interacting with the community and with society; and
- Gaining access to the types of social and economic activities that give life meaning and purpose (e.g. contributing to one's family and community, actively participating in society and/or obtaining employment).

To foster sustainable livelihoods for persons with visual impairment, all three types of barriers must be addressed simultaneously in ways that facilitate the passage of persons with visual impairment through all three of the stages of physical and social integration. This requires local, national and international disability strategies based upon comprehensive and integrated combinations of:

- Rehabilitation strategies that maximize the functional capabilities of people with disabilities;
- Inclusion and empowerment strategies to facilitate their active participation in their communities, societies and economies; and
- Architecture and design strategies that remove and prevent unnecessary barriers in infrastructure, including built environments, transportation systems, technology and communications.

Total rehabilitation for persons with visual impairment includes four main aspects such as Education, Family acceptance, Social integration and Employment. These aspects are interlinked like education helps for employment; employment makes them acceptable member in the family and society. When we look into the development programmes available for the disabled persons in the community, they are plenty, but due to unaware of programmes, the persons with visual impairment are unavailing optimally.

2.2 OBJECTIVES

After going through this unit, you can be able to:

- pin-point the status and incidence of blindness in India.
- describe the welfare and rehabilitation programmes of the Government.

- discuss national initiatives for poverty alleviation of persons with visual impairment.
- explain the legislation provision for empowerment of persons with disabilities with regard to education and rehabilitation.
- narrate governmental programmes and initiation with regard to poverty alleviation of persons with visual impairment.

2.3 AWARENESS ABOUT STATUS AND PROGRAMMES ON VISUAL IMPAIRMENT IN INDIA

The following points focus the present status and development programmes existing in the service of persons with visual impairment in India.

1. The number of disabled persons, in absolute terms, is quite large. The Visually Impaired number 3.63 million as per the NSSO Survey of 1991. This survey estimated that roughly 1.9% of country's total population was suffering from various disabilities viz., visual, hearing, speech etc.
2. The pattern of diseases causing blindness has shown considerable changes in the recent past. While small pox has been eradicated, blindness due to Vitamin A deficiency has declined considerably. As a result of this, the number of blind children in the country has reportedly declined. Yet, the total number of visually impaired has still shown a slight increase, as per the NSSO data, from 3.47 million persons in 1981 to 3.63 million in 1991, because of the diseases associated with longevity, causing blindness in the middle and late adulthood.
3. However, research studies in the recent past have established that a large number of visual disabilities are preventable, if attended to on time. For example, immunization against communicable diseases, supplementation of micro- nutrients and regular health check-ups of pregnant women, including screening can help prevent various disabilities including blindness. We are seeking to converge the activities of various departments at the grassroots level to minimise the incidence of such disabilities.
4. The government's concern for this section of our population has been manifested since the First Five Year Plan, when a national level apex body, the Central Social Welfare Board was set up in 1953 to take care of the welfare and rehabilitative needs of the vulnerable groups including the handicapped, children and women. A Training Centre for the Adult Blind was set up at Dehradun in 1955. The National Programme for Trachoma Control in 1963 was directed towards tackling the problem of blindness. This was later merged with the National Programme for Control of

Blindness in 1977. Yet, another National Institute was set up for the Visually Handicapped at Dehradun in 1982 to extend a wide range of services for the education, research and vocational training, besides training of the personnel to work for the blind.

5. We are aware of the special initiatives taken during the International Year of the Disabled Persons in 1981 which gave a big fillip to the already existing services for the disabled throughout the country. A number of special concessions were extended both by the Central and State Governments in the matters of education, employment, travel, etc.
6. A comprehensive legislation, viz. The Persons with Disabilities Act was enacted in 1995, which aims to empower the disabled with a right to demand 'protection of rights' 'equal opportunities' and 'full participation' in all developmental activities of the country. Enforcement of this legislation in 1996, in fact, marks the beginning of a new era in the lives of the Disabled.
7. The Ninth Five Year Plan re-affirms the commitment of 'making as many disabled as possible active, self-reliant and productive contributors' to the national economy. Also, realising the fact that the governmental efforts could cover only 5% of the disabled and the rural disabled being the most neglected, the Ninth Plan adopted a major strategy of 'Reaching the Unreached'. Systematic attempts are being made to converge the existing services available under various welfare-related sectors of health, nutrition, education, labour, rural development, urban development, science & technology, women & child development, information & broadcasting, etc.
8. Special efforts are being made to extend both welfare and rehabilitation services right up to the district level through a comprehensive programme of 'National Rehabilitation Programme for the Disabled' being launched as a State sector programme during the current year. Simultaneous efforts are also being made to strengthen the existing infra-structure by setting up of 6 Regional Composite Resource Centres in various parts of the country to cater to the needs of all categories of the Disabled. The Government is extending 3% reservation for the disabled in the Group A, B, C and D posts both in the Government and in the Public Sector Undertakings to ensure employment opportunities with justice. Similar efforts are also being made to reserve 3% benefits under various poverty alleviation programmes including DWCRA- exclusively for disabled women. Organising Viklang Bandhus is another innovative effort to train the disabled as Self-Help Volunteers to contribute their mite to help others also to help themselves.

9. The Plan outlay has increased from Rs.47 crores in the Seventh Plan to Rs.214 crores in the Eighth Plan and to Rs.954 crores in the Ninth Plan to meet the emerging need of the disabled. The Ministry of Social Justice and Empowerment is monitoring not only the impact of various policies and programmes in terms of improving the status of the disabled, but also the progress of implementation of the PWD Act, at regular intervals.
10. The Government has been actively involving the NGO sector as their partners all along, in view of their credible achievements in reaching the un-reached and extending the most needed human touch, while serving these sensitive target groups. The nodal Ministry of Social Justice and Empowerment has been closely collaborating with a country-wide networking of more than 1500 NGOs working for the visually impaired through their grants-in-aid programme.

2.4 NATIONAL INITIATIVES FOR POVERTY ALLEVIATION OF PERSONS WITH VISUAL IMPAIRMENT

2.4.1 Legislation

The **Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act** was enacted in 1995, which is the landmark development in India in the welfare of persons with disabilities. This is a comprehensive piece of legislation which treats rehabilitation as a right and aims to eliminate discrimination and create a society which provides opportunities for development of people with disabilities to their fullest potential. Action on implementation of the Act has started in right earnest and is an ongoing process. It deals with both the prevention and promotional aspects of rehabilitation such as education, employment and vocational training; the creation of barrier-free environment; provision of rehabilitation services for people with disabilities; institution for persons with extensive disabilities and social security measures such as unemployment allowance and a grievance mechanism both at the central and state levels. The legislation prescribes a 3 per cent reservation (1 per cent each for physically-, visually- and hearing-impaired persons) in identified posts in all government and public sector offices. The Act provides reservation of 3 per cent benefits to the people with disabilities in all poverty alleviation schemes.

The Parliament of India had earlier enacted a law for the setting up of the **Rehabilitation Council of India (RCI)**. Its main responsibility is the standardization of curriculum and training facilities of various professional courses on

rehabilitation of people with disabilities and to inspect the facilities to monitor compliance. The RCI is playing an important role in ensuring the quality of services in the crucial area of manpower development. So far, a total number of 91 organizations have been recognized by the RCI for running certificate, diploma and degree courses in the area of disability.

2.4.2 Financing

In order to empower people with disabilities to cope with the new challenges and to develop the necessary entrepreneurial skills and initiatives, the **National Handicapped Finance and Development Corporation (NHFDC)** was set up to support self-employment projects for people with disabilities.

The **Ministry of Rural Areas and Employment** has already taken an initiative in 1996 by ensuring suitable amendments in the integrated rural development programme under which the groups of disabled persons will be given a revolving fund of 25,000 rupees for income-generating activities. All the ministries and departments which are operating the poverty alleviation programmes and projects shall identify the schemes under which participation of disabled persons may be ensured.

There are also various **grant-in-aid schemes of the Central Government**, in which NGOs are provided up to 90 per cent (95 per cent in the rural areas) funding for the rehabilitation services.

2.4.3 Tax Deduction

The Government of India has also given various income-tax deductions from the total income taxes from people with disabilities. The limit under Section 80-U has been raised from Rs20,000 to Rs40,000 and deduction of Rs20,000 from the taxable income of the parents or guardians of people with disabilities has been allowed provided this amount is deposited in any scheme of Life Insurance Cooperation (LIC) and United Trust of India (UTI).

2.4.4 Rewards

For the annual International Day of Disabled Persons, the President of India presents the following national awards: the most efficient disabled employee; the outstanding employer of disabled persons; the individual doing work for the cause

of disabled persons; the best institution working for disabled persons; the best placement officer of disabled persons; the technology awards for inventions in the field of disability.

2.4.5 Involvement of National Institutes

The six national institutes have undertaken various public awareness measures with regard to education and rehabilitation of persons with disabilities through films, print media and radio. They are the National Institute for the Visually Handicapped, Dehradun; National Institute for the Hearing Handicapped, Mumbai; National Institute for the Orthopaedically Handicapped, Calcutta; National Institute for the Mentally Handicapped, Secunderabad; Institute for the Physically Handicapped, New Delhi; National Institute of Rehabilitation Training and Research, Cuttack.

2.4.6 Barrier-free Environment

The Ministry of Urban Affairs and Employment, in collaboration with Municipal Corporation of Delhi and ESCAP, has started the New Delhi Pilot Project. This selected project, which was inaugurated in December 1996, aims to make barrier-free all the public buildings and offices in the localities which are frequently used by people with disabilities, and situated within a kilometre radius of Indra Prastha Estate. The project is expected to have a demonstration effect and play an important role in extending technical guidance and the necessary motivation to other cities towards the promotion of non-handicapping environment. In 1996, the Ministry of Urban Affairs and Employment has also undertaken the task of formulating model building by-laws which will provide for easy access to public buildings by persons with disabilities. The model building by-laws have been circulated to all the state governments for adoption and implementation.

2.4.7 Education

The Act places a statutory obligation on the government to provide free education to disabled children in an appropriate environment till the age of eighteen. It also provides for establishment of special schools, facilities for imparting non-formal education and education through open schools and universities to disabled children, organizing teacher training programmes, taking steps for adaptation of curriculum, reform of examination system, promoting research and providing various facilities to disabled children at the national level.

The objective is to integrate the people with disabilities with the general community at all levels as equal partners, to prepare them for normal growth and to enable them to face life with courage and confidence.

The **Scheme for Integrated Education of Disabled Children (SIEDC)** provides educational opportunities for disabled children in the general school system so as to facilitate their retention and ultimate integration in the system.

SIEDC is implemented through the education departments of the state governments, and autonomous and voluntary organizations. Over 53,000 disabled children in 13,674 schools have been covered so far. Under SIEDC, 100 per cent financial assistance is provided. These include allowances for books and stationery, uniforms, transport allowance, readers allowance for blind children, escort allowance for severely disabled children particularly those with lower extremity disability, boarding and lodging charges for disabled children residing in hostels.

In addition, the Government of India also sets up and equips resource rooms with aids and assistive devices, provides teacher support in the ratio of 1:8, pays resource teachers as applicable in the state/union territory, pays helpers and attendants and gives special pay for resource teachers.

It also funds a survey to identify disabled children in the blocks/districts and assess the children via a team comprising a doctor, a psychologist and a special educator. It also buys and produces instructional materials, pays for the training and orientation of resource teachers and the salary of an administrative cell at the state level to implement and monitor the programme.

During Ninth Five-year Plan commencing from 1997 to 1998, the Government of India proposed to expand the coverage of the SIEDC into the "unreached" areas. The total proposed allocation for SIEDC during Ninth Five-year Plan has been kept at Rs one billion with a view to expand the coverage of the programme and making it more effective.

Another programme, the **Project Integrated Education for the Disabled (PIED)** was introduced with United Nations Children's Fund assistance in 1987. PIED was started in a selected block in 10 states of Haryana, Madhya Pradesh, Maharashtra, Mizoram, Nagaland, Orissa, Gujarat, Rajasthan, Delhi and Tamil Nadu.

Under PIED, a block is taken as a project area and all the schools in that block are converted into integrated schools. An external evaluation of PIED in 1994 showed that not only had the enrolment of disabled children increased considerably, the retention rate among disabled children was very high, about 95 per cent. The figure

was even higher than that for normal children in the same block. The PIED programme, which is being run through 1,382 schools – benefiting over 6,000 children – has now been merged into the SIEDC programme.

Under the holistic, community-based and innovative **District Primary Education Programme (DPEP)**, which was launched in 1994 and covers 60 districts, integrated education for all children with mild to moderate disabilities is being given special emphasis. The programme will eventually be introduced in 120 districts.

The project board of the National Elementary Education Mission, which is part of the Department of Education in the Ministry of Human Resource Development, has already approved the revised guidelines to incorporate integrated education for the disabled children in the DPEP. DPEP covers the areas of environment building, community mobilization and early detection, teacher training, development of innovative designs for primary schools and removal of architectural barriers in existing schools, provision of education aids and appliances and resource support at block/district level.

The Government of India has already set up a core group comprising government officials, technical experts and voluntary organizations to examine the relevant provisions of the Act relating to pre-school education, integrated education and special education. It will give its recommendations, which are expected to be submitted and finalized by December 1997.

A workshop on the implementation of the relevant provisions of the Act was convened on 29 August 1997 in New Delhi. State Education Secretaries participated in the workshop and worked out action plans to strengthen the existing programmes and to ensure the participation of all children with disabilities in formal and non-formal educational programmes on an equal basis.

A special scheme covering the establishment and development of special schools has been implemented since the period 1993-1994. Under the scheme, voluntary organizations are given the necessary assistance of up to 90 per cent to set up special schools.

A special scheme of manpower development has also been introduced (1991-1992) under which 100 per cent assistance is provided for running training courses for teachers in the area of cerebral palsy and mental disability.

The Central Board of Secondary Education (CBSE) has set up a committee to look into means of modifying the examination system so as to make it easier for

disabled children to take examinations. The CBSE already allows provision of the facility of amaenuensis for blind and physically disabled children when they sit for the tenth standard and twelfth standard board examinations. It also opened a cell for parents to lodge the grievances of parents regarding placement of disabled children.

The national institutes of disabilities under the Ministry of Welfare have been organizing training programmes for special teachers. The **University Grants - Commission (UGC)** has taken an initiative by opening universities and colleges to cater to the needs of disabled children. UGC is implementing a scheme under which financial assistance will be provided to the universities for organizing special education programmes for teacher who hold Bachelor of Education and Master of Education degrees, to enable them to teach disabled children. UGC also reserves 30 research associateships every year for disabled students and scholars.

2.4.8 Training and employment

The Ministry of Labour through the **Directorate-General of Employment and Training (DGE&T)** extends its services to persons with disabilities through a number of schemes. There is a conscious effort to integrate such persons in nation building.

There is also a network of 915 employment exchanges which cater for the registration and placement of job seekers including those with disabilities. Besides registering and placing in salaried job, the general employment exchanges also provide vocational guidance and employment counselling, organize career guidance and provide useful career information for disabled job seekers.

The employment market information programme of the employment exchanges gives basic information concerning the employment market which is used by various sponsoring agencies working for disabled persons. Thus, the employment exchanges also provide vocational guidance and help persons with disabilities take up self-employment ventures.

There are 47 special employment exchanges and 41 special cells in general employment exchanges with the specific objective of helping persons with disabilities get gainful employment. About 53,000 persons with disabilities have been employed through these special employment exchanges and special cells throughout the country.

The **National Council of Vocational Training**, an apex non-statutory body set up by the Ministry of Labour, has formulated a policy of reserving 3 per cent of seats

for trainees with locomotor disability in all industrial training institutes (ITIs) – in both engineering and non-engineering groups of trades. Under the Apprenticeship Act, 1961, which aims at the development of human resources through skills training based on the latest technology. Some 3 per cent of vacancies are reserved for persons with disabilities. The Ministry of Labour is also considering a scheme of incentives to encourage establishments to hire physically disabled persons as apprentices.

The DGE&T runs 17 **vocational rehabilitation centres (VRCs)**, throughout the country for the different categories of disability. The VRCs have arrangements to assess residual capacity, training, evaluation and placement of persons with disabilities. The trainings are provided free. The Indian government also lends support to the VRC training programmes by providing stipends to the trainees. This also serves as a catalyst for non-governmental agencies which assist persons with disability in vocational rehabilitation.

The government has planned to establish at least one VRC in each state and also assist the state governments and local authorities, and NGOs in establishing vocational rehabilitation centres to cater to disabled persons.

In order to implement the Agenda for Action for the Asian and Pacific Decade of Disabled Persons (hereafter referred to as Asian and Pacific Decade Agenda for Action), the Ministry of Labour has drafted very ambitious plans to strengthen the vocational rehabilitation services for disabled persons.

It is setting up 10 more VRCs with skill training workshops and rural rehabilitation extension centres. These centres will be equipped with modern and sophisticated instruments, training aids and will be housed in buildings exclusively designed for disabled persons, keeping in view the government's commitment to provide barrier-free and easily accessible structure for them.

Out of the total allocation for plan schemes of the employment directorate about 37 per cent is proposed to be provided during the Ninth Five-year Plan exclusively for rehabilitation of disabled persons.

A large number of non-governmental agencies are working in the area of training, employment and economic rehabilitation of persons with disabilities throughout the country. There is also a conscious effort to change over to modern trades suited to new technologies and market demand.

Opportunities for training, however, are limited in the rural areas and unevenly spread in the country. The Ministry of Labour has a programme of **Rural**

Rehabilitation Extension Centres (RRECs) where the services of the VRCs are extended to rural areas through mobile camps and 11 RRECs set up under the VRCs at Mumbai, Calcutta, Kanpur, Ludhiana and Chennai.

The Ministry of Labour is fully aware of the need to provide equal opportunities for vocational training and employment for women and girls with disabilities. Much effort has been made to increase the intake of women and girls with disabilities in vocational training and integrate them with the requisite support services into existing vocational training facilities.

A vocational rehabilitation centre for disabled women has been set up exclusively for rendering vocational rehabilitation services to disabled women job seekers. There are plans to turn this centre into a regional vocational rehabilitation centre. India also plans to set up nine more such centres in different parts of the country. These centres will function as integrated training centres utilizing the facilities available with the regional vocational centre for women.

The **Central Institute for Research and Training in Employment Service (CIRTES)** is responsible for training officers of the national employment service to sensitize them about the special placement needs of people with disabilities and for research-related to placement activities.

CIRTES has organized 10 training programmes, which covered the special placement needs of disabled persons, during 1996 to 1997. In addition, training programmes for personnel involved in the vocational rehabilitation of disabled persons are being organized. CIRTES has also developed career literature for disabled job seekers and their parents. The posters developed by CIRTES depicting the employability of disabled persons are being used in campaigns to assess their potentials and vocational skills.

The **Ministry of Rural Areas and Employment** recently took an initiative to help disabled rural poor to carry out suitable economic activities of their choice. Some 3 per cent of the total subsidy budget under the Integrated Rural Development Programme will be earmarked for providing revolving fund assistance of Rs25,000 each to groups or sangams of the disabled rural poor for such activities. This will be in addition to the existing provisions of 3 per cent reservation of benefits for individual beneficiaries. The Viklang Bandhu scheme under the Ministry of Welfare will implement this proposal.

Under the *Indira Awas Yojana*, a housing scheme for the rural poor, 3 per cent of the benefits have been reserved for the physically disabled persons living below the

poverty line in rural areas. Similarly, under the *Jawahar Rojgar Yojna*, a major wage employment programme for the rural poor, 3 per cent of the funds have been earmarked for the creation of barrier-free infrastructure for disabled persons in rural areas.

The **National Handicapped Finance and Development Corporation** has been incorporated in January 1997 as a non-profit company fully funded by the Ministry of Welfare. The paid up share capital of the Corporation is Rs2 billion and the authorized capital is Rs4 billion. It is envisaged that the state governments would set up such corporations of their own or identify channelling agencies for the national corporation in order to ensure that people with disabilities get full advantage of the new initiative. The main objectives of the corporation are to promote and support entrepreneurial and self-employment ventures by people with disabilities. A consultation meeting was held on 10 July 1997 with the participation of state government officials, officers from financial institutions and non-voluntary organizations to discuss the draft guidelines for disbursing the loans to the disabled entrepreneurs. The corporation is expected to begin operations by December 1997.

2.4.9 Prevention of the causes of disability

In a survey conducted in 1991, the national sample survey organization found that old age and injuries are the major causes of visual disability. Health and human development form integral components of socio-economic development of the nation. As per the Constitution of India, public health, sanitation, hospitals and dispensaries fall in the state list while the central Government of India is responsible for implementing programmes of national importance.

India is a signatory state to the Alma Alta declaration which envisages health for all by the year 2000. The national programme for control of blindness, national goitre control programme, national mental health programme, national programme on Japanese encephalitis, leprosy, nutrition, maternal and child health care programmes constitute the main plank for disability prevention services through the network of primary health centres, subcentres, district and teaching hospitals.

There are 22,229 primary health centres, 131,379 sub-centres and 1,923 community health centres. Disability prevention services, which form part of the health care scheme, are provided by 599,000 trained *dais* (mid-wives) and 417,000 health guides. Child development, nutrition, infant care and immunization form essential components of the curriculum for training *dais* and health guides.

Early detection in the field level is carried out by multi-purpose health workers attached to primary health centres, auxiliary female child minders, mid-wives attached to sub-centres, *anganwadi* workers and *balsevikas* (female child minders) of the ICDS Programme, village rehabilitation workers and community-based rehabilitation programmes of the government and NGOs. There are 290 *anganwadi* training centres for imparting training to *anganwadi* workers and helpers while there are 20 middle-level training centres for imparting training to supervisors and child development project officers. Started in 1961 to 1962, the *balsevikas* training programme implemented welfare programmes for pre-school children. There are 25 *balsevikas* training centres, each conducting one academic year training course for 50 trainees. Training programmes for each of these functionaries have adequate inputs for the early detection of childhood disabilities including mental retardation.

Also in place are early intervention services for infants at-risk and children having delayed development. With lower infant mortality rates, babies with genetic defects have greater chances of survival. The early intervention programmes, being carried out at more than 50 centres in the country over the last decade, have shown that early intervention helps improve the physical and mental functioning of the child. It also enables and encourages parents in the care and management of such babies in the home setting, with periodic consultation provided by early intervention centres. It is expected that, within a decade, such services would be available nationwide.

The major factors leading to various types of disabilities have already been identified and prevention measures initiated. Such measures are managed by Department of Women and Child Development, Ministry of Human Resource Development and Ministry of Health and Family Welfare, which initiated various programmes that provide enough micro-nutrients to the mother and child and other immunization programmes. These programmes will be strengthened during the period 1997-2002. Public education programmes through the mass media will be enhanced.

2.4.10 Rehabilitation services

There is a recent thrust towards reaching rehabilitation services to people with disabilities living in the far-flung rural areas. Here the importance of community-based rehabilitation (CBR) is well established as it is logistically difficult and expensive to provide institutional rehabilitation services. The strategy is to take a multisectoral and decentralized approach in the provision of services within the community, with appropriate inputs from various sectors.

India has a tradition of family and community-based initiatives in rehabilitation. This provides an inherent strength and a basis on which successful community initiatives can be built upon. It is further reinforced by NGOs who have made significant contributions in the area of community-based rehabilitation, particularly in the southern areas of the country where considerable expertise and experience have been built up. Another factor is the 73rd and 74th amendments of the Indian Constitution which has conferred powers and responsibilities to elected local bodies at the rural (*panchayats*) and municipal levels which could be constructively utilized and integrated into programmes for community-based rehabilitation.

The Ministry of Welfare presently known as Ministry of Social Justice and Empowerment has proposed a national programme for rehabilitation of persons with disabilities during the Ninth Five-year Plan. It is envisaged that at the national level, a national centre for disability rehabilitation will be established. At the state level, a state institute will serve as a resource centre and also undertake manpower development, research and provide model services.

At the district level, a district rehabilitation centre will provide specialist services in rehabilitation and work in tandem with district hospitals and other bodies concerned with rehabilitation. At the block level, which comprises 50,000 people, two multi-purpose rehabilitation workers (MRW) will provide services to people with disabilities, their families, and the community. The officers will also network with education, labour, social welfare and health personnel, and NGO agencies in the area. At the *Gram Panchayat* or local government level, which comprises a cluster of villages, two CBR workers – one male and one female from the area – will be suitably trained to cater to about 50,000 people. They will be supported by elected local government as well as grass-roots functionaries of the concerned departments and non-governmental agencies. Strategies for implementation at the field level are flexible to enable state governments to utilize various methods – government, *panchayat* or non-government – suited to local conditions.

The comprehensive national rehabilitation programme thus formulated was discussed in a meeting held on 30 June 1997 where the representatives of the state governments, central government and voluntary organizations participated. The national level programme will be implemented during the next five years in a phased manner.

The Ministry of Health and Family Welfare has taken-up a pilot project of community-based rehabilitation in five states – Maharashtra, Andhra Pradesh, Madhya Pradesh, Tamil Nadu and Kerala. The all India institute of physical medicine and rehabilitation in Mumbai is acting as the main implementing agency and the training of personnel for both professionals and grass-roots level - functionaries is underway. This programme utilizes the existing infrastructure of health, women and child development, welfare and local government sectors in implementing the programme.

Persons with intellectual disabilities are at a greater risk of exploitation and physical/social abuse by the unscrupulous elements of society. It has been a major cause of worry to the parents of children with intellectual disability as to “what will happen to their children after their deaths?” A committee formed under the chairmanship of Justice Baharul Islam suggested the formation of a national trust for intellectual disability with the following objectives:

- a. To provide guardianship and foster care;
- b. To strengthen and support the welfare process of families, foster families, parent association, voluntary organizations and the community;
- c. To provide legal aid to the mentally disabled persons and their families;
- d. To receive, own and manage the bequeathed properties by parents to maintain their intellectually disabled children after their deaths.

The Government of India has decided to set up a statutory trust to achieve the above objectives. The proposed bill is being drafted with inputs from voluntary organizations and the parent associations of children with intellectual disability. Consultation meetings were held in June 1997. After the final round of discussions, the bill is expected to be formally introduced in the Lok Sabha in 1998.

The Government has set up 47 special employment exchanges and 41 special cells in the normal employment exchanges. The aim is to help disabled persons get gainful employment. Some Rs60 million has been allocated for this project under the Ninth Five-year Plan. About 53,000 disabled persons have been given placement through these special employment exchanges and cells. In addition, there are 17 vocational rehabilitation centres. Under the country's Apprentices Act, 1961, trainees are trained in various industrial establishments with 3 per cent of the vacancies reserved for people with disabilities.

About 76 per cent of disabled persons live in rural areas. The government introduced, on a pilot basis, a scheme to establish District Rehabilitation Centres (DRC) in the country. They aim to provide rehabilitation services in rural areas, in 11 selected districts of the country. The centres have comprehensive rehabilitation responsibilities to all disabled individuals in the geographical area of the district which has a population ranging between one to two million persons. The main objectives of the scheme are:

- a To devise suitable delivery systems to reach the entire population in the geographical area of the district;

- b. To promote the most cost-effective technologies;
- c. To restructure the present jobs of rehabilitation professionals, so that the minimum number of specialists could be utilized for the delivery of services.

For the purpose of coordination and administration, there is a Central and Coordination Unit (CACU). Four Regional Rehabilitation Training Centres (RRTCS) – one each at Chennai, Mumbai, Cuttack and Lucknow – have been set up for imparting training to DRC functionaries. A national information centre for disability and rehabilitation has been established at the central level.

State/union territory (UT) governments have rehabilitation schemes, provide various facilities and concessions. Some of the state government give pensions to disabled persons. Old age pensions are given at varying rates by almost all the state/UT governments.

A large number of NGOs have initiated a variety of CBR programmes for the different categories of disabled persons. Most of these programmes have been initiated with the assistance of leading international funding and developmental organizations. India has also developed training facilities at a number of locations for the training of the CBR field functionaries.

The Council for Advancement of People's Action and Rural Technology (CAPART) has taken initiatives to extend its services to people with disabilities. It plans to promote CBR of all categories of people with disabilities through its existing network of thousands of rural development organizations.

2.4.11 Assistive devices

The Government of India has implemented a scheme through registered societies, trusts and companies under which assistive devices are provided. They include mobility devices, wheelchairs, crutches, calipers, hearing aids and artificial limbs. Such services costing Rs2,500-3,600 are given free to those having a monthly income of up to Rs1200; and at 50 per cent of the cost to those having a monthly income from Rs1201-2500.

The total allocation under the scheme was Rs550 million under the Eighth Five-year Plan. The proposed allocation of funds during the Ninth Five-year Plan has been projected as Rs1.25 billion. An initiative has been taken to spread the geographical coverage of the scheme so as to make the assistive devices available to the rural disabled population living in far-flung and un-reached areas. The number of organizations assisted under the scheme has increased to 140 during 1996-1997.

The district level development agencies are also being encouraged to take up the responsibility of free and subsidized distribution of aids and appliances. There is a proposal to revise the scheme and raise the ceiling of the cost of aids and appliances and the income limit per month.

The science and technology project in mission mode was launched in 1988 and aims to develop suitable and cost-effective aids and appliances with the application of technology, and also to improve the mobility, employment opportunities and integration of disabled persons into mainstream society.

Suitable research and development projects are identified and funded under the scheme on a 100 per cent basis. So far, 49 projects have been identified for assistance and nine new projects identified for funding in the current year. About 37 of them are at various stages of completion, some have been put to commercial production. Among the important projects are those for the speech synthesizer, computerized Braille embosser, inter-pointing Braille writing frames, close circuit television with magnification facility, multi-functional wheelchair, feeding aids for children with cerebral palsy and safety devices for use in threshers.

Most of the appliances needed for the education of visually-disabled persons are made within the country. The National Institute for the Visually Handicapped is the main producer.

The Ministry of Finance will be asked to relax the customs duties levied on the import of assistive devices with a view to suggesting further exemption and simplification of the proceedings.

2.4.12 Self-help organizations

It has been the policy of the government to consult NGOs and self-help organizations, and eminent people with disabilities in formulation of all its policies and programmes for the welfare of disabled persons. In all the committees and advisory bodies, there is adequate representation of NGOs and people with disabilities. Several self-help organizations have developed in the country.

Recently the Ministry of Social Justice and Empowerment undertook an initiative during 1996-1997, by starting a four-month long training programme for rural disabled volunteers in rehabilitation. The programme aims to impart the necessary inputs on disability and rehabilitation related issues along with knowledge of concessions and facilities provided by the government to disabled persons. These volunteers are also expected to form the self-help organizations of disabled persons.

Furthermore, the Ministry of Rural Areas and Employment has suggested that suitable amendments be made in the integrated rural development programme guidelines and provide an assistance of Rs25,000 to the self-help organizations of disabled persons for taking up suitable economic ventures.

A large number of volunteers are likely to be trained during the Ninth Five- year Plan period from 1997 to 2002. A large number of self-help organizations are expected to be formed during this period.

The **District Rural Development Agency (DRDA)** provides assistance for formation of Self-Help Groups for Women and Persons with disabilities.

2.4.13 Need of the Hour

With the shift in emphasis from providing welfare to ensuring the rights of disabled persons, the importance of convergence of policies and programmes in different sectors, so as to provide synergy, has emerged to the forefront. The efforts of the government, non-governmental and other agencies in the welfare sector need to be more structured and concerted in approach. India must also ensure linkages between programmes in all connected sectors such as education, vocational training and employment, rural and urban development, health, and women and child development. There must also be optimum utilization of available resources and holistic rehabilitation for people with disability.

2.5 UNIT SUMMARY – THINGS TO REMEMBER

- Immunization against communicable diseases, supplementation of micro-nutrients and regular health check-ups of pregnant women, including screening can help prevent various disabilities including blindness.
- The Ninth Five Year Plan re-affirms the commitment of 'making as many disabled as possible active, self-reliant and productive contributors' to the national economy.
- PWD Act 1995 prescribes a 3 per cent reservation (1 per cent each for physically-, visually- and hearing-impaired persons) in identified posts in all government and public sector offices. The Act provides reservation of 3 per cent benefits to the people with disabilities in all poverty alleviation schemes.
- The RCI is playing an important role in ensuring the quality of services in the crucial area of manpower development.
- National Handicapped Finance and Development Corporation (NHFDC) was set up to support self-employment projects for people with disabilities.

- The Ministry of Rural Areas and Employment has already taken an initiative in 1996 by ensuring suitable amendments in the integrated rural development programme under which the groups of disabled persons will be given a revolving fund of 25,000 rupees for income-generating activities.
- The Government of India has also given various income-tax deductions from the total income taxes from people with disabilities.
- The six national institutes have undertaken various public awareness measures with regard to education and rehabilitation of persons with disabilities through films, print media and radio.
- The Ministry of Labour through the Directorate-General of Employment and Training (DGE&T) extends its services to persons with disabilities through a number of schemes.
- The Central Institute for Research and Training in Employment Service (CIRTES) is responsible for training officers of the national employment service to sensitize them about the special placement needs of people with disabilities and for research-related to placement activities.
- Under the *Indira Awas Yojana*, a housing scheme for the rural poor, 3 per cent of the benefits have been reserved for the physically disabled persons living below the poverty line in rural areas.
- Under the *Jawahar Rojgar Yojna*, a major wage employment programme for the rural poor, 3 per cent of the funds have been earmarked for the creation of barrier-free infrastructure for disabled persons in rural areas.
- The Ministry of Social Justice and Empowerment undertook an initiative during 1996-1997, by starting a four-month long training programme for rural disabled volunteers in rehabilitation.

2.6 CHECK YOUR PROGRESS

I. *Choose the most appropriate answer from the alternatives given for each item:*

1. Immunization helps for
 - a. curation of blindness
 - b. prevention of blindness
 - c. rehabilitation
 - d. control of blindness

2. Reservation prescribed by PWD Act 1995 for Persons with Visual Impairment in identified posts in all government and public sector offices is
 - a. 3 percent
 - b. 2 percent
 - c. 1 percent
 - d. 4 percent
3. RCI Act 1992 regulates
 - a. general education programmes
 - b. professional courses
 - c. special education and rehabilitation programmes
 - d. education programmes for women
4. NHFDC was set up to support the people with disabilities on
 - a. employment in industries
 - b. employment in government sectors
 - c. employment in non-government organizations
 - d. self-employment
5. The national institute set for the service of persons with visual impairment on education and rehabilitation is
 - a. NIHH
 - b. NIMH
 - c. NIVH
 - d. NIOH
6. Directorate-General of Employment and Training (DGE&T) runs
 - a. vocational rehabilitation centers
 - b. education centers
 - c. assistive device centers
 - d. technical training centers
7. The scheme which has earmarked 3% funds for creation of barrier-free infrastructure for disabled persons is
 - a. Indira Awas Yojana
 - b. Viklang BandhuJawahar

- c. Rojgar Yojna
- d. SIEDC

II. Answer the following questions:

- 8. What is the status and incidence of blindness in India?
- 9. Describe about the welfare and rehabilitation programmes of the Government for persons with visual impairment.
- 10. Discuss about the national initiatives for poverty alleviation of persons with visual impairment.
- 11. Explain the legislation provision for empowerment of persons with disabilities with regard to education and rehabilitation.
- 12. Narrate governmental programmes and initiation with regard to poverty alleviation of persons with visual impairment.

2.7 ASSIGNMENT / ACTIVITY

2.7.1 Incidence and prevalence rates of visual disability in India as per the recent survey are:

2.7.2 List out the development programmes in community related to persons with visual impairment.

2.7.3 Pin-point the government schemes available for persons with visual impairment with regard to poverty alleviation.

2.7.4 Present the gist of legislations promote the rehabilitation of persons with disabilities.

2.7.5 The following general schemes can also provide service for disabled persons for their rehabilitation in the community.

2.8 POINTS FOR DISCUSSION / CLARIFICATIONS

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

2.8.1 Points for discussion

2.8.2 Points for Clarification

2.9 REFERENCES / FURTHER READINGS

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UNIT 3: IMPACT OF VIMD ON LEARNING AND DEVELOPMENT

STRUCTURE

- 1.1 Introduction**
- 1.2 Objectives.**
- 1.3 Process of providing non- visual experiences to visual idea.**
- 1.4 Supplementary instruction for concept development.**
- 1.5 Principles of using instructional materials.**
- 1.6 Objectives.**
- 1.7 Adaptation of instructional materials for children with visual impairment.**
 - 1.8 Adaptation of instructional materials and methods in teaching visually impaired children and the use of special appliances.**
- 1.9 Objective effects of blindness.**
- 1.10 Subjective effects of blindness.**
- 1.11 Use of special appliances**
- 1.12 Unit Summary**
- 1.13 Check your answer.**
- 1.14 Assignment.**
- 1.15 Points for discussion and Clarification**
- 1.15 References.**

1.1 INTRODUCTION

Vision is an important sense. It is a gateway of all knowledge. Vision serves the purpose of integrating the information received by other modalities and is important in the formation and refinement of concepts, absence of vision deprives of such privilege. It is often said that 80% of knowledge is gained through vision and 95% knowledge is received through vision and hearing. This implies that in the absence of vision and hearing, learning may not take place at all. It is considered to be a myth as many people in the absence of sight have acquired a great degree of success in all spheres of human learning. But to taste this success, an additional effort is required.

Information can be gained in several ways and many a times we can learn one thing in more than one ways. What is needed is that a teacher teaching children with visual impairment, should acquire an understanding of providing non- visual experiences to visual ideas, strengths and limitations of various senses and principles of teaching the visually impaired children. An attempt in this lesson also has been made to discuss implications of blindness and visual impairment in teaching.

1.2 OVERALL OBJECTIVES

After going through this lesson, the teacher trainees will be able to :

- explain the need for visual idea to translate into auditory and tactile experiences
- explain the process of providing non-visual experiences to visual ideas.
- Explain the strengths and limitations of various senses.
- Define concept and explain the process of concept development. Describe the principles to be followed for teaching various concepts to visually impaired children.
- Describe various instructional strategies to be followed in teaching the visually handicapped children.
- Deacribe the meaning of adapted instructions.
- Explain the effects of blindness and visual impairment.
- Describe techniques of material adaptations.
- Describe the specific uses of various special appliances.

1.3 PROCESS OF PROVIDING NON-VISUAL EXPERIENCE TO VISUAL IDEA.

OBJECTIVES

The teacher trainee, with the help of this material is expected to

- a. Explain the need for visual idea to translate into auditory and tactile experience.
- b. Define and list the direct services.
- c. Define and list the indirect services offered by the regular and resource teachers.
- d. Classify the activities on the basis of skills development and content development.

When a sighted person is not fully making use of his sense due to the dominance of the sight over other senses, a visually impaired person ought to use them optimally. In fact, blindness reduces the confidence in the remaining senses and therefore, adequate training would be necessary to orient the children to the use of other sense organs. The important areas required for sensory training could be essential to compensate the experiences which is based on the visual ideas. In addition to this, the discussion of the non-visual experience to visual idea should consider the following implications towards blindness.

- The visual impaired child may need to be given direct assistance to learn systematically even the easy skills that the sighted child learns almost spontaneously through imitation and contact with the world.
- The visually impaired child may show deficiencies in some subjects when he is untaught. Predictions should not be made that he is unteachable. Efforts are necessary to teach difficult concepts too to the child.
- A misconception that visually impaired children possess extra power in their auditory and tactile ability should be overcome. They need sufficient practice for developing these skills in them. Unless these skills are developed systematically, there is no way of learning them.
- Due to lack of visual feedback, a visually impaired child may have to skip a number of intervening steps of an activity which have visual orientation.
- There are some areas which the visual impaired child must fail. He needs guidance to accept these failures graciously and accept help in these areas.
- It is not only the disability which creates all difficulties, but the child should learn to live with that disability by not allowing it to affect his social life adversely.

- Some times, visually impaired child may not show improvement in his studies. Teachers should not suspect his cognition only on the basis of poor performance, it has implications on the basis of family assistance, socio-economic status etc.
 - The functional vision and light perception in the children may result in the child a different type of behaviour. Teachers should be aware of this fact and guide them properly.
 - The visually impaired children with additional disabilities may need special support based on their particular disability condition.
 - The child gets the utmost compensation to the visual loss.
2. Sense of Touch: Since exploration of an object is worth to thousand words used for explanation, this area becomes very vital. Objects perceived through touch determines the definiteness of the object and helps the individual to form a neat conception of that.
 3. Sense of Smell: A good nose voluntarily offers the information of the objects which could be smelt. Smell is a sensible clue for a traveler. During his travel, the smell of a gutter, the smell of smoke from a chemical industry, smell of flowers of a garden, smell of kitchen etc., are sources of information for him to locate where he is.
 4. Sense of Taste: This skill helps the visually disabled person to associated the names of substances with the taste. For example, sweet, sour, hot etc. could be associated with the substances which provide such experiences.
 5. Kinesthetic sense: The feeling of the body is responding to the external stimuli, which is other wise, the kinesthetic sense enables the child to get certain information like cold, heat, breeze, elevation of surface etc.

The mode through visual ideas can be transmitted and education can be imparted to the blind auditory and tactile. Sounds are constant in the environment, and although some are loud enough to startle, when repeated consistently and paired with visual or tactile stimuli conveys meaning. The sequence of learning to understand and give meaning to sounds seems to follow a pattern.

- awareness and attention to sounds
- response to specific sounds
- sound discrimination and recognition
- recognition of words and interpretation of connected speech
- selective listening to verbal instructions

- auditory processing and listening for learning

The last stage is the ultimate level and is a skill essential for academic and information seeking and continued cognitive development of visually impaired.

Often referred to as the skin senses, the tactual and kinesthetic system involves touch, movement and body positions in space. These senses assume paramount importance in development in relation to reduction in visual ability, and are the primary learning for blind children. This sense also follows a pattern.

- Awareness and attention to differences in textures, temperatures, vibrating surfaces and materials of varied consistencies.
- Structure and shape perceived through hands.
- Relation of parts to the whole through blocks, toys and objects
- Graphic representations in two dimensional to three dimensional forms
- Braille symbology

1.5 PRINCIPLES OF USING INSTRUCTIONAL MATERIALS

The education for visually impaired children is the same as the non-disabled but the mode through which it is transmitted is somewhat different. The instructional material to be used to explain a concept needed modification and most of all its selection is important.

Ever since formal education of blind children began, enlightened teachers of the blind have practiced certain principles, mostly without being theoretically aware of them. To what extent they can be applied in the actual process of teaching depends somewhat on whether visually handicapped children receive their education as a group in an environment geared to their needs, as residential schools are, or as single individuals in public school facilities where they may have an understanding general classroom teacher and should have a resource or itinerant teacher who is aware of and knows how to meet their special needs.

1. In order to give the blind child a knowledge of the realities around him, the teacher must aim at providing him with a wide variety of **concrete experiences**, thus making up to a certain extent for the limitation in the range and variety of his experiences. Concreteness in teaching can be achieved in essentially two ways : by having the children observe the object or situation itself, or by providing them with a model of the object. In all the cases if there is any possibility, reality is to be preferred. Children must be given sufficient time for observation. Diagrams and embossed maps are most valuable from the early school years on in developing spatial concepts and basic relationships needed for orientation and other purposes.

2. Blind children are at a serious disadvantage in experiencing things and situations in their totality. Touch permits observation of objects that can be embraced by hands or body. Vision permits a unification of observations and it structures and organizes discrete impressions received by other sensory organs. The lack of unifying integrative experiences, of gestalt formation, must be counteracted by teachers who give blind children opportunities to experience situations in their totality and to **unify part-experiences into meaningful wholes**. The teaching by study units is an important means of achieving this end.
3. As a result of their blindness and because of the environmental reactions to this handicap, blind children have in significantly less opportunities for **self-activity**. Therefore special attention must be given at home and in school to encouraging blind children to do as many things for themselves as are desirable and compatible with a well conceived time economy. The general approach of teachers should be to encourage blind children to learn to do things themselves with as little assistance as possible. The teacher will need to distinguish between tasks and skills that are essential for the child to perform at a given stage of his development and those which must be left for later or need not be mastered at all. They will need to assist him in his learning by finding a progression toward accomplishment by which each step is within the child's capability and still poses a challenge to him. This requires sensitivity and identification on the part of the educator and inserts an art element into teaching which is challenging to pursue and satisfying in its results. As regards, the creative activities of blind children, educators should not impose their 'seeing taste' on blind children, but let them create things according to their own concepts and emotions.

1.6 INSTRUCTIONAL OBJECTIVES

Cognitive domain: is concerned with ability to do a task (The recall or recognition of knowledge and the development intellectual abilities and skills).

Affective domain: is concerned with the will or desire or attitude to do the task.

Hence cognitive and affective domains are theoretical aspects of human behaviour.

(Changes in interests and values and the development appreciation and attitudes.

Psychomotor domain : is concerned with the practical aspect. (Development of manipulative or motor – skills).

Nature of Adapted instruction : The general curriculum which contains more “visual experience to non-visual” and less “non-visual experiences” must be analysed to convert the visual experience to non-visual experience for the

betterment of concept development for the visually impaired children. The visual oriented diagrams should be converted as tactile oriented.

To achieve the above the following four steps may be followed.

- a. We should try to **DUPLICATE** experiences; but can't always, so we have to.
- b. **Modify** experiences some times; these modifications may be in terms of
 - Content
 - Method of display
 - Type of material used
 - Response expectations from the child etc.
- c. Some times, there is no suitable means of modifications and we must therefore **SUBSTITUTE** one kind of lesson for the visually impaired children which as closely as possible approximates that presented to his sighted peers. But even then, and especially in the early days, we may sometimes
- d. **OMIT** a lesson.

These four steps are very important in giving the same kind of experience to the Visually Impaired Children through the tactile material. This pattern shifts quickly, and is no time at all, omissions are rare, substitutions are frequent; modifications - especially in the page layout continues to be desirable; but of greatest importance, and more duplicate experiences are possible.

1.7 ADAPTATION OF INSTRUCTIONAL MATERIALS FOR CHILDREN WITH VISUAL IMPAIRMENT - GENERAL PRINCIPLES

- There is no change in the content of the lesson.
- The basic format of the lesson is not changed.
- The visual oriented information is adapted wherever necessary.
- While presenting the pictures, finer visual details are omitted without compromising the thrust of the concept.
- When the finer visual details are omitted from the diagram, supplementary verbal description is given along with the tactile diagram.
- Wherever concept is important and not the diagram, it is modified suitable. For example, in teaching a number concept, the actual picture given in the print book is modified in tactile formats, which are understandable.

- The format of the tables is retained whenever desirable. In all other cases, contents given in the tables have been described row-wise.
- Wherever the actual duplication of a picture is not presentable in tactile form, the characters in the diagram are labeled.
- As Braille version of a print page will run into approximately 2-3 Braille pages, the print page is indicated on the left side of the Braille page and the Braille page on its right side. Whenever a print page in over, a horizontal line is given to mark the end of the page.
- If a box is given in the text to highlight the importance of the content given there, the same is provided within a box it is too small. Wherever, the box is too big for tactile closure, the content given in the box presented within square parenthesis.
* Whenever small mathematics and scientific notations are used in the Braille text, they are listed at the beginning of the Braille book along with illustrations on how to use them.
- Along with the Braille copy of the text, the diagrams in the print form are also enclosed at the end so as to enable to teacher to provide verbal description of the diagram while teaching. Reference to these diagrams is also made in the Braille text wherever needed.

1.8 ADAPTATION OF INSTRUCTIONAL MATERIAL AND METHODS IN TEACHING VISUALLY IMPAIRED CHILDREN AND THE USE OF SPECIAL APPLIANCES

The guidelines for teaching method should be developed based on the special characteristics of learning behaviours of the visually impaired children. Sighted child can easily learn many things just by seeing what is happening around him. But for the visually impaired children it is very difficult. A mere sight will bring lot of information in a fraction of second. So their way of learning of NATURAL where as learning of the visually impaired in MEDIATED LEARNING. Therefore activities designed for the visually impaired must be LOGICAL, SEQUENTIAL and SYSTEMATIC.

Most learning takes place quiet apart from teachers and formal teaching situations. It is a well known fact that teaching and learning are unavoidable aspects of human growth. Very often learning is strengthened by "REINFORCEMENT" visual feedback plays a significant role in the reinforcement of varied experiences. Since the tactile, auditory, olfactory sensory may not be the complete substitute for the vision the visually impaired children may take a longer time to learn and more

repetitions to understand because of the limitation in vision. The concepts are visualized by the visually impaired children through pieces of information (i.e.) they explore, identify, discriminate and generalize by step by step approach but sighted children learn as a WHOLE because of the quick visual process.

The enemy of learning is primarily other learning. Freedom and discipline are essential conditions for learning. Learning is an active continuous process. Purpose action is better than repeated motions. Human learn many things they don't need to know. The functional learning is determined by knowledge, understanding and interpretations. When the knowledge is controlled by recall and recognition careful decision must be made for the new learning should not confuse the things that may already be learnt by the visually impaired children. For example the word "DARKNESS" may not be confused with LIGHTLESSNESS. To know the difference the child must be explained the attributes of darkness and lightness.

While seeing the learning stages of the children irrespective of normalities and abnormalities, concrete experiences and then to abstract learning. When looking at the visually impaired, every teachers should try to give as many concrete experiences as possible. This is because of the very reason that their reduction in range and varieties of experiences due to the lack of vision. It is also noted that concrete objects can not give concrete ideas to the Visually Impaired Children. It is necessary for the teacher to see such things are not left incidental. It must be planned and systematic.

It is also observed that most of us have the wrong notion that the Visually Impaired Children have superior learning power. But this is not practically true. In practice the visually impaired children may be less in making use of remaining senses. They must be properly oriented and trained by the personnels involved in the programme. In case that parents involvement is needed for this purpose all possibilities of exploring the available services of the parents and other para professionals could be made workable.

The restrictions imposed by the absence of vision has implication for the teaching learning process while implementing the adapted instructional methods and materials. The following may be some of them.

1.9 OBJECTIVE EFFECTS OF BLINDNESS

- Reduction in range and variety of experience.
- Reduction in ability to move about.

- Control of environment and self in relation to it.

1.10 OBJECTIVE EFFECTS OF BLINDNESS

1. Stability
2. Etiology
3. Extent (amount)
4. Utility (residual vision)
5. Social impact
6. Need
7. All mitigated by intelligence and guidance.

In addition to above objective and subjective effects of blindness, the discussion of the teaching / learning methodologies in detail should consider appropriate measures to study the implication of blindness for education.

- The visually disabled child may need to be given direct assistance to learn systematically even the easy skills that the sighted child learns almost spontaneously through imitation and contact with the world.
- Some problems shown by the Visually Impaired Children are not related to blindness. For example home sick, adjustment to group living.
- Adults and children do not understand each other as well as both assume, since they often use the same word with quite different meaning.
- A child may be impressed by the concrete existence then it's essential features. He cannot always distinguish between his own feelings and outside events.
- A misconception that Visually Impaired Children possess extra power in their auditory and tactile ability should be overcome. They need sufficient practice for developing these skills in them. Unless these skills are developed systematically, there is no way of learning them.
- In working with the Visually Impaired Children we must try to remember that we describe things using verbal oriented terms which most of the times they have no meaning for them.

Association is an important aspect of learning. Identifying, grouping and sequencing assist learning. Due to the lack of visual feedback, a visually impaired child may have to skip a number of intervening steps of an activity which have visual orientation.

It is very important to take the teachable moment and use it to the child's advantage. Let the child initiate the activity in learning.

Progress in learning is not uniform, but frequently reaches plateaus where the rate of learning shows appreciably. Some time Visually Impaired Children may not show improvement in his studies. Teacher should not suspect his cognition only on the basis of poor performance; it has implication on the basis of family assistance, socio-economic status etc.

Some times blindness add additional problems if the defective eye continues to give pain. Proper treatment is necessary at this stage, other wise this may affect the education of the child directly.

The functional vision and light perception in the children may result in the child a different type of behaviour. Teachers should be aware of this fact and guide them properly.

The Visually Impaired Children with additional disabilities may need special support based on their particular disability condition.

The Visually Impaired Children may have difficulty in forming exact concepts as they have to manipulate form parts to whole.

The Visually Impaired Children may develop many verbal skills without associating the proper meaning. Due considerations have to be given for the development of appropriate languages skills in them.

Regarding teaching curricular subjects both methods and in using of instructional material needs modifications like

MATHEMATICS : Adaptation of mathematical text materials is essential to keep the learning outcomes on par with sighted children. Preparation and dissemination of mathematics Braille text material is vital for the teaching- learning of maths. Since maths is an abstract subject that includes concrete, pictorial and abstract concepts, the principles of material production should be duplication as far as possible, modifications when necessary, substitution whenever appropriate and even omission of some inevitable topics.

Teaching concept of length, breadth, volume, temperature, etc. is very important for V.H. children. In teaching such concepts the teacher should move from

- large 3 dimensional objects to
- small 3 dimensional objects to
- 2 dimensional figures such as tracing wheel lines, to
- child model familiar objects in clay to
- tactual concept books and materials to

- identifying two dimensional forms.

SCIENCE : Research indicates that tactiles and embossed maps for geographical features.

1.11 USE OF SPECIAL APPLIANCES

Advances in technology have brought in revolutionary changes in the quality of life and patterns of work and leisure. The 20th century has witnessed phenomenal advancement in technology in almost every sphere. These developments have brought in revolutionary changes in the quality of lives of human beings. It has played a very important role in mitigating the limitations imposed by a disability. Assistive devices have helped the visually impaired to achieve better levels of independence through more access to information. Technology has tremendous potentialities for facilitating economic rehabilitation of the visually impaired and there is a need to improvise technology in the absence of universal designs. The following are some examples of devices.

EDUCATIONAL DEVICES

Educational devices can be classified as

- Braille duplicators and writers
- Writing devices
- Braille paper
- Talking books and tape recorders
- Reading machines
- Braille computers
- Mathematical devices
- Science devices
- Geography devices

1. Teaching orientation and mobility through aids and appliances

The systems which is widely accepted for the independent travelling of the Visually Impaired Children in the use of the long cane. Orientation and mobility is one of the most important areas in the training of the Visually Impaired Children. Before introducing the mobility device to the visually impaired children, the skills like orientation skills, mobility skills, sighted guide technique and safety technique

should be introduced. A Visually Impaired Children with excellent orientation skills and graceful mobility skills is said to have attained physical independence and such students are easily acceptable to the society. When a sighted person is not fully making use of his sense due to the dominance of the sight over the sense, a Visually Impaired Children should be trained to use sense of hearing, sense of touch, sense of smell, sense of taste and kinesthetic same.

MOBILITY DEVICES

Canes:

- a. **Symbol canes:** It is made up of light metal tubing, generally alluminium or its alloys. These canes folded up conveniently for carrying. This cane is popularly known as Braille folding stick.
- b. **Guide canes:** A stronger version of the symbol cane and intended to be more of a mobility aid.
- c. **Long canes:** A wooden or alluminium stick of 85 to 90 cms. This alluminium cane is generally sleeved with PVC material, having a rubber grip and a nylon tip with or without a crook.
- d. **Electronic Travel Devices:** An ETA is described as a device that sends out signals to sense the environment within a certain range or distance, processes the information received and furnishes the person with relevant information about the environment. Most of these devices are based on integrated circuits and emit or tactile signals. The electronic travel devices are not available and prevented in India. Some of these devices are listed below.
 - Lind say Russel E-model path sounder
 - C5 Laser cane
 - Ultrasonic Torch
 - Sonic guide
 - Light probes
 - Mowat sonar sensor
 - Nottingham obstacle sensor
 - Electro-cortical prosthesis
 - Electro Roftalm
 - AFB's Computerized travel aid
 - Polaroid ultrasonic travel aid.
- e. **Mobility show card:** A plastic show card to help visually impaired persons

to cross busy roads and to hail a taxi.

- f. Mini Beeper: A battery operated, hand-held electronic gadget having application in mobility, recreation, sports and obstacle location.

2. BRAILLE DUPLICATORS AND WRITERS

Thermoform Machine

'Indutherm' is an indigenous duplicating machine. Generally this machine is useful to take Xerox copies of the master copy with the help of Brailion sheets. It is mostly useful to take copies of tactile diagrams.

Braille writers

It is an upward writing machine for writing on one side of the paper, enabling the Braille to be read as it is written. The most popular Brailers are

- Stensby Braille writers
- Perkins Brailers
- Taj Brailers
- Worth perkins Brailier
- Minal Brailier

Writing Devices

- Interline Braille frame
- Taylor postcard frame
- Pocket Braille frame
- Stylii
- Braille kit
- Pragnya sketching device
- Product design.

3. MATHEMATICAL DEVICES

- * Taylor Arithmetic frame
- * Arithmetic and Braille writing slate
- * Abacus
- * Talking calculator

* Mathematics kit

* Spur wheel

* Compass set

* Geometry mat

* Opisometer

4 . LOW VISION AIDS

- VTS link
- Visual tek
- Schmidt reader
- Magnifying lenses:
- Mounted magnifying lens
- Flexible arm illuminated magnifies
- Magnifying binoculars
- Book magnifies
- Illuminated magnifies
- Paper weight magnifies
- Super loupe
- Eye loupe
- Head loupe
- Flashlight magnifies
- Pocket magnifies
- Rayner recumbent spectacles
- Super scan reading glasses
- Windsor spherical magnifies
- stand magnifier and
- Hand-held magnifier.

Braille Reading

- Students being taught Braille must have an understanding of the spoken language.

- The children should use both the hands.
- Placing both hands at the beginning of a line is important.
- The left hand should move in the opposite direction and locates the beginning of the next line.
- The students should touch the dots lightly.
- Good two handed readers need to acquire a light touch.
- Clean and warm hands are important for rapid and correct Braille reading.
- Never tell a child that there are reversible pairs of letters in Braille.

Braille writing

Special appliances are used by the child to write braille. Braille slate and stylus, pocket frame and brailier is commonly used by the children. 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 left side of the slate. After this, the child should reverse the paper and read it from left to right.

Skills necessary for writing with slate and stylus

Pre-requisite skills are most important for using slate and stylus effectively. The six dots 1, 2, 3, 4, 5 & 6 are punched in the respective cells of the braille state. 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.

- Finger manipulation skills.
- Fine motor co-ordination and control of muscles.
- Competency to read familiar braille words.

Technology has not solved all our problems, but it has dramatically reduced many. It has opened up avenues for the disabled hitherto thought to be completely closed.

In spite of the initiatives, technological developments do not seem to have made full impact on the rehabilitation of the visually impaired. Some of the reasons are:

1. Information dissemination about technological developments is meagre.

2. Adequate training facilities in the use and maintenance of specialised equipment are not available.
3. Affordability has to be ensured either through subsidies or financial assistance on easy repayment terms.
4. A policy to popularise and market the indigenous products, especially in view of low markets demands for such devices, is required.
5. Many of the technological developments have not gone out of the laboratories and the fruit of such wonderful innovations has not been experienced by the users.

SUPPLEMENTARY INSTRUCTION FOR CONCEPT DEVELOPMENT

Concept

Concepts have been described as "verbally identifiable and more-or-less stable abstractions (constructed from experience) which serve man in his psychological adjustment to a particular environment" (Bruner et. al., 1960) concept is defined as (a) an accumulation of all that is conveyed to one's mind by a situation, symbol or object. Sometimes used to refer to a thought, opinion or general idea of what something should be. (b) the set of characteristics common to a class of objects; e.g. triangularity includes all three sided figures (Kully and Vergason, 1978). Concept is "an idea or thought especially a generalized idea of a class of objects; abstract notion" (Webster's new world dictionary, 1986).

The visually impaired children due to absence of vision failed to develop basic concepts and its integral components in their environment. Concepts should be taught properly and systematically to the Visually Impaired Children so that they can participate in all the academic activities equally with the sighted children. We have to asses concepts with individual children and adopt the verbal and manipulative procedures. Then we have to reinforce and generalize conceptual understanding once a concept is learned in a specific instructional setting.

- Learning of "concepts" in day to day life is very vital for the individual to interact with the world. The specific instruction in the following areas are very crucial in the concept development for the Visually Impaired Children.
- Body awareness (concepts pertaining to the body), top-bottom, back-front, left-right, names of major body parts, relationship of body parts, Lower part of the body, Upper part of the body
- Environmental awareness
- Awareness of object / situational characteristics.
- Time awareness

- Spatial awareness
- Actions
- Quantity
- Symbol awareness
- Emotional and social awareness
- Reasoning.

TEACHING GUIDELINES REGARDING CONCEPTS

1. One should use a consistent terminology, in teaching a concept.
2. Some essential concepts need to be taught deliberately while many other concepts are taught as part of daily experiences, play etc. It is always preferred to teach a concept through an activity, and in a safe environment for exploration. Parents should be part of the team in developing concepts.
3. Make use of toys, aids, materials to teach the concepts.
4. Use of field experiences, personal life experiences, toys, aids and materials etc. as well as parental participation is always recommended for concept development in children.

Assessment of Conceptual understanding

It is necessary to assess the students concept development in a systematic manner by examining the list of concepts in related to the curricular needs. Mostly in the primary level due to lack of language ability their performance may not be good. So their language ability skills may be assessed through the use of their available skills. The assessment should be based on their understanding and performance. Generally the judgement should be based on their past experience and instruction, language ability, visual functioning and general developmental level. The following are some of the models for the assessment of concept development.

Table – 1

Concepts of Actions

	Familiar Object Exemplifying Concepts	Unfamiliar Object Exemplifying Concepts
1. Identification Indicate an object named by teacher Name an object indicated by teacher	_____ _____ _____	_____ _____ _____
2. Describe function of named / Indicated object	_____ _____	_____ _____
3. Describe relationship of named / Indicated object to other objects	_____ _____ _____	_____ _____ _____

Table – 2

Concepts of Body Parts that can be Touched

	Self	Other Persons
1. Identification Indicate part named by teacher Name part indicated by teacher	_____ _____ _____	_____ _____ _____
2. Describe function of named / indicated part	_____ _____	_____ _____
3. Describe relationship of named /	_____ _____	_____ _____

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Indicated part to other body parts.	_____	_____
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Table – 3

Concepts of Object Characteristics

	Clear-cut Examples	Finer Discrimination
<p>1. Identification</p> <p>Indicate characteristic of an object or indicate object with a specific characteristic named by teacher</p> <p>Name an object characteristic indicated by teacher</p>	<p>_____</p> <p>_____</p> <p>_____</p>	<p>_____</p> <p>_____</p> <p>_____</p>

Table – 4

Concepts of Actions

	Self	Other Persons
<p>1. Identification</p> <p>Imitate movement performed by teacher</p> <p>Perform movement by teacher</p> <p>2. Describe function of an action, if appropriate.</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>

Table – 5
Concepts of Positions

	Own body parts only	Other persons or object and own body parts	Other persons or objects only
1. Identification			
Move to position named by teacher	_____	_____	_____
Name a position indicated by teacher	_____	_____	_____

Table – 6
Abstract Concepts

-
1. Describe function

 2. Name class category, if appropriate

 3. Describe similarity or analogy to other

Known concepts

1.12 UNIT SUMMARY

1. The meaning of providing non-visual experience to visual ideas is to enable a child to gain knowledge of concepts through his remaining senses i.e. audition, tactile, all factory, gustatory and kinesthetic.
2. Human being is endowed with five major senses. Each of these senses namely, vision, audition, tactual, alfactory, gustatory and kinesthetic are employed for specific purpose for gaining knowledge about the environment. For example vision can provide information about the space, distance, colour, size and shape, but it cannot give any information about hardness, smoothness, softness, roughness, heat and cold. Similarly, audition which is also a distance sense like vision can give some idea about direction, eco-location, but it cannot give any information about the size or shape and colour. Tactual senses can give information about the hardness, softness, smoothness, heat, cold, elasticity and rigidity. But to gain these information, the actual tactile contact with the object is essential. Hence, it is not a distance sense. Kinesthetic can give information about movement. Alfactory i.e. sense of smell is also a sense of direction, but it cannot provide any information about exact location of the fragrant object.
3. Concept development involves sensation, perception, classification and image formation. Concepts are said to have been developed or formed when an individual can name or describe an object or event or place in its absence. For example the description of table even though the table is not there is the concept of a table.
4. Four basic principles namely duplication, modification, substitution and omission are employed for teaching the visually handicapped children. Duplication means providing a number of experiences for the same learning outcome. Modification means making changes in the teaching learning material without compromising with the learning outcome. Substitution means providing experiences through different senses for compensating the loss of sight. Omission means (which should be used when it is absolutely essential rather unavoidable) the dropping out a particular activity from a given subject.
5. A number of strategies can be successfully employed for teaching the visually impaired children. For example giving as far as possible concrete and real experiences, giving opportunities to a child to explore an object bit by bit and then forming a meaningful whole by establishing relationship.
6. The instruction like teaching learning material also needs to be adapted for teaching the visually handicapped children. For example a teacher while explaining a concept by writing on blackboard should also speak out what she is writing on blackboard.

1.13 CHECK YOUR ANSWER

1. The four principles that are suggested in the management of educational experience for visually impaired children as follows.
 - a.
 - b.
 - c.
 - d.
2. Visually impaired children have more auditory and tactile abilities.
 - a. Yes
 - b. No
 - c. Con't say
 - d. totally blind children have more abilities
3. The objective effects of blindness
 - a.
 - b.
 - c.
4. The subjective effects of blindness are
 - a.
 - b.
 - c.
 - d.
 - e.
 - f.
 - g.
5. The use of special appliances in teaching orientations and mobility.
 - a.
 - b.
 - c.
 - d.
 - e.
 - f.
 - g.
 - h.
6. The following are the devices meant for Braille writing.
 - a.
 - b.
 - c.
 - d.

1.14 ASSIGNMENT

1. Prepare a list of visual and non-visual ideas involved in the social science text book at the secondary level.
2. What do you mean by concept development. Write down the different types of concept development for the primary level visually impaired children.
3. Discuss the general guidelines should be followed while preparing the braille text book.
4. The trainee can visit both integrated education programmes and special school programmes to know about the special appliances involved in teaching plus curricular activities.

1.15 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 those points below:

1.15.1 Points for Discussion

1.15.2 Points for Clarification

1.16 REFERENCES

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UNIT 4: SCREENING, IDENTIFICATION, AND ASSESSMENT OF VISUALLY IMPAIRED CHILDREN WITH ASSOCIATED DISABILITIES

STRUCTURE

- 2.1 Introduction**
- 2.2 Objectives**
- 2.3 Defining Cognitive Development**
 - 2.3.1 What is Cognitive Development?
 - 2.3.2 Characteristics of Cognitive Development
- 2.4 Piagetian Stages of Cognitive Development**
 - 2.4.1 Sensory Motor Stage
 - 2.4.2 Concrete Operation
 - 2.4.3 Formal Operation
 - 2.4.4 Abstract Thinking (Logical Operation)
- 2.5 Objective Effects of Blindness**
 - 2.5.1 Restriction in the range and variety of experiences
 - 2.5.2 Restriction in the ability to move about
 - 2.5.3 Restriction in the control of environment In relation to one's own self
- 2.6 Implications in Cognitive Development**
 - 2.6.1 Implication in concept formation/development
 - 2.6.2 Implication in language development
 - 2.6.3 Intellectual development
 - 2.6.4 Role of play in Cognitive Development
- 2.7 Strategies for promoting cognitive development of Visually Impaired Child**
- 2.8 Unit Summary: Things to remember**
- 2.9 Check your progress**
- 2.10 Assignments/Activities**
- 2.11 Points for Discussion/Clarification**
- 2.12 Reference/Further Readings**

2.1 INTRODUCTION

We study various aspects of a given subject to understand the same clearly. In the field of special education, each area of disabilities has its own implications. For example, in the case of Hearing Impairment, we study what hearing impairment is? How does it occur? How can it be prevented? What are the ways of communication? Which the hearing impaired children need to learn for communication? and so on. Similarly, in the area of Visual Impairment, it's etiology, its impact on various aspects of development, the methods and techniques that need to be employed by a teacher in educating the visually impaired children and so on.

You may have studied many of these things elsewhere in your course. We will try to learn in this unit what is cognitive development? What are various stages of cognitive development? And other issues relating to the cognitive development in visually impaired children. An attempt to understand the role of a teacher in promoting cognitive development in visually impaired children will also be made.

2.2 OBJECTIVES

After studying this unit you will be able to:

- Understand and Define Cognitive Development,
- Describe various stages of Cognitive Development as propounded by Piaget;
- Describe various effects of Blindness;
- Describe implications of Blindness in Cognitive Development,
- Explain various strategies for promoting Cognitive development of Visually Impaired Children.

2.3 DEFINING COGNITIVE DEVELOPMENT

In the discipline of Psychology, we need to understand various terms like Growth, Development and the impact of heredity and environment on the growth and development. These terms are used by many of us without understanding their psychological meaning. In the area of development of an individual too terms like physical development, social development, cognitive development and emotional development are used without understanding their proper meaning and definition.

Before we try to learn to define cognitive development and describe various stages of cognitive development, why don't you attempt to describe your views about it?

2.3.1 What is cognitive development?

Describe your own views about the definition of cognitive development in the space given below:

You may have included any/some/all of the following in cognitive development in your description, while attempting to define cognitive development:

- Sharpening of abilities to learn and understand.,
- Development of various senses',
- Development of perceptual abilities'.
- Development of abilities to interpret sensorial experiences;
- Development of abilities to use languages.

Your attempt is in the right direction. Cognitive development includes all of these and many others, we may also define cognitive developments as -

- A rather closely defined area that of embraces the whole complex area of human mental development focusing on perception, attention, learning and memory, the comprehension and use of language and reasoning. Perception depends on sensation, attention depends on need of acquiring knowledge, learning depends on motivation and memory is based on result of repetitive exercise and practice.

- Cognitive development implies the development of an information processing system in which a given stimulus is received by an organism as a result of sensorial experience and proceeds through sequence of processing stages until it either drops out of the system or is stored in long-term memory.
- This is done through the process of 'assimilation' and 'accommodation' through which 'adaptation' is attained resulting in further cognitive development.
- Cognitive development is the development of ways and capabilities of understanding one's world, representing it and dealing with it; it is, therefore, at the very core of one's functioning as a person.
- Thus cognitive development is a process by which the child's knowledge and understanding of the world expand.

We also can say that cognitive development is synonymous with changes in cognitive structure. The major cognitive functions are organization and adaptation, the former making for integration, and the latter comprising of two principles, assimilation and accommodation.

Thus, in short what we mean by cognitive development is given here in the box for your understanding.

The Cognitive development is a complex system of human mental perception, attentions, learning and memory, by which knowledge and understanding of a person increase through assimilation and accommodation.

we also can say that

Cognitive development is the result of sensory development, perceptual development in the way in which the child interprets sensory impulses received by him, as well as the ability to form concepts, exercise, judgment, reason and solve problems.

2.3.2 *Characteristics of Cognitive Development.*

Cognitive development is a long term process involving continuous and dynamic interaction between the organism and the environment expressed in identifiable stages or period which follows an invariant sequence. Cognitive development results essentially from an interaction between the subject and the environment. Being cognitively active does not mean that the child merely manipulates a given type of material; he can be mentally active without physical manipulation. Just as he

can be mentally passive while actually manipulating objects. Intellectual activity is stimulated if the opportunities for acting on objects or observing other people's actions or for discussing corresponding to the subject's level of development.

Cognitive development proceeds in a certain direction-through irreversible, invariant and sequential stages. The cognitive development can only be nourished and fastened through a careful designed programme - both spontaneous and structured experiences and exercise.

We have some more characteristics of cognitive development and they are:

- Cognitive development is development of general ideas standing for a general class.
- Cognitive development is directly related to our thoughts.
- Cognitive development is based on experiences.

2.4 PIAGETIAN STATES OF COGNITIVE DEVELOPMENT

A number of theories of cognitive development have been formulated. Among these, the most systematic and comprehensive is that of Jean Piaget and his collaborators. Piaget's work has been extremely stimulating and influential. Piaget regards intelligence, as a specific instance of adaptive behaviour of coping with the environment and organizing (and reorganizing) thought and action. Adaptation begins with the random, diffuse, mass reflexes of the neonate state and progress through stages, to the formal, logical reasoning of adulthood. The transition from one stage to another are gradual and results from continuous creative ability of the child and interaction between him and his environment. At each stage, the child's knowledge and understanding of the world expands. Reorganization of information and the development of new capabilities immerse and make possible more complex type of intelligent behaviour, thinking and reasoning.

The growth of intelligence or adaptation always involves two complementary process, assimilation and accommodation. In assimilation, a child incorporate and utilizes stimuli from the environment, interpreting new situations in terms of familiar ones, fitting the unfamiliar into his available 'organization' and reacting as he has in past situations. Accommodation occurs when environment stimuli demand new reactions in familiar situation.

Piaget believes that, while physical and perceptual development seem to be continuous, intellectual development progresses in step like ways in discrete stages. According to Piaget, in the earliest stage of cognitive development, orienting responses and curiosity play a critical role in adaptation.

Piaget divided cognitive development into several stages. Most important stages are:

- a) Sensory Motor stage.
- b) Concrete Operation.
- c) Formal Operation.
- d) Abstract thinking (Logical Operation)

2.4.1 Sensory Motor Stage

According to Piaget's theory, the first stage in the development of adaptive behaviour, the sensory-motor, extends from birth to about two years of age, and is divided into six sub stages.

For the first month, an infant only exercise the reflexes present at birth, but the second sub stage from roughly one to four months, involves coordination of reflexes and responses. Hand movements become coordinated with eye movements; what he hears he looks at; he reaches for objects, grasps and sucks them. In the third sub stage approximately four to eight months, an infant beings to anticipate the consequence of his actions and can intentionally repeat responses that have produced interesting results. For example, at four months of age, a baby will kick his legs in order to make a toy suspended over his crib swing. Moreover, becoming interested in the objective would he begins to look for objects he has lost sight of.

In the fourth sub stage, eight to eleven months, the child begins to differentiate means from ends, using established responses to attain goals. Thus, if a desirable toy is hidden, he will actively search for it and he will remove an obstacle in order to get it.

The fifth sub stage, beginning at 11 or 12 months to 18 months of age, is characterized by active experimentation, exploration, variation and modification of behaviour. The child appears to be genuinely interested in novelty and manifests a great deal of curiosity.

Between 18 months and two years of age the child is in the sixth and final sub stage of the sensory motor period. This represents an important advancement into the other stages, for, it is characterized by the emergence of the capacity to respond to, or think about objects and events that are not immediately observable, and to invent

new means of accomplishing goals through 'mental combinations', that is, imagination and ideas.

Some degree of problem solving, remembering, planning, imagining, and pretending are also possible at this stage, which most children have achieved by the age of two years.

2.4.2 Concrete Operations

The emergence of real symbolic activity occurs during the second broad period of development, the stage of concrete operations which extends from about 18 months or two years until the age of 11 or 12.

During the first part of this period, the preconceptual stage ages (two to four), a child begins to regard stimuli as representatives of other objects. Imagery, or "symbolic function" develops during this stage and, at the same time, the child acquires more facility in language, and he begins to engage in symbolic play.

His tricycle may be used as a racing car, a tree stump as a castle, and a twig as a machine gun.

During the next part of the stage of concrete operations, the period of initiative thought (appx. age four to age seven), the child conceptualizes more, elaborates his concepts, and constructs more complex thoughts and images. Moreover, he becomes able to group objects together into classes, according to his own perceptions of similarity. This is undoubtedly due to improvement in the child's language ability, which is of paramount importance in verbal medication, concept formation, abstraction and problem solving.

At this period, the child's concepts and his understanding of situations are likely to be determined by whatever he happens to perceive, often a single, salient aspect of a particular object or event. Ordinarily he will not relate different aspects or dimensions of a situation to one another. For example, in one experiment, a child is given two equal balls of clay and asked to roll one of them into a long sequence, to flatten it into a pancake, or to break it into small pieces. Then he is asked whether the quantity of matter has increased, decreased, or remain equal. Most five and six years olds think that a change in form necessarily produces a change in amount. Being able to take account of only one dimension; such as the length, at a time, a child of this age is likely to report that the sausage contains more clay than the ball because it is longer.

At about seven years of age, the youngster begins to relate different aspects or dimension of a situation to one another and finally arrives at the notion of

conservation, or what Piaget labels the “principle of invariance”. At this age the child is now aware of the fact that the amount of clay remains constant in spite of changes in shape. Furthermore, he acquires the concept of reversibility - the idea that, in thought, steps can be retraced, actions can be canceled, and the original situation can be restored. Using the concept of reversibility, the child can interrupt a sequence of steps in problem solving if he sees that he is not succeeding; and he can then return mentally to the beginning and start again. It should be noted that this concept of reversibility is related to reversal at learning which, as we have seen, depends on abstraction and concept formation. This kind of learning becomes easier as children grow older and, according to experimental findings, a considerable proportion of seven-year-olds can deal efficiently with reversal problems. In the stage of concrete operations, a child uses logic and reasoning in an elementary way, but he applies them only in the manipulation of concrete objects, not to verbal preposition.

The ability to deal with verbal expression of logical relationship requires the use of “formal operations” as distinct from “concrete operations”, and the child does not ordinarily use these until the age of 11 or 12 years.

2.4.3 Formal Operations

The formal operations stage of cognitive development begins early in adolescence. While in the stage of concrete operations, a child can only classify, count, and put into series the various objects and events he perceives. An adolescent in the stage of formal operations can “operate with the operations”, that is, by means of symbolic propositions. A child's concrete thought operations occurs in response to real situation. An adolescent can consider general laws, and his thoughts concern what is hypothetically possible as well as what is real. (Hunt, Intelligence and experience.)

A Soviet psychologist mentioned that, much of the preadolescent's language becomes abbreviated, contracted, and more internalized. Extensive use of covert speech is undoubtedly related to many advances in cognitive functions during adolescence. The adolescent can reason deductively, making hypotheses about problem and their solution keeping in mind many variables simultaneously. He is capable of scientific reasoning and of formal logic in verbal argument. Moreover, at this stage, he reflects about, evaluates, and criticizes the logic and quality of his own thinking. His dependence on the perception or manipulation concrete objects is reduced, he no longer confine his attention to the immediate situation. An adolescent reasons scientifically, forming hypotheses and testing them in reality or in thought. Although a younger child's thought involves only concrete objects, the adolescent can imagine what might be possible. He can speculate and his speculations are governed by logical rules.

2.4.4. *Abstract thinking (Logical Operations)*

The final stage of cognitive development is stage of logical operations. By the time is 15, a person is able to use logical operations and formal logic in an adult manner in solving problem. He has reached the critical stage in cognitive development. At this stage a child (abstract thinker) can deal with possibilities. He acquires abilities to organize data systematically, apply combinatorial reasoning, and formulate hypotheses and evaluate their validity. His thinking is internalized, reversible and coordinated into operations which can be applied to abstract entities and propositions.

The following table summarize the stages and their substages along with marked changes.

S	State	Sub stage	Marked Changes
1	Sensory Motor Stage	i. Reflexes	Reflexive responses to his own body
		ii. Primary circular reaction	Repeat those actions that are interesting to him
		iii. Secondary circular reaction	Reproduces behaviour that produce effects in external world
		iv. Coordination of secondary circular reaction	Begins to coordinate his behaviour with respect to external world in more complex way
		v. Tertiary circular reaction	Behaviour clearly involves active trial and error action on the external
		vi. Internalization of thought	Begins to be able to imagine behaviours and their consequences.
2	Concrete operation state	i. Pre-conceptual	Concept of conservation relations
		ii. Initiative thought	Temporal-spatial representations

3	Formal operation stage		Advanced logical and mathematical scheme, comprehension of abstract or symbolic contents. Reduced need for objectives for thinking.
4	Abstract thinking (logical operation stage)		Use logical operations and formal logic in an adult manner in solving problem.

2.5 OBJECTIVE EFFECTS OF BLINDNESS

Visual impairment results in several educational, social and psychological effects. The effects are both objective and subjective depending on the type and degree of visual impairment. For educational purposes, it is considered desirable to classify the nature of effects.

The objective effects of blindness are cognitive. As senses are the gateway to knowledge, sensory deficit in vision reduces the range and quality of cognition. Moreover, vision is the most actively used sense. Lots of knowledge grows out of the visual experiences. The resulting effects of the loss of vision are therefore severe.

Berthold Lowenfeld, a noted educator of blind and visually handicapped pupils, presents a moderate position. He says that blindness "imposes three basic limitations" on the individual:

1. Restriction in the range and variety of experiences.
2. Restriction in the ability to move about.
3. Restriction in the control of environment in relation to one's own self.

These are described in the following paragraph.

2.5.1 Restriction in Range and Variety of Experience

A visually handicapped person can gain knowledge of the spatial qualities of objects only by touch observations. In this type of knowledge kinesthetic experiences play an important role. In order to perform any touch observations, direct contact must be had with the object to be observed. Herein lies some like sun, the horizon, many things are too large like mountains, large buildings, many things

are too small like a fly, and ant or many things are too fragile like a butterfly, snowflakes to be observed by touch. Also some objects in certain conditions cannot be directly observed tactually like moving objects (airplanes), burning objects, boiling objects and the objects which have no shape of their own like mercury. One aspect of vision, colour perception, cannot be performed by any other sensory organ because it is a function of retina. Blind children often gain only a partial knowledge of objects because touch requires direct contact with the object to be observed. There is one more cause for this restriction, the sense of touch generally functions only if it is actively employed for the purpose of cognition, whereas vision is active as long as the eyes are open and the bearing functions continually unless its organ is obstructed.

2.5.2 *Restriction in ability to get about.*

The visually handicapped child are severely handicapped in their ability to move around by themselves. The total loss of vision makes the person dependent on his other senses, which even at best result in increased difficulties and deceleration in getting about. Many regard this restriction as the most severe single effect of blindness. This limitation of a visually handicapped person effects the person in two different spheres of his life. His opportunities for experiences and his social relations. The exposure of new experiences is deprived of an important avenue of acquiring knowledge and stimulation because of his restriction in move about. He is limited in his spontaneous decision to engage in or follow up on various pursuits of knowledge and happiness.

In the social area, Cutsforth (1983) has forcefully pointed out that

“Since the blind live in a world of the seeing, it is necessary to procure visual aid and information. Whether this be volunteered or solicited, it represents a curtailment of self-expression and is registered emotionally' as such. Thus, the act of inferiority for which there must be compensation. And the thoughtful, blindhearted guide through a traffic jam must be pleasantly thanked for his assistance - society demands it - while the emotion demands that he be cursed or struck down with the cane. (P. 73).

Rather than ask for the accept assistance, a blind persons may decide to forego participation in an activity or, in the extreme case, he may fall into a pattern of withdrawal. Thus, it must be recognized that visually handicapped person, besides being restricted in his cognitive activities, is also form early infancy on limited in his ability to expose himself to experiences and opportunities.

According to Lowenfeld (1948) Mobility is the capacity or facility of movement, consists of two components: physical locomotion and mental orientation. These two components are not separate functions but are coordinated in the actual process of getting about. Locomotion may be defined as "the movement of an organism from place to place by means of its organic mechanism," and mental orientation may be defused as, "ability of an individual to recognize his surroundings and their Temporal or spatial relations to himself." (Warren 1934).

2.5.3 Restriction in the control of the environment in relation to one's own self

Visual experiences permits control of the environment and of the self in relation to it for more effective than that achieved by the other senses, either singly or in combination. Because of this reason, lack of sight causes a detachment from the physical and to some extent from the social environment. The visually handicapped persons cannot inform himself at a glance of his situation within a given environment as the seeing persons can. Lack of visual continuity responsible for the blind child's retardation in the process of turning from the self to the outer world. In the social aspects of an individual's life, blindness does not essentially interfere with communication but it does affect expressive movements, whether frontal expressions or gestural behaviour, because most of them are acquired by visual imitation. The limitation in interaction with the environment shows itself also in the blind person's inability to determine whether he is observed at any time by others. Therefore, the visually handicapped person are often apprehensive and even fearful of being watched. The detachment from the environment has many effects on children. For example, the visually handicapped children are not visually stimulated to reach out for the source of sound, tendency to immobility in young blind children etc.

2.6 IMPLICATIONS OF BLINDNESS IN COGNITIVE DEVELOPMENT

The cognitive development of visually handicapped child is affected by visual impairment. Visual impairment has either direct or indirect influence on cognitive development of visually handicapped children. Direct influence are those which result immediately from the visual impairment in a cause effect relationship and which generally have a handicapping effect on the development of the individual. The indirect influences plays a vital role in cognitive development. The loss of

vision tends to restrict the process of gathering, storing, retrieving and organizing information. According to Lowenfeld the three general restrictions because of blindness may effects on cognitive development. Visual experiences is extremely useful in building concepts and since vision plays a dominant role in cognition, the blind child's position and needs in this area will show specific differences as compared with sighted children. Blind child gains knowledge of the realities around him in a different way. In developing the conception the totally blind persons must rely upon the use of his remaining senses. Touch kinesthetic and audition are the most important sensory avenues.

2.6.1 Implication in concept formation

A concept is a network of significant influence by which one goes beyond a set of observed criterial properties exhibited by an object or event to the class identity of the object or event in question, and thence to additional inferences about other unobserved properties. (Bruner, Goodnow, Austin P244 1956)

The process of concept formation is based on classification means noting similarities and disregarding insignificant differences. Classification depends on sensory experiences. And in lack of this sensory experiences cannot fail to produce a lack in concept formation. The visually handicapped child receives information through other senses like touch, smell, hearing etc. This is observed that the concepts received by remaining senses are defective. The information received by sight and touch are different. A sighted child can see anything to make his/her concept formation at a glance. But a visually handicapped child cannot do the same for making his/her concept formation. Visually Handicapped child make his/her concept through part to whole. So visually handicapped children have some difficulty in formation of concepts.

2.6.2 Implication in language development.

Language development is the most important way of communication for the visually handicapped child as well as sighted child. A sighted child can communicate through his/her gestures, but a visually handicapped child cannot do so. Because of this language development is more necessary for visually handicapped child in comparison to sighted child. There is a very little difference from sighted child in some areas of language development of visually handicapped child. This is due to medial learning. A sighted child can see the movement of lips

while others saying something and also can understand the said word using in which context, but a blind child can not see and cannot understand the meaning of the said word. So the visually handicapped child use the word without knowing its meaning. (verbalism) Most of parent are not trying to teach vocabulary do development that is based on visual experience and thus they confuse the child. It is not clear whether any such differences does not have implications for the adequacy of thought.

2.6.3 Intellectual development.

This is assumed that intellectual development develop more slowly in a visually handicapped child than in sighted child. This is due to three basic restrictions on visually handicapped child. The blind child build tip concepts of his/her surrounding environment through remaining sense, but the information received by visual sense is extremely useful in building concepts. By the sense of touch a visually handicapped child cannot make concepts of distant (building), very large (mountains), very small (ant), fragile (butterfly) and dangerous thing (flame). Any one can not make his/her concepts of these things without visual sense. Hence, these limitations make the total experience of the visually handicapped child more restricted. And Foulke (1962) also noted that the nature of the concept that an individual acquires depend on his/her range of experience. So the concepts of the visually handicapped child are in some ways more restricted than those of sighted child. Foulke also noted that the visually handicapped are more dependent on second-hand-experiences that is conveyed by verbally transmitted information by other people.

2.6.4 Role of play in cognitive development

Cognitive development is the product of an interaction between individual and the environment. In lack of sensory data needed for proper cognitive development there is some difficulty for the visually handicapped child. For a good type of concept formation such sensory data must be given to visually handicapped child by contriving new and imaginative play situation. The visually handicapped child has all the equipment for storing processing and retrieving sense data gathered from experience. All cognitive development including the concepts formation is experience of interaction with the environment so take the visually handicapped child to experiences that he can not have at home or in class room. And for making more and more interaction with the environment organize visits to Museums, Post Officers, Railway Stations and other public places.

2.7 STRATEGIES FOR PROMOTING COGNITIVE DEVELOPMENT IN VISUALLY IMPAIRED CHILD

For promoting cognitive development in visually handicapped child, stress is placed on speed of performance rather than quality of learning through all the remaining senses. In the process of cognitive development teachers, parents and other members of society may play a positive role. Cognitive development in a good manner can take place by the major steps.

- (a) Need for concrete experiences. - In order to give the blind child a knowledge of realities around him, the teacher/parents must aim at providing him with a wide variety of concrete experiences, thus making up to a certain extent for the limitation in the range and variety of his experiences. For the visually handicapped child it is not important to learn concretely about exotic things; his primary concern in teaching can be achieved in essentially two ways: by having the children observe the object or situation itself, or by providing them with a model of object. In all cases if there is any possibility, reality is to be preferred and children must be given sufficient time for the observation.
- (b) Need for unifying experiences. - It has already been stressed that blind children are at a serious disadvantage in experiencing things and situation in their totality. Touch permits simultaneous observation only of objects that can be embraced by either hands or the body. Larger objects must be observed by consecutive touch motions and in many instances, only parts of them are observed in this way. Vision permits a unification of observations and it structures and organizes discrete impressions received by other sensory organs. The lack of unifying integrative experiences of gestalt formation must be counteracted by teachers / parents who give visually handicapped child opportunities to experience situation in their totality and to unify part-experiences into meaningful whole.
- (c) Need for learning by doing. - As a result of their visual disability and because of the environmental reactions to this handicap, blind children have in general significantly less opportunities for self-activity. Therefore, special attention must be given at home and in school to encouraging visually handicapped child to do as many things for themselves as are desirable and compatible with a well conceived time economy. The visually handicapped

child need to learn many of the routine daily activities by having them shown to them in their way, and this tasks effort, time and patience.

2.8 UNIT SUMMARY/THINGS TO REMEMBER

- Cognitive development is the result of sensory development, perceptual development in the way in which the child interprets sensory impulses received by him, as well as the ability to form concepts, exercise judgment, reason and solve problems.
- Thus cognitive development is a process by which the child's knowledge and understanding of the world expand.
- Cognitive development proceeds in a certain direction-through irreversible, invariant and sequential stages. The cognitive development can only be nourished and fastened through a careful designed programme.
- A number of theories of cognitive development have been formulated. Among these, the most systematic and comprehensive is that of Jean Piaget and his collaborators.

Piaget divided cognitive development into several stages. Most important stages are:

- a) Sensory Motor stage.
 - b) Concrete Operation.
 - c) Formal Operation.
 - d) Abstract thinking (Logical Operation)
- Blindness restricts the individual in three basic ways: in his range and variety of experience, in his ability to move about and, in control of environment in relation to one's own self.
 - Since vision plays a positive role in cognition, the visually handicapped child's position and needs in this area will show specific differences as compared with other sighted child. There is no question that the blind child can gain knowledge of the realities around him, but he gains it in a different way and the knowledge itself is in some respects of a different nature.
 - The actual process of teaching of visually handicapped child depends somewhat on whether visually handicapped children receive their education as a group in an environment geared to their needs, as residential schools are, or as single individuals in public school facilities where they may have an understanding general class room teacher and should have a resource or itinerant teacher who is aware of an knows how to meet their special needs.

2.9 CHECK YOUR PROGRESS

1. Write all the stages of Piaget's cognitive development theory and characterization of each stage.
2. Define cognitive development.
3. What are the main characteristics of cognitive development?
4. What are the main objective effects of visual disability?
5. As a teacher of a visually handicapped child what strategies will you prefer for promoting cognitive development in visually handicapped child?
6. In what way the sensory motor stage of a visually handicapped child in differ from the sighted child?

2.10 ASSIGNMENT ACTIVITIES

1. Observe a visually handicapped infant under the age of 2 years. Describe his present level of cognitive development.
2. Observe a child with a visual impairment and a child of approximately the same age who does not have a visual impairment. How do they differ in their cognitive development.

2.11 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 those points below:

2.11.1 Points for discussion

2.11.2 Points for clarification

2.12 REFERENCES / FURTHER READINGS

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UNIT 5: MULTIDISCIPLINARY ASSESSMENT OF VISUALLY IMPAIRED CHILDREN WITH ASSOCIATED DISABILITIES

STRUCTURE

- 3.1 Introduction**
- 3.2 Objectives**
- 3.3 The Development Braille:**
 - 3.3.1 Invention of Braille
 - 3.3.2 Development of Bharati Braille
- 3.4 Factors affecting learning of Braille**
- 3.5 Sensory Training**
- 3.6 Reading Readiness:**
 - 3.6.1 Preparation of Reading Readiness material
 - 3.6.2 Activities for Developing Reading Readiness skills
 - 3.6.3 Motivation
- 3.7 Teaching Braille Reading:**
 - 3.7.1 Traditional Method of Learning Braille
 - 3.7.2 Word Method
 - 3.7.3 Sentence Method
- 3.8 Teaching Braille Writing**
 - 3.8.1 Introduction to Braille writing devices
 - 3.8.2 Teaching writing on Braille slate
 - 3.8.3 Teaching writing on Brailier
- 3.9 Teaching & Reading Writing to low vision Children**
 - 3.9.1 Need & importance
 - 3.9.2 Developing tactile and Auditory sense
- 3.10 Summary & Points to Remember**
- 3.11 Check your Progress**
- 3.12 Points for Discussion and Clarification**
- 3.13 References**

3.1 INTRODUCTION

Touch is the major modality for acquiring information about the Environment used by blind severely visually impaired person. This was realized ever since the Blind people started receiving education. This realization resulted into the development of various systems of reading & writing used by blind people in their education. Some of them are engraved letters and making alphabets with the help of wire knots etc.

These systems did not succeed for two major reasons. Firstly, preparation of reading material was very cumbersome and secondly gaining independence by Blind people in writing was not possible-Lowenfeld (1973). People were in search of a suitable method, which could make blind people independent in both in reading and writing. This search led to the development of a tactile script known as Braille. An attempt in this lesson is made to discuss the historical aspects of the development of Braille, various techniques of teaching, reading, & writing Braille and the material preparation for the same.

3.2 OBJECTIVES

On the completion of this lesson, you will be able to:

- Describe the historical development of Braille,
- Prepare reading readiness material,
- Prepare Teaching reading material,
- Describe the role of sensory training in reading Braille,
- Make a list of Braille writing devices,
- Develop Braille writing skills,
- Acquire skills to teach – writing to low vision children

3.3 THE DEVELOPMENT OF BRAILLE

3.3.1 Invention of Braille

A French man, named Louis Braille (1809-1852), who was himself Blind, on the inspiration of Capt. Charlse Barbier, developed a system of touch reading in 1829. This system was named Braille because he invented it. This is based on six dots

arranged in two vertical lines of three dots each in one cell of the size of 6 mm x 3.6 mm. The top two dots from left to right are numbered 1 and 4, the middle ones 2 & 5 and the lower 3 & 6. Thus, 1,2,3 on the left and 4,5,6, on the right. On the basis of permutation and combination, a maximum of 63 combinations can be formed. Each combination forms a particular shape.

This script traveled from France to Europe and then to America and other parts of the world. But it was not accepted better than the previously used tactile scripts. Although, the time proved that the Braille's script opened the gateway of knowledge for all the blind in the world ever since it was invented, Farrell (1956)

3.3.2 Development Of Bharati Braille

After the establishment of the first school for the blind in India by Miss. Annie Sharp at Amritsar in 1887, Braille started to be used in Indian schools too, but prior to the independence, different schools for the blind had prepared their own code to be used in different languages in the country. Consequently, there were many codes in use. This caused great difficulties in facilitating and promoting the education of the blind on one hand and the production of Braille material on the other as material produced in Braille in one school could not be read by others school, Adwani (1991)

This problem was addressed first time in 1941 by the then central Govt., which set up a committee to review the existing codes and to develop a uniform Braille code for Indian languages. Since this effort did not succeed. Therefore, Govt. of India after the independence referred this matter to UNESCO. UNESCO conducted several meetings of experts to discuss this issue. On the basis of an in-depth discussion, a uniform Braille code called " Bharati Braille" based on principle of phonetics was adopted. According to this principle, letters producing same sounds in different languages will be written by a single combination. For example: - dots 1,2 will be (b) in English, () in Hindi and similarly the letter giving () sound of Tamil, Bangla, Kannada, Marathi etc.

3.4 FACTORS AFFECTING LEARNING OF BRAILLE

You have been studying this course for some time. You may have also been involved in teaching Braille. Would you like to try to enlist a couple of factors that

can promote or retard learning Braille? Try and write what you think about this in the space provided below:

You are thinking in the right direction. All those factors that affect learning like individual differences, age, reading readiness, level of intelligence etc. play a crucial role in learning of Braille also.

(1) First latest try to understand how does individual differences can affect learning of Braille. No to individuals are alike intellectually, socially, capability wise etc. Each one of us has our own way to learning and doing things.

In Individual differences, Age, Intelligence, Sensory perceptual ability etc. can be included. Some people can learn at a faster pace certain concepts whereas some others would learn the same at a little slower pace due to environmental or some other reasons.

Those who have higher level of intellectual abilities would acquire knowledge at a faster pace than those who have average abilities. This is true in regard to learning of Braille. Experience of several specialists in the field of education of the Blind show that the blind children of the age of seven with average I.Q. should be taught Braille. But, this should be done after a careful consideration of another factor.

(2)Tactile tolerance and tactile perceptual ability are the two factors that need to be considered and examined thoroughly. Tactile tolerance means that any object, which is given to touch, should not be sharp or hurting. That is the

surface of the object should not damage the skin. Tactile perceptual ability means to be able to derive meaning of tactile sensation. That is skill, which enables an individual to identify differences in shapes that are touched. This is very important as Braille script is based on different shapes and the relationship between the two or more combinations of dots arranged horizontally in a line. Thus, development and sharpening of tactile sense is crucial.

(3) Knowledge of language: -

Another important factor is the knowledge of language. It would be easier for a blind child to learn to read Braille, if his/her language development is comparable to a seeing counterpart who has learnt to read print. For example: - if a child knows what is a tomato or potato it would be easier for him/her to learn to read these words. This is true both for blind and seeing children Lowenfeld (1965 & 1969), Chapman (1988)

In view of the foregoing, teaching of Braille would involve two stages: - First stage at which the child tactile sense would need to be developed and sharpened. Once, the tactile sense is developed enough to differentiate between surfaces of different texture, counting of dots. Identifying dots on the left & right, up & down etc. then only in the second stage actual teaching of Braille reading can be introduced.

3.5 SENSORY TRAINING

Sensory training refers the training of various senses for experiencing & transmitting the information to the brain where experienced feelings are interpreted and meaning given. The purpose of sensory training is to help a child to increase the use of different senses for giving information about the environment. The stimulation, available resources, interest and the opportunities play an important role in developing and sharpening of the senses.

3.5.1 Need and importance

Sensory training plays an important role in the educational development of a blind child. The blind child has to learn to use his remaining sensory as well as residual vision (if any) effectively in order to compensate the loss of vision. Much

information that an individual gains can be received by two or more senses. Hence, the absence of one type of sensorial channel can be compensated by the increase & efficient use of the other senses. For example: - The shape and size of a chair or a table or a bird can be understood by vision and also by touch. But, it is necessary for one to be able to use the sense of touch effectively for gaining the knowledge about the shape & size of these objects. Two things are necessary to understand: firstly, the child must be able to make efficient use of his tactile sense. Secondly, he must explore the object in such a way that he can understand all the characteristics of the object.

The blind child has not only to learn to use his remaining senses for primary functions of those senses but also for compensating the loss of vision (Schol 1986). The more he is efficient in the use of touch, audition, smell, taste and movement sense. The greater amount of success he can achieve in his educational endeavor.

3.5.2 Developing tactile sense:

Touch helps a child to gain information about roughness, smoothness, hardness and softness, hot & cold, flexibility & rigidity and elasticity etc. It also helps to understand the shape of an object what is necessary to be able to gain this information is to develop and sharpen the tactile sense. This is an important activity, which need to be included in the programmed of a school where blind children are enrolled. A teacher can organize a number of activities for sensory training. She can provide objects of different texture to help a child to understand the characteristics through textural differences of the object. Another activity can be shorting and matching exercises. Arranging things in order of big to small or vice versa can also be an activity, which can help to develop manual dexterity and tactual ability. The teacher must bear in mind that the activities must be interesting for a child then only he would participate in them. This is the basic principle on which "Montessori" method of teaching is the based. Madam Montessori, who was a doctors worked with disabled and problem children. She for the first time demonstrated that sensory training could help improve educational achievement. In the education of the blind this is more true and effective.

3.6 READING READINESS

Reading readiness in our context means to be able to attach

Meaning to tactile experience. As the Braille is based on touched reading involving fingertips for tactual experience. They need to be developed and sharpened enough to do so. As a teacher we must know what type of material would help in developing and sharpening tactile sense. Give your views on the type of material you would like to use for this purpose in the space provided below: -

3.6.1 Preparation of Reading Readiness Material

Lowenfeld et al. (1969) suggest that teacher –made materials are particularly suitable as they can be tailored to meet the needs of individual children.

The incidental exposure to learning Braille may well be very much less for the blind child in the pre-school years than it is for the sighted. Sighted children see words and letters in various types and in different settings by means of books, papers, labels, hoardings and television. Most blind children, however, have no access to Braille in their early years. They may have encountered Brailled labels which show them that toys and objects have names that can be written. Such learning, however, requires deliberate intervention from another person and cannot be the same as the ongoing environmental learning that takes place for sighted people. Blind children need enriching experiences, which introduce the meaning and pleasures of the written word before formal reading skills are introduced. The mechanics of reading-finding the top of the page, page numbers turning over pages and learning how to

handle a Braille book – are also necessary skills which required specific teaching. Since, counting of beads, threading of beads, objects of different textures etc. are some of the things that can help. You think, in developing tactile sense, they need to be understood thoroughly. In fact a teacher can successfully employ many more things for this purpose.

Developing and sharpening of tactile sense would mean to enable a child to recognize difference between right and left, up and down, left middle, right middle, and also to be able to count dots besides turning over the page and holding the books. A means the development of directional & positional concepts would need to be taught. The material that can be used as you have rightly pointed out would include the beads and objects of different textural surfaces. But, while selecting the object of different textures, we should always ensure that the texture of the object does not hurt the fingertips of the child.

3.6.2 Activities for developing reading readiness

A variety of activities can be planned and organized by a teacher to develop reading readiness. Why don't you try to mention a few activities that could help developed and sharpen tactile sense in the space provided below: -

Yes, you are right. You can give objects of different textural surface to a child and asked him to feel each surface tactually and understand the difference. Before doing so we should give different size of beads to count. In the second stage we should asked the child to arranged the beads size wise in groups. We should also help the

child to understand which bead is smaller or bigger.

After the child is able to perform the above successfully we should prepare a sheet on which objects of different textures like Silk cloths, Woolen cloths, Cotton, Plastic sheet should be stuck. Then we should provide this sheet to the child and explain these textures.

In the next stages we should ask the child to do matching. Once the child is able to match texture of Woolen cloths with another pieces of Woolen cloths and so on and so forth. We should introduce dots on paper.

We should first of all make the child feel each dot separately. For this purpose, a teacher can raise dots on a sheet of paper. There should be gaps between dots. While doing so ask the child to count the dots in each line vertically as well as horizontally. You can help the child to learn the concept of left –right, up- down and the middle through this activity.

In the subsequent stage you should prepare a Braille sheet 2 dots in each cell of a line when 3 dots then 4 dots etc. ask the child to count the dots of each cell. Also explain the position of the dots in a cell where there are 4 dots in each cell, see figure – I.

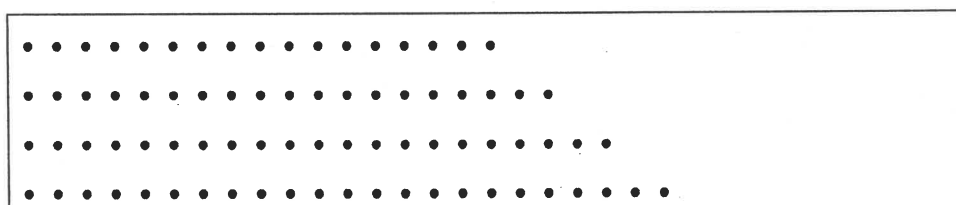


Fig. -I (a)

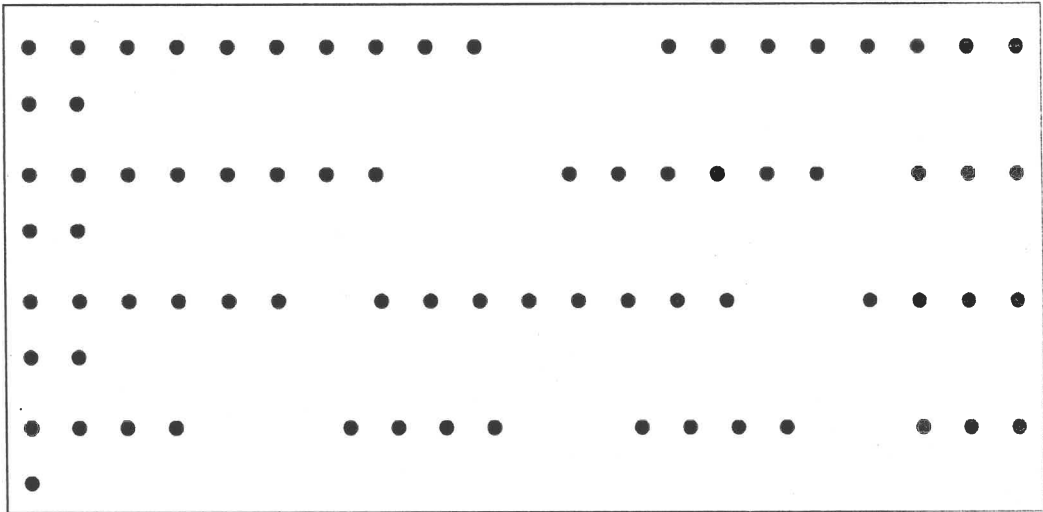


Fig. -I (b)

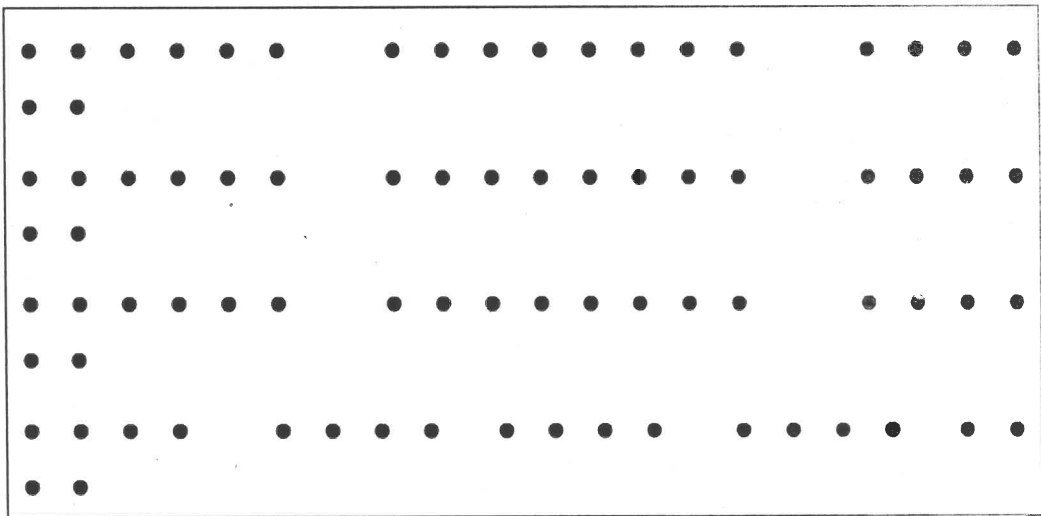


Fig. -I (c)

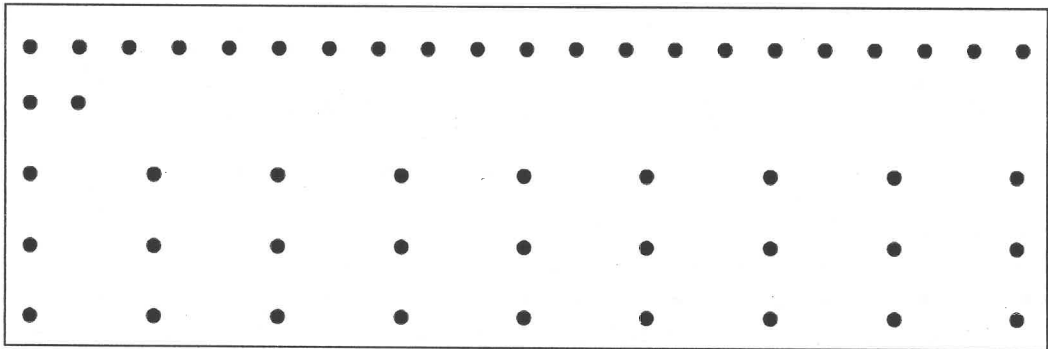


Fig. -I (d)

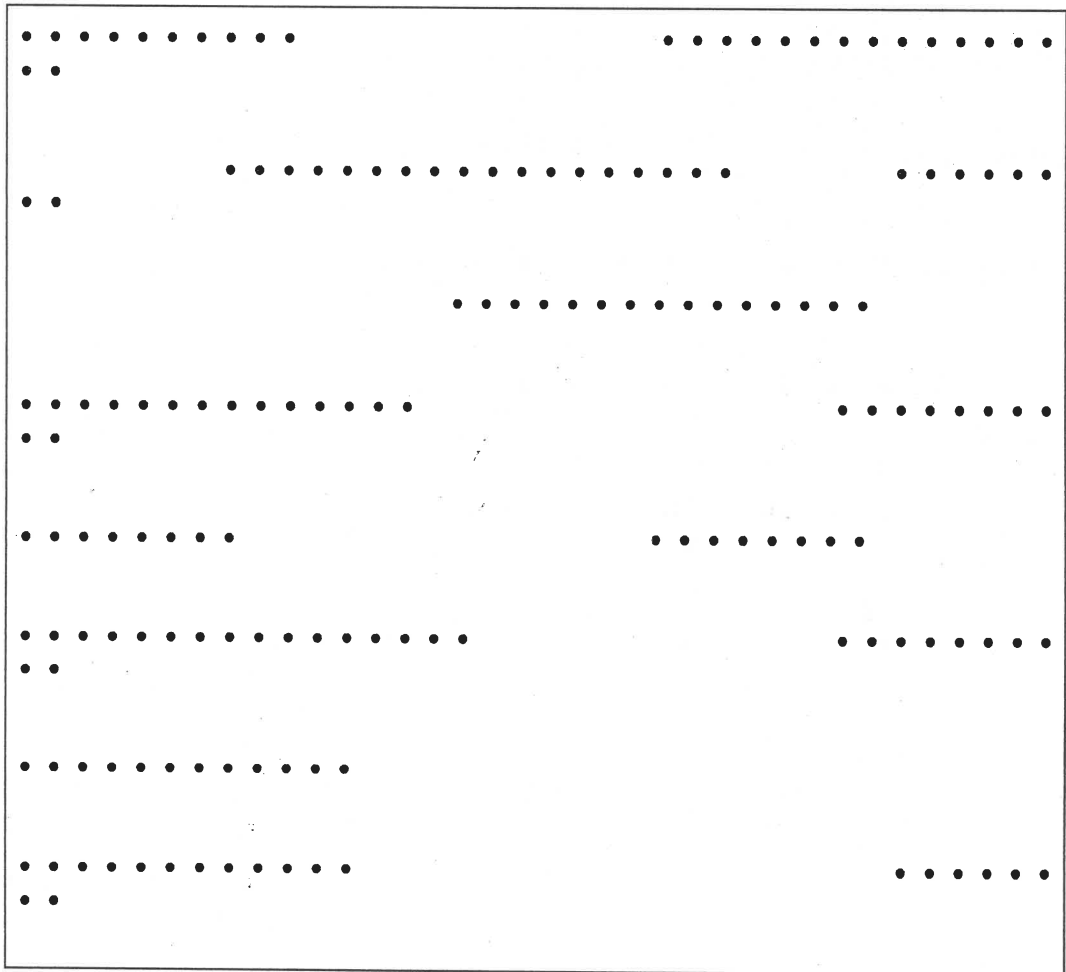


Fig. -I (e)

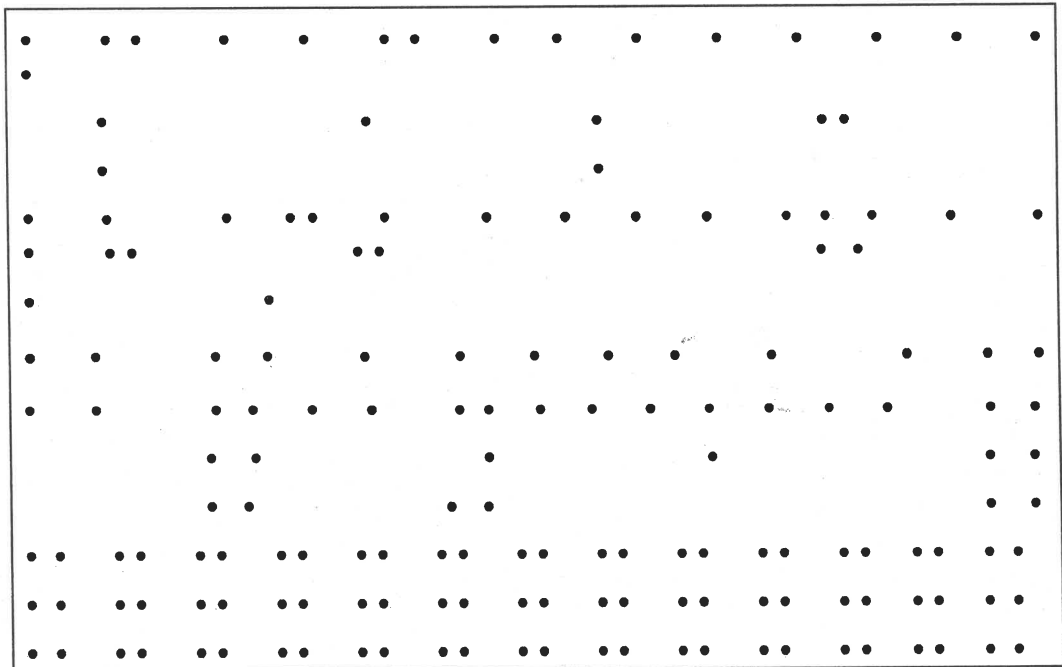


Fig. -I (f)

Once, the child is able to understand the position of dots and also the meaning of left-right, up- down and the middle, he can be introduced attaching the meaning to different combination of dots, what is known as introducing Braille reading.

3.6.3 Motivation

Any thing we learn, is related to the amount of motivation we have for learning, that is if a child is motivated (made realize that what he is going to learn will help him in his further learning) to learn the teaching would become easier. For this purpose, the teacher must ensure that Braille labels are pasted on the objects that the child comes into contact repeatedly daily such as his school bag, chair, desk/table, window shutters, doors of his room, shutters of his almirah and the like. This will motivate the child to know what is written on the Braille label. This will motivate him/her to take interest in learning Braille, as it would enable him to know what is written on the Braille labels. The content of the label should be the child's name, room number, door of the room etc.

3.7 TEACHING BRAILLE READING

The specialists in the field of the education of the blind have suggested a number of methods of teaching Braille reading. These include letter method, word method and sentence method.

3.7.1 Traditional Method of Teaching Braille Reading: -

Traditionally the Teacher has been using letter method to teach Braille reading. According to this method the child is taught to recognize the shape and also the number of dots of each letter. Once, the child has learned few letters, and then he is taught to learn to read words. For this purpose a wooden board of 5" x 3" approx. is used. In this wooden board, six shallow holes are made, three on the left and exactly parallel three on the right. See figure –II.

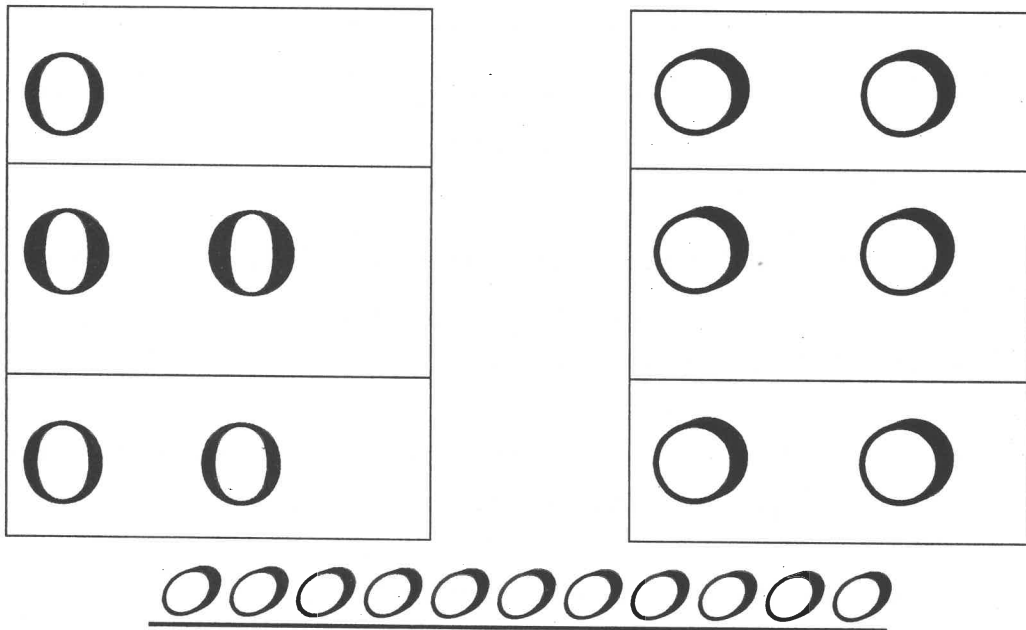


Fig. II

In this board glass balls are put to form the shape of letter. And the child is taught the dot numbers as well as the shape of each letter. This is then transferred to the metal sheet with raised letter. One can use in between a device called Brailled board

in which several lines of very small holes are made. By fixing metal pegs, letters can be made which are tactually feel able, See figure III

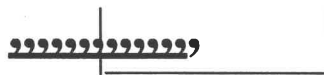
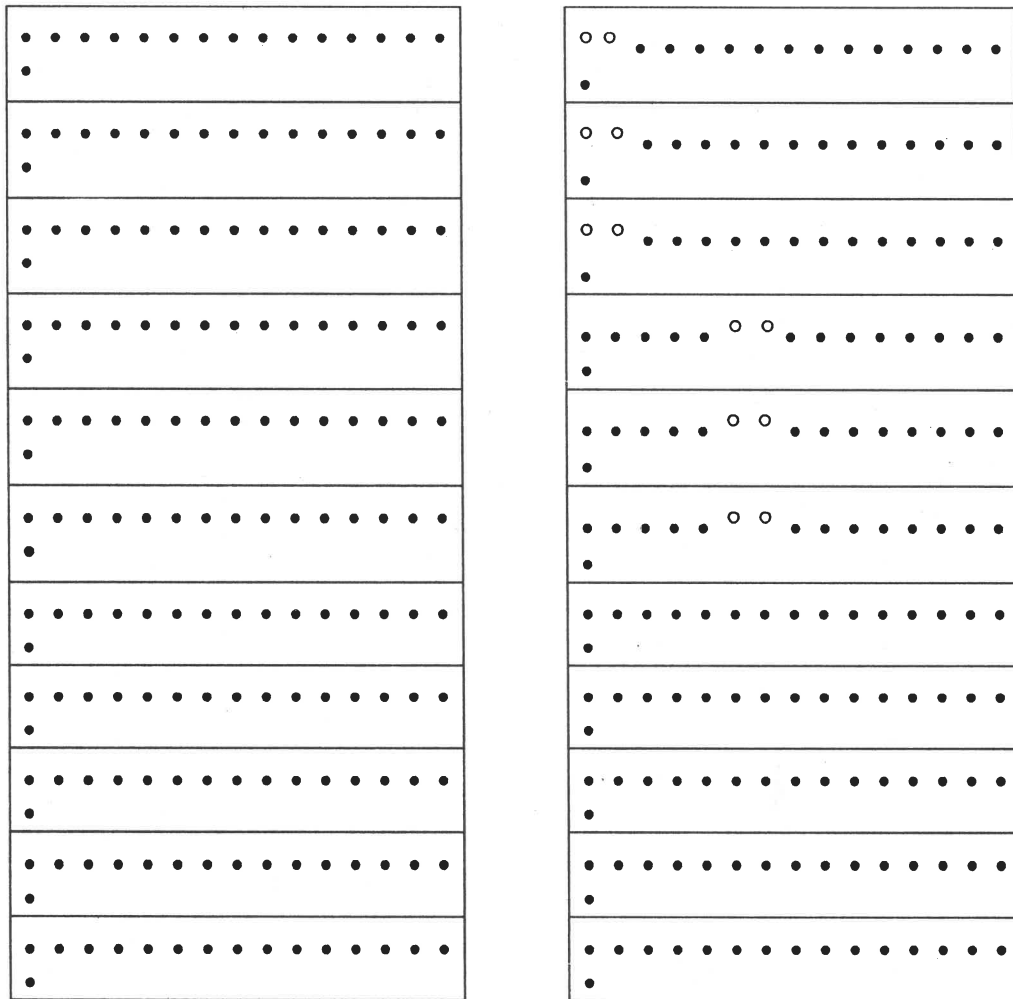


Fig. III

This method according to various researchers (Nolan and Cadrice & Nolan and Morris) is less effective because we do not read anything letter by letter. More over, they argue that

this lays stress on memory rather than on recognizing the shape. Therefore, some specialists advocate the use of word and sentence methods.

3.7.2 Word Method

According to this method we introduce directly the words, which are in the vocabulary of the child. Small flash cards with words written in Braille on them are given to the child and he is asked to read them. For example, Mango on one card, Apple, Boy, Girl etc. After the word on each card the letters used in that particular word are written separately. The child is asked to compare each letter with the letters in word. Thus, he learns to read the words as well as the letters used to form these words.

This method is also found to be unacceptable, as we do not read words individually. Moreover this as well as the previous method according to several researchers does not help achieve desired reading speed.

3.7.3 Sentence Method

We read in sentences and communicate in sentences. Therefore, many specialists are of the view that Braille reading should be taught through sentences written on flash cards containing small sentences such as “This is a book”, “This is a pen”, “My name is Mohan”, “It is my book”, “It is my bag” etc. After each sentence, each word of the sentence should be written in different orders and letters after the words. The child must be asked to read the sentence repeatedly without bothering about the letters used. After sufficient practice the child should be asked to read the word and compare the same with the word in sentence and thereafter letters in the word.

This method is according to its followers is believed to be psychological as well as logical as it is based on actual practice in communication.

Remember that none of the above methods can be effective for every child. Experience shows that some children learn through traditional method more easily while some others learn to read through sentence method. In our country, traditional method is mostly used. Several studies have shown that higher rate of reading speed can be attained if Braille reading is taught through the sentence method or the combination of sentence & word method. For an effective use of these methods to

teach Braille reading, the child should be given ample practice in moving fingers in a straight line. The child should be encouraged to use both index fingers for reading. The right index finger should be used to read and the left index finger should follow it. As soon as half of the line is read, the left index finger should move to the beginning of the next line and should perceive a couple of words by the time right index finger finishes the line. This helps in improving reading speed, as the time spent for the right index finger to come to the beginning of the next line is saved.

3.8 TEACHING BRAILLE WRITING

Many a times people ask a question as to whether Braille reading should be taught first and thereafter writing or vice - versa. There is no a hard and fast rule about this. A competent teacher will, by experience, be able to know by the abilities of her pupils whether he/she would learn to read or write first. Braille writing should be introduced along side reading-Chapman (1988). First, a child should be taught the concept of a Braille Cell and thereafter the position of dots in the cell.

3.8.1 Introduction to Braille writing devices

Generally the visually handicapped students use two types of Braille writing devices. One manual Braille writing device called Braille writing slate and the other like a typewriter called Brailler or Braillewriter.

On Braille slate dots of each letter are punched individually. Thus, writing on a Braille slate is fatiguing and time consuming.

On Brailler or Braille writer, all dots of a letter are punched by a single stroke as we do type a, b or c etc. by one stroke on a typewriter.

3.8.2 Teaching writing on Braille slate

Braille writing slates are of two types, one is which a metal clamp is fixed on the top of a wooden board in which a Braille paper is fixed. There is frame of metal consisting of two lines of 36 cells each. The paper is placed in between this frame and by placing the pin of stylus in the Braille cell, the dots are punched.

We should orient the child to each of these components and thereafter teach him to fix a Braille paper. Generally, 40 G.S.M paper is found to be suitable for Braille

writing. After teaching to fix the paper, the child should be taught to hold the stylus and then the technique of punching the dots. We should not insist initially on writing particular letters rather we should encourage the child to punch all six dots in each cell. Thereafter, we should teach him the letters used in writing his name.

In this manner, we should proceed gradually and introduce entire alphabets through know words. Remember that while writing on Braille slate 1,2,3, is on the right side and 4,5,6, on the left because we read by turning the papers. When 1,2,3 comes on the left and 4,5,6 on the right side.

3.8.3 Teaching writing on Brailier

The child should be oriented to the each and every part of the Brailier. Thereafter, he/she should be taught to fix the paper in the Brailier. On Brailier (Perkins Brailier), on the left extreme, there is a key, which is used to change the line. The key on the right extreme is used to bring the dot box one-space back ward. In the middle there is a set of seven keys. The middle one is the space bar. On the left adjacent to the space bar is 1 and then 2 and 3, on the right side of the space bar adjacent is 4,5 & 6. The index fingers are placed at 1 & 4, middle fingers 2&5 and the ring fingers 3 & 6. Right/left thumb is used to press the space bar. Thus, if we have to type P (1,2,3,4,) then dots 1,2,3,4 are pressed simultaneously in one stroke. This is less fatiguing and faster.

3.9 TEACHING & READING WRITING TO LOW VISION CHILDREN

Fully sighted pupils and children with low-vision learn to read in the same way; it is in the presentation and management of the reading material itself that needs special-attention.

There is no sole method of teaching reading to pupils with low vision that has been categorically shown to be better than any other. A flexible approach is required in order to meet individual needs, as there are some problems in the management of print. Poor levels of communication, low motivation because of inadequate reading material, and difficulties in managing printed material remain challenges for the teacher.

There are different variables among low-vision children, these are: -

Nature and extent of their visual disabilities,

Levels of language development,

Their motivation to want to read.

Depending upon children's requirement, individual reading strategies are being chalked out. Distinguishing figure from background, discriminating shape and visual search and scan are essential aspects of reading.

Pre-reading activities involve the commonly accepted areas of visual perception, which can be tailored to meet the need of individual children.

For a low-vision child using magnifiers, the area visible at one glance gets reduced. Therefore, perceiving the whole words and phrases and searching and scanning of a line become difficult. Children using CCTV also face the same type of difficulties. Though low-vision children exhibit low reading rates and delay in reading attainments but it should not prevent visually handicapped students from enjoying reading and gaining information from it.

Much can be done to reduce difficulties by presenting (i) legible material, & (ii) encouraging search strategies & motivation. On an individual basis this is the best effected by the reading and a specialist teacher or adviser for visually handicapped children. Lighting should be good, position should be comfortable to allow the reader to make maximum use of residual vision. Children with nystagmus need to slightly move the book from side to side to reduce fatigue. If needed, 'Exposure-Device' should be provided to children. It helps to concentrate visual attention, and facilitates learning of the word-shapes. Simple 'Exposure-Device' can be made with dark cardboard with an oblong window.

Pupils with a peripheral field loss (tunnel-vision) may be helped by a reducer. It reduces the size of print seen in the central areas of vision.

Once, reading skills have been mastered by using the enlarged print, the pupil should try to reduce the print gradually to the standard print.

Enough time should be given to the students to complete the reading assignments.

The length and presentation of the material given to them should be magnified if required.

WRITING and reading are two parallel activities. Like in reading, oral-communication and visual perceptual skills are needed for teaching writing to low-vision children. But, some additional pre-writing activities include - hand-eye co-ordination, directionality and copying shapes. Drawing, coloring and pattern-making make the child learn how to hold and control pencils and crayons.

Sometimes, though the shapes of the final character are clear to the pupils, yet they don't know how the letter is formed. To show up the exact movement, individual demonstration is required followed by lot of opportunities to scribble.

Group activities in which pupils of different visual field can be encouraged to talk about unclear concepts.

Initially, such children may write incorrect spellings, reversed letters and such like other mistakes. These should not be discouraged. Cursive writing is sometimes helpful.

Lot of appropriate material and sufficient time to complete the task should be provided.

3.10 SUMMARY & POINTS TO REMEMBER

1. Braille is a tactile script, named after its inventor Louis Braille. Braille script is a system of touch reading based on six dots arranged in two vertical lines of 3 dots each in one cell.
2. This script traveled from France to Europe and then to America and other parts of the world. Braille script has opened the gateway of knowledge for all the Blind in the world ever since it was invented.
3. In pre-independence India, different Schools for the Blind had prepared their own code to be used in different languages inn the country. It was causing great difficulty. In 1941, the then Central Government for the first time set up a Committee to develop a uniform Braille code for Indian languages. But this effort could not succeed.
4. After Independence, Govt. of India and UNESCO worked together and uniform Braille called "Bharati Braille" had evolved. Bharati Braille is based on the principle of phonetics.
5. In addition to Braille, low-vision children can read and write print. But there are certain challenges before the teachers of low-vision children. Some low vision children may have restricted field of vision; others may have only peripheral vision etc.
6. There are various factors, which affect the learning of Braille, such as individual differences, age, intelligence, tactile perceptual ability, tactile tolerance etc. Another important factor is the knowledge of language.
7. As the Braille is based on touch reading it involves fingertips for tactual experience. Different type of material is used in developing and shaping the tactile sense, which in turn enables the learner to recognise the difference

between right and left, up and down, left-middle, right-middle, and also to be able to count dots.

8. Traditional method of Braille-teaching includes word method of sentence method.
9. For teaching Braille writing, generally two types of Braille writing devices are used, namely Braille writing slate (a manual device) and Braille (a typewriter like device).
10. For teaching, reading and writing to low-vision children, different methods are being used combined with the skills of a competent teacher. Good lighting, comfortable seating position, adequate reading material & proper management of printed material are few such strategies.

3.11 CHECK YOUR PROGRESS

- 1 Why was Pre-braille tactile scripts not conducive for the education of the Blind?
- 2 Trace the development of Braille in 50 words
- 3 What problems did the blind children and their educators face with regard to Braille in pre-independent India?
- 4 Enlist the method of teaching Braille.
- 5 Prepare five activities for developing tactile sense.
- 6 Fill in the blanks
 - (a) Braille was invented by _____
 - (b) Tactile tolerance means _____
 - (c) Braille writing devices are _____
 - (d) The difference between Braille writing slate and Braille is _____
 - (e) Reading readiness means _____

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