Training Module on
Visual Impairment

शिक्षा का अधिकार

सर्व शिक्षा अभियान

सब पढ़ें सब बढ़ें

Sarva Shiksha Abhiyan

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Section 1

Concept of Visual Impairment (Blindness and Low Vision)

Outline of the Unit

1.1. Introduction.

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1.4. Causes of Visual impairment.

1.5. Signs for Early Detection.

Objectives

After undergoing through the learning material the learner should be able to:

1. Identify different parts of the eyes.
2. Narrate the functions of the eye.
3. Use the terms blindness & low vision in proper / correct perspective.
4. Classify the children according to their causes.
5. Understand the implications of various eye conditions.
6. Get oriented with the signs for early detection of visually impaired children.

Introduction

You may have met children with seeing problems. They are not a homogeneous lot. Seeing problems range from total blindness to minor visual problems or refractive errors. A number of terms are used in connection with loss of sight: blindness, partial sight, visual handicap, visual impairment, low vision etc.

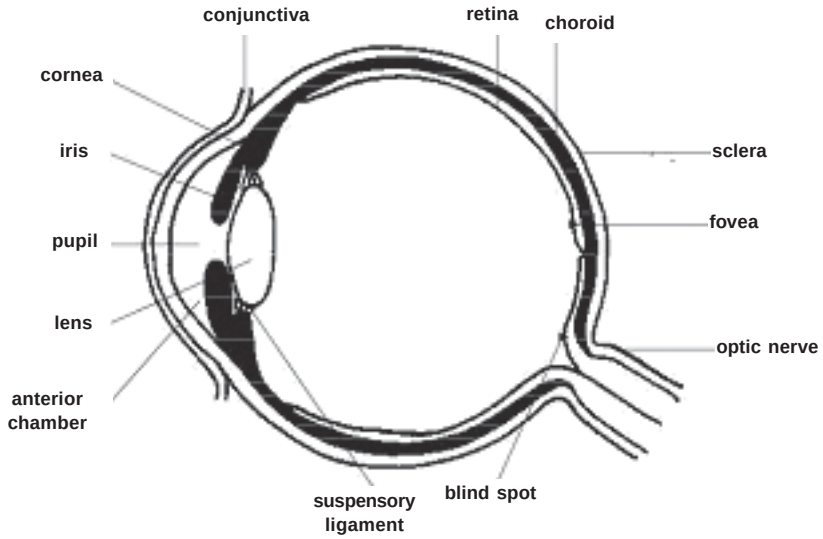
Present educational thinking is moving away from the whole concept of labelling children. The emphasis is on the individual needs of children and on the aspects related to their development & learning. It is therefore necessary to understand the specialised terminology in order to define pupils who have sight problems.

Understanding the basic structure of an eye and functioning of each part helps the teacher in defining the problem areas of pupil especially when you have a low vision child.

1.1. The Structure of an Eye and it's Functions

The eye is the apparatus for seeing a general knowledge of the eye & how it works is useful in helping to understand impaired vision.

An Eye



The Eye: The eye & brain work together to form images & the things we see. We have two eyeballs. Each eyeball is about 2.5cms. in diameter and is lodged within the socket called orbit between the orbital wall & the eyeball.

Eyelids: These are movable folds of skin which protect the eye from injury and excessive light. The eyebrows and eyelashes also participate in the protective role.

The conjunctiva: It is a continuous sheet of tissue. To allow free movements of the eyeball, the conjunctiva is carried above & below into folds.

Cornea: Cornea is a crystal clear structure in front surface of the eye. It carries the light rays to the retina in the back of the eye.

Sclera: Sclera is the white of the eye which joins the cornea at the limbos. It is tough and helps to maintain the shape of the eye and supports the delicate structures within the eye.

Anterior Chamber: This is behind the cornea and in front of the iris and lens. A clear aqueous fluid secreted by the processes of the ciliary body flows constant through the pupil into the anterior chamber & maintains constant pressure within the eyeball.

Iris: The black disc behind the cornea is called iris. It is an extremely delicate, constantly moving diaphragm with a circular opening in middle. It contains pigments, which give colour to the eyes. These pigments control the amount of light entering retina.

Cilliary Body: Cilliary body is the portion of the veal tract between the iris and the choroids.

Choroid: This is vascular, intermediate coat which furnishes nourishment to the other parts of the eyeball.

Crystalline lens: This is transparent, colourless body suspended in the eyeball.

Vitreous humour: Transparent, colourless mass of soft, gelatinous material filling the eyeball behind the lens.

Retina: This is the innermost coat of the eye, formed of light sensitive nerve element. The most specialised part of the retina is 'macula' which lies just lateral to the optic disc. It provides acute central vision used in reading or in threading a needle.

How We See: The eye functions like a camera. Vision is a complex function. The act of seeing requires light to see by and the brain to interpret what is seen. The light rays reflected from an object in a person's field of vision fall on the eyes. The rays pass through the cornea, aqueous humour, and through pupil which dilates or contracts to control light in accordance to the brightness of the object.

The rays then pass through crystal lineless and the rays of light are focussed on the retina. The process of focusing is called accommodation. The cornea and the lens combine to bend the light rays as they pass through. The rays pass through the vitreous body and penetrate on retina, where they set up a photo-chemical response in the outermost layers, stimulating the rods & cones.

The impulse is picked by retinal nerve fibres and passes along the optic nerve to the brain where an upside down image is formed. Based on experience, the inverted image is psychologically transposed.

1.2. Definition of Blindness and Low Vision

Definition of visual impairment as adopted in the persons with Disabilities (Equal opportunities, Protection of Right & Full Participation) Act 1995 as well as National Programme for control of Blindness (NPCB).

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

1. Total absence of sight; or

2. Visual acuity not exceeding 6/60 or 20/200 (snellen) in the better eye even with the correction lenses, or

3. Limitation of the field of vision subtending an angle of 20 degree or worse.

For deciding blindness visual acuity and / or field of vision are considered.

Low vision: As per PWD Act, 1995 also recognises low vision as a category of disability and defines it as follows:-

"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 device.

For teachers this definition is of no use as it does not give the range of visual acuity as well as field of vision.

Practitioners therefore follow the WHO working definition of low vision-

"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."

1.3. Causes of Visual Impairment

Corneal Conditions:

Kerataconus: Usually it affects both the eyes. Cornea becomes cone shaped. There is a distortion of visual field and gradual loss of distance visual acuity. This can be hereditary, or associated with other conditions.

Educational Implications:

Children having these conditions have problems in distance vision (seeing blackboard) confusion in identifying letter and numbers, visual fatigue after long period of close visual work.

Corneal Ulcers: Corneal ulcers caused by bacterial or fungal infections lead to corneal abrasions which result in keratitis.

The symptoms can be extreme pain and photophobia (sensitivity to light) immediate medical treatment is essential.

Corneal Dystrophies: Corneal dystrophies are degeneration of corneal tissue which is genetically determined. It results in low visual acuity.

Corneal Scarring: Corneal scarring can be a result from infection or penetrating wounds. Refraction

is affected, visual acuity is reduced. Through corneal grafts or corneal transplants can vision can be restored.

Aqueous Humour:

Glaucoma: In glaucoma there is increased intraocular pressure. This high pressure damages tissues of the eye. It results in loss of visual acuity and visual field. Two types of Glaucoma are found: - Adult and congenital (Bupthalmos) Cornea becomes hazy and opaque. Cornea is pushed forward to give a bubble- like effect.

This requires surgery as soon as possible. The eye looks abnormal.

Iris:

Aniridia: This is a congenital, inherited condition. Iris fails to develop partially or completely. It affects both the eyes. It can be associated with nystagmus, photophobia, cataract, glaucoma. Photosensitivity Visual fatigue, headaches or general discomfort are symptoms of glaucoma. Patients require good contrast, use of low vision aids is possible.

Iritis: Inflammation of **uveal** tract is called iritis. Onset is sudden, accompanied by pain, light sensitivity and blurred vision are the symptoms. Medical attention is essential.

Coloboma of iris: This gives pupil a keyhole appearance. The cause is that iris is not formed completely during prenatal period. This results in photosensitivity and loss of visual acuity.

Lens:

Cataract: In cataract lens becomes opaque. Cloudiness of lens prevents the passage of rays of light onto retina. Two main types of cataract are: 1) congenital (by birth) 2) senile (in old age).

Children get operated and lens is removed making the eye aphakic i.e. (Without lens). In cataract cases following care should be taken:

- Glare should be avoided
- Light source behind the child
- Good contrast essential
- Low vision aids are useful
- Reading stand is preferred.

Vitreous Humour:

Vitreous opacities: Vitreous must be clear for the light to pass through it. Any clouding of the vitreous will result in reduced visual acuity. Trauma or inflammations may produce inflammatory cell/ debris also bleeding is one cause. Vitrectomy is used to remove the unwanted material

Retina:

Retinitis Pigmentosa:-This is more common in boys. It is hereditary, progressive and results in tunnel vision and night blindness. It can also be associated with a range of syndromes such as Usher's syndrome (RP + deafness) Leber's amaurosis.

Symptoms of Retinitis Pigmentosa:

1. Photophobia
2. Visual field problems
3. Problems in tracking, scanning (Reading)
4. Problems in gross motor skills
5. Problems in adapting from bright to dull light

The following measures are useful:

1. CCTV may be useful
2. Good contrast is essential

3. Well lit, glare-free environment should be provided
4. Use of smallest print possible
5. Braille
6. Mobility training.

Retinopathy of Pre-maturity: (ROP) Retrolental Fibroplasia occurs in premature babies who receive oxygen therapy. It can cause total blindness (20%) other associated conditions are severe myopia, micro ophthalmus, retinal detachment, nystagmus.

The following measures are useful:

- Orientation and mobility training
- Visual perceptual skills
- Braille

Diabetes Melitus: High blood-sugar level affects the body including eyes. The blood vessels on the retina may haemorrhage and it may spread into vitreous.

- Complaint of flashing light
- Visual acuity is reduced
- May lose colour vision
- Field maybe affected
- Laser beam surgery may retard to progression.

Retinal Detachment: Retina is separated from its supporting structures. The detached portion atrophies and blind area develop in the field of vision.

- Flashing lights
- Sharp, stabbing pain in the eyes
- Visual acuity reduced
- Colour vision impaired
- Photocoagulation and cryosurgery is necessary.

Macular Degeneration: Fovea and macula affected reduction in near and distance vision, colour perception and contrast sensitivity is affected, progressive.

Following measures are suggested:

- Use of low vision aids and CCTV
- Good illumination
- Good Contrast
- Training in eccentric viewing
- Avoid glare
- Visual perceptual training.

Optic Nerve: Optic Atrophy: It is degeneration of the optic nerve. The optic nerve transmits messages from the retina to visual cortex of the brain range of visual processes can get affected in OA. Vision fluctuations are seen. Contrast sensitivity is affected. Central as well as peripheral field are affected. The person has difficulties in adapting to reduced illumination. Glare and lighting conditions are important. Low vision aids are useful.

Eye Movements: Six extrinsic muscles of each eye work in coordination to turn and rotate each eyeball up, down, to the side and towards the nose. Each muscle has a primary function in turning the globe of the eye in various directions.

Ocular Muscle Disorders:

Strabismus: Defect of eye-muscle system. Defect in the length, placement or ability to function. Eyes are not aligned correctly. Images transmitted to brain may be too dissimilar to be fused. Results in Amblyopic (Lazy eye) people with strabismus have following conditions

Esotropia

Exotropia

Hypertropia

Hypotropia

This is an inherited condition, may also be caused by partial paralysis.

Treatment is most effective before age 1 Becomes more difficult by age 5, ineffective after age 5.

Early diagnosis and occlusion for preventing amblyopia (lazy eye) surgery is one more option for shortening the muscles or eye exercises are also prescribed.

Nystagmus:

Nystagmus is an involuntary, rhythmical, repeated movements of one or both eyes in horizontal vertical or circular direction. Two types: Pendular nystagmus -up and down movements of equal speed, amplitude and duration .This is characterised by slow movements in one direction followed by faster return to original position. Nystagmus results in low visual acuity because of inability to maintain steady fixation. Dizziness or vertigo also occurs sometimes with nystagmus.

Nystagmus is always an associated condition observed with albinism, aniridia, cataract, corneal opacity, optic atrophy. Children having Nystagmus can use line-markers/ typoscopes for reading. These children need reading and writing material in good, bold print. Teacher can give close visual tasks for shorter duration for these children. Tilting of the head for obtaining best focussing gives good results.

Early Intervention Signs to Watch for Early Detection of Vision Problems:

General symptoms that may occur from birth:

- The child squints or blinks when looking at something.
- The child's eyes are crossed.
- The child favours one eye more than the other when looking at an object.
- One or both of the child's eyes turn in or out.
- The child's pupils are hazy.
- The child's eyes are teaming excessively, are red or the eye-lids are encrusted with matter.
- The child turns or tilts his head abnormally.
- The child has frequent or persistent sties.

School Age:

Teacher or Parent may observe:

- Child's body is rigid while looking at distant or near objects.
- Child has short attention span and day dreams.

- Child places head close to book or desk when colouring, reading or writing.
- Child uses unusual or fisted pencil grasp, frequently breaking pencil.
- Child has a spidery, excessively sloppy, or very hard to read handwriting.
- Child closes or covers one eye.
- Child dislikes tasks requiring sustained visual concentration; is nervous, irritable, restless or unusually fatigued after maintaining visual concentration.
- Child loses place while reading and uses the finger or marker to guide the eyes.
- Child has difficulty in remembering what is read.
- Child skips words and re-reads.
- Child has difficulty remembering, identifying, and reproducing basic geometric forms. Child has difficulty in sequential concepts.
- Child has poor eye-hands co-ordination and unusual awkwardness including difficulty with stairs, throwing and catching ball, buttoning and unbuttoning and tying.
- Child is easily frustrated, is withdrawn and has difficulty getting along with children.

Check Your Progress:

1. Explain the terms Blindness and Low Vision.
2. How can a teacher identify child with vision problem?
3. Why teacher should be aware of different eye conditions?
4. Draw a neat diagram of structure of an eye.
5. What measures will you suggest for a child with a cataract?

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Section 2

Functional Assessment

Assessment refers to the process of gathering and analyzing information in order to make instructional, administrative and / or guidance decisions about or for an individual. (Wallace, Larsen and Elksnin 1992). It is a critically important step in the developmental progress of a visually impaired child. Understanding the child's abilities and the nature of cognitive, visual or other sensory impairments is foundational knowledge for creating an educational plan.

Assessment team can comprise of a special teacher, parents, regular teacher, O&M instructor and psychologist.

The assessment can be carried out in an informal and formal setting; familiar and unfamiliar setting, natural and artificial setting for understanding the training needs of visually impaired child.

Functional Skills Inventory for the Blind (FSIB)

FSIB, a criterion reference tool has been developed to assess the functional skills of blind children in the age group of 6-17 years. The skills inventory consists of 134 behavioural statements which are observable and measurable. Part I of FSIB allows gathering general information about each child's age, sex, birth order, onset of blindness, and eye condition. Part II of FSIB covers 12 developmental areas. It has two sections in each area, one for 6-10 year age group and the other for 11-17 year of age group. Each area contains functional skills which are graded in terms of complexity.

The twelve developmental areas covered in FSIB are:

1. Gross Motor Skills
2. Fine Motor Skills
3. Spatial Awareness
4. Sensory Awareness
5. Environmental Awareness
6. Social and Emotional Awareness
7. Temporal Awareness

8. Cognitive Skills

9. Language Skills

10. Compensatory Academic Skills

11. Daily Living Skills

12. Orientation and Mobility Skills

The assessment process will be complete when the information gathered is carefully summarized, interpreted, and used, in conjunction with family priorities and concerns, to make decisions about intervention supports for the child.

Functional Vision Assessment

In case of children with residual vision assessment of functional vision is crucial. Functional vision refers to the use of vision for a particular purpose. Even small amounts of vision can be useful, e.g. Light perception can help in identifying obstacles. Functional vision may be improved with low vision devices or by specific instructions to use the vision.

A commonly used tool for functional assessment of vision is developed by Jill Keeffe. It is divided into two parts. The first part describes the screening procedures as well as measurement of distance and near vision acuities and visual field. The second part explains how to observe the effects of low vision and to assess the visual skills used for functional vision and suggestions for effective use of vision.

The assessment is carried out in two parts: First is the observation of effects of low vision. The aim of observing is to examine the effects of low vision for each person. The areas to be observed for each person are:

- How the person feels about his vision
- How vision is used
- The understanding of low vision and the special needs of the person
- The need for modification to the environment such as lighting, contrast and use of colour.

Visual Skills used for Functional Vision

The visual skills used for functional vision are listed below in order that they should be assessed.

1. Awareness and attention to objects

2. Control of eye movements- tracking

3. Control of eye movements- scanning

4. Discrimination of objects

5. Discrimination of details to identify actions and match objects

6. Discrimination of details in pictures

7. Identification and perception of patterns, numbers and words

After obtaining results of the assessment the teacher can design a training programme for that particular low vision child. There are three aspects in training effective use of vision:

1. Stimulation of vision

2. Visual efficiency

3. Environmental adaptations.

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Section 3

School Preparedness & Family Counselling

Outline of the Unit

Objectives

After undergoing through learning material the teacher should be able to:

1. Know the importance of role of family in the development of visually impaired children.
2. The need of family counselling.

3.1. Introduction

In a survey conducted by an agency it was found that main problem of the visually impaired children is incorrect concept formation. Itinerant teacher is sent to visually impaired child. The teacher is expected to conduct functional assessment of each visually impaired child. He also collects information about the child and his surroundings. This information later helps him in dealing with child.

3.2. Suggested activities for preparing the child to go to school

In the home:

- Show the child a variety of clothes in the house and let him learn to sort them out.
- Orient him about various things in the house, their names and where they are kept.
- Teach him to dial numbers on the phone and call people you know.
- Help make the bed. Notice how the bed feels different when it is made and when it is messy.
- Check out the family shoes. Talk about why some are big and some are small.

- Involve in a variety of cleaning activities like cleaning the floor, cleaning the courtyard, cleaning utensils etc.

At the Park or in the garden:

- Plant fruits and vegetables or visit a greenhouse or farm so your child can see where his food comes from.
- Pull up a plant and examine the roots.
- Find out how the swing is attached to the swing set.
- Push a cart or stroller on the sidewalk and then in the grass and talk about the difference.
- Catch a bug and let it go.
- If someone is walking his dog, ask if you can pet it.

In the Kitchen

- Anytime you can manage it, let your child help you in the kitchen. The kitchen is full of great experiences, from understanding what kinds of foods are kept in which types of boxes to figuring out how different appliances work. Plus they will love the immediate feedback they receive when they get to eat what they make!
- Talk about how eggs can be raw, fried, hard boiled, scrambled, or made into egg salad, but they are all still eggs. Cook up different kinds of eggs and eat them.
- Talk about why some things are kept in the refrigerator .
- Boil water and talk about hot water and cold water. If you have one, try boiling the water in a kettle that whistles.
- The next time you make a fresh chapattis, allow your child to touch the chapatti so he can see what a full chappati feels like. Show him the whole process of making chapattis.
- Sort the recycle. Talk about the difference between glass, plastic, aluminum, tin, and paper.

At the store

- Touch fruits and vegetables in the store
- Touch grains and cereals in the guinea bags and boxes containing soaps, pastes and various other items at the grocery store.
- Talk about money , show him the currency

These activities will help in improving his general knowledge and will help later in coping with the school curriculum.

3.3. Knowing the family of visually impaired children and his/her surroundings

When the child is admitted in inclusive Education Programme the teacher should collect as much information as possible about the child and his family. The information can be collected by talking to visually impaired child's relatives, neighbours, friends, peers, teachers and other people in the locality. When teacher collects this information he also gets information about villagers' attitudes towards different disabilities.

Information about visually impaired child's surroundings: Even though the primary objective of Inclusive Education is educational rehabilitation of visually impaired child, the teacher should also keep in mind the future of the child. The information about surrounding may include the geographical location of the village, the approximate population of the village, the main occupation in the village, availability of transport facilities, how many schools are these in the vicinity, the status of women in the village, the powerful groups in the village. All this information helps the teacher to decide his future plan of action for that particular visually impaired child.

The teacher also collects information about the child's family whether the child lives in a joint family or a nuclear family? How many members are there in the family? What sort of family structure the child is having? Who is the head of the family? What is the financial condition of the family? What is the social status of the family? How the family members behave with the child.

All this information helps the teacher in starting the educational planning for the child.

3.4. Family counselling

The dream of inclusive education can not be fulfilled unless the family members of the VIC get directly involved in the development and education of this child. And therefore counselling of the family members is the most important task of itinerant teacher's work. This is a delicate work. Giving advice is not always welcome.

Generally when you visit the family for the first time keenly observe what is happening in the house. A complete case study of the family will require a few more visits, observe the behaviour of the family members with VIC. If you find that the attitude is negative, then by giving examples or by narrating success stories, make them understand the importance of education for the disabled, also make them aware of their rights, tell them about Arians schemes launched by the Govt. for the disabled. This will help in bringing a change in their attitudes.

At times you come across parents who take good care of their VIC but they do not have any expectation from their handicapped/disabled child. They are overprotective. In such cases the teacher can explain the parents the general benefits of education. The teacher can also stress the importance of living an independent, normal life in future for VIC.

The VIC also got the right to education the Govt. is providing number of facilities and concessions to VIC like giving scholarships, distribution of special educational material. The teachers however should remember that when they tell parents about stipend or scholarship for school going children, just because of this greed they don't send the child to school.

In extreme cases the teacher can take help from Sarpanch (Village head) or any other elderly person to admit the child in regular school.

Self Check

1. What is the role of family in the development of a visually impaired child?
2. How the knowledge of the surrounding helps the teacher of a VI child?
3. Suggest few activities which can help the child later in his school.

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Section 4

Sensory Training

Outline of the Unit

4.1 Introduction

4.2 Sense of Touch

4.3 Sense of Hearing

4.4 Sense of smell and taste

4.5 Residual Vision

Objectives

1. To make the learner aware of importance of the remaining senses for a VI child.
2. To train the VI child to use the remaining senses effectively.
3. To help the learner to develop a variety of activities for sensory development.

4.1 Introduction

A visually impaired child needs to be trained to use the remaining senses effectively and collect information from the environment. Thus, sensory Training is the training of remaining senses. A VIC does not automatically have a better sense of touch, hearing, smell or taste. The child needs to be trained to use these senses most efficiently.

4.2 Touch

It is through sense of touch that the VIC gets concrete and precise knowledge of the world around him. Only by feeling and tactually exploring the VIC gets realistic information about object's shape, size, texture, smoothness weight, surface qualities and temperatures. Usually the teacher can give verbal description when the VIC is tactually exploring the object. This can help in correct concept formation.

Parents can encourage the child to feel different objects around the house. This is the first step in teaching the child to use his hands. It will help in increasing his finger movements. The training

activities may include grasping and holding objects, transferring objects from one hand to the other, exploring objects, moving fingers, tactual discrimination, fine muscle control. Many of these activities will also be important for teaching pre-Braille skills.

Few suggested activities:

1. String beads, buttons, seeds, flowers.
2. Tie shoe laces.
3. Identify and sort shapes (triangles, squares, circles) made of different textures.
4. Way modelling.
5. Filling in up with sand/cereals.
6. Throw, roll, catch audible ball.
7. Hammer nails into a board.
8. Putting pegs in pegboard.
9. Make Securing cards by punching holes in a piece of cardboard. With a shoe lace let the child sew the card.
10. Put different objects in a bag. Let the child identify objects by using his sense of touch.

4.3 Hearing

The sense of hearing is very important for a VIC. Lot of information can be collected by listening. In a classroom it helps him to understand teachers presentations. Good listening is also required for developing good orientation and mobility skills. The VIC should be trained in picking up what is being said as well as picking up the main points of the presentation, also ignoring distracting noises, knowing activities by their sounds, identifying people by their sounds. The training should start as early as possible.

The objective of this training is to make the child aware of sounds, help him identify different sounds, localize sounds (from where the sound is coming) & tracking different sounds.

The activities can include:

1. Use different toys which make sound to attract the attention of a VIC.
2. Play game of identifying objects by the sound they make.
3. Teach him to identify people by their voices.
4. Read stories, sing songs for the child, ask questions about story. This will help him to remember what he heard.

5. Use the sound that can change in volume (Radio, T.V.) Let him understand louder and softer sound.

6. Teach the child identify birds and animals by their sounds.

7. Teach different ways of dapping hands.

4.4 Smell and Taste

The sense of smell and touch are not used by VIC as much as hearing and touch, but still they provide useful information about his environment. Smell helps in orientation while travelling. The smell and taste is helpful in cooking.

The objective of olfactory travelling is to make the child aware of smells, identify different smells, decimate smells, to be able tell location of the smell.

Few suggested activities:

1. Let the child identify different items by using smell. Face powder, shampoo, flower, soap perfume, fruits, vegetable.

2. Let the child identify food items using his sense of taste. Sugar, salt, lemon, orange, fruit, pepper, snacks where chilli powder is used.

3. It is important to teach the child to determine the condition of food by its smell e.g.

    - Good and sour milk.
    - Fresh and spoiled fruits and vegetables.
    - Clean and dirty water.
    - Fresh and spoiled fish and meat.

4. Involve the child in daily shaping activity also in preparing family meals so that he can learn smells and tastes of cooked & uncooked food items.

4.5 Residual Vision

Residual vision is vision which usually a low vision person has. This is also called functional vision. This vision can be used for identifying objects, people, for orientation and mobility, for concept formation and sometimes for reading and writing. Residual vision can be both distant vision as well as near vision.

Few suggested activities for Distant Vision Training

1. Identify objects, people from distance (3-4 metres)

2. Identify gross physical movements and imitate the movements

3. Teach the child to follow moving objects

4. Teach the child to develop systematic scanning techniques

5. Orient the child where certain objects will be found that is general location of certain objects e.g.

    1. Name plates on buses

    2. Name plates of shops

    3. Name plates of streets

    4. Road signs

Activities for Near Vision Training

Near vision is used for reading and writing. Usually low vision children having certain specific eye conditions can use either large print, or normal print. The problem can be in the reading distance. Ideally we should not force these students to read and write in Braille. Instead we can train them using their residual vision. We can train them using their residual vision effectively.

1. Teach the child identify colours. Let him colour pictures. Use sketch pens, markers.

2. Initially use black felt tip pens. For good contrast write letters and number in big print.

3. The child can use black board for writing, reading which gives ‘Zero glare’.

4. While writing in notebook, make the lines darker.

5. Let the child work in required lighting. Albino child needs lower level of illumination where as a child with corneal opacity may need more light/bright light.

6. Always use good contrast. You can use yellow filter paper for reading books. You can use typo scope.

7. Make vision stimulation cards.

Self Check

1. Make a list of activities to develop sense of touch in a VI child.

2. How can a low vision child use his residual vision effectively ?

3. Suggest few activities to develop four year child’s sense of hearing.

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Section 5

Concept Development

Outline of the Unit

5.1 Introduction

5.2 Process of concept formation

5.3 Guidelines for teachers for teaching concepts to VI children

Objectives

1. Understand the process of concept formation.
2. Understand the difficulties in the formation of concept in VIC.
3. Orient the teacher with specific activities for concept development.

5.1 Introduction

Concepts are vital to the individual because they provide basis for most of our symbolic behaviour when we think of VIC, they have difficulty with concepts related to position, location, direction because of lack of visual memory. VIC learns about concepts related to things, people, environment through channels other than the vision and the information is collected in bits and pieces. So the concepts are distorted or remain incomplete.

A concept is a mental representation, 1 picture or idea of what something should be. A concept is formed by grouping objects, events and experiences together by what they have in common. Concepts are formed at three levels-

1. Concrete.
2. Functional.
3. Abstract

5.2 Process of Concept Formation

Concepts are formed in two steps, first the information is abstracted from the environment. This information is processed, classified and then stored in different sections. Playing when a new was to know that certain things exist, they are different from other things, we then label this new thing.

This is first concept or concept at superficial level or concept as a while when we get more information about the same thing in parts. Then we move to the next step of generalization. We look at the similarities and fit this concept with some similar things. This process goes on till our death.

Most of the information which we collect from the environment is by seeing. We see objects, people, and our surroundings using our eyes. Sighted child looks at a thing as a whole but VIC will see the same thing by touching it. When he feels an object he feels its parts and then puts them together to form its concept. But all the concepts can not be taught tactually explored, either because they are very big or too small For e.g. Concept like a mountain. It is too big for a child to feel. For correct concept formation the child should be exposed to many experiences related to a mountain. You can take him for during a mountain. You will verbally describe him what is a mountain. After all these experiences he will know what a mountain is.

5.3 Guidelines for Teachers when Teaching any Concept to VI Children

1. Teach one concept at a time.
2. The concept should be presented in many ways and in different situations.
3. Don't be rigid. Use any technique/ method which you feel is giving result.
4. The child can initially learn concepts which are concrete in nature and later on you can teach abstract concepts.
5. Try to teach a variety of concepts including-
    i. Body concept.
    ii. Spatial concept.
    iii. Concept of direction.
    iv. Concept of laterality.
    v. Concepts related to environment.
    vi. Mathematical concepts.

Some specific activities to teach the above concepts are:

Body Concept

(a) Play a game like 'Simon says' touch your head (name different parts of the body let the child touch each part). Eventually all the body parts should be taught.

(b) You can teach the child.

i. The location of each body part.

ii. The function of each body part.

iii. relationship between body parts.

Spatial Concepts: This includes front-back, top-bottom, up-down, in-out and many others. The teacher can provide a variety of situations. Concepts like next, there, around, towards, between, diagonal, middle etc., should be taught with actual experience.

While teaching spatial concepts teach these concepts in relation to the child himself. The child in relation to other objects and other objects in relation to other objects.

Example

i. Put your hands in front of.

ii. Stand in front of the table.

iii. Put the book on the top of the desk.

iv. Move the table near to the wall.

Concept of Direction: Compass directions are very important because they are always constant. For a VIC directions help in giving orientation while travelling. While teaching direction relate it to some known concept. Eg. Sun rises in East. The bus stop is facing the cast, so it becomes easier to remember other directions in relation to a particular object/place.

You can ask the child to describe the walking route to school using compass directions.

Concept of Laterality: This means teaching the child left and right concept. These concepts should be introduced as early as possible.

Teacher can tie ribbon in the left hand and then give instructions like raise your left hand. (the one with ribbon) Gradually teach left eye, left leg, left ear, etc. Then teach ‘right’ and then teach ‘right’ and then use both the words together.

Now teach the left and right of the object (left side of the up board).

Lastly teach placement of objects in relation to each other e.g. Keep your books in the left side of the desk.

Environmental Concepts: The teacher can teach the child about his surroundings these many concepts in VIC environment - animals, plants, mountains, people, roads, objects and so on. The

teacher can give concrete experience to the child wherever possible. Later on these concepts are useful in orientation & mobility.

Few concepts such as street patterns can be taught using models or maps.

Concepts related to Mathematics: VIC needs to be taught concept shapes (circle, triangle, square etc.) Concepts like small & big, concept of numbers, concepts related to weight and measurement, concept related to diagrams are included in this. The time concept also should be taught.

Self Check

1. How are concepts formed?
2. What are the problems faced by visually impaired children in correct concept formation?
3. Make a list of concepts which can be taught to a 5 year old VI child.
4. Suggest few activities to develop spatial concepts in a ten year old VI child.

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Section 6

Development of Communication Skills

Outline of the Unit

6.1 Introduction

6.2 Suggestions for encouraging language development

Objectives

After completing the activities specified in the lesson, the reader is expected to:

1. Understand the importance of language development for a VI child
2. The teacher will be able to carry out various activities for language development.

6.1 Introduction

Concept development and language go hand in hand many a times. When we think about language development in visually impaired children, we must think about how sighted children normally learn language. A sighted child by the age of 5 / 6 years can communicate with his family members and neighbours. He is able to answer simple questions. He can recite few simple nursery rhymes, narrate simple stories.

When we think about a VIC he also can acquire these skills if his auditory skills are normal. There are four basic skills which we call as language skills (1) Listening (2) Speaking (3) reading (4) writing.

The first step in language development is carefully listening to what is being said. Here, the role of parents is very important usually the child imitates the parents,

6.2 Suggestions for Encouraging Language Development at Home and in the Classroom

1. Look and listen. Observe the child's activities and responses to objects and people in her environment. What are her favourite toys and activities? What does she do when someone enters the room? Talk to her about the things that interest her. In this way the child learns that she has some control over what happens around her.

2. Interpret the child's speech into meaningful language. Young children begin to communicate long before they say their first word. However, they need their caregivers to interpret coughs, laughs, babbling, and gestures into meaningful language. When the child makes a gesture related to a favourite nursery song, you might say," Oh, you want to sing 'Twinkle Twinkle Little Star."

3. Expand on the child's language. Take a sound, word, action, or phrase and expand on it. Describe the object or event she is experiencing. Your language can add to the child's understanding of the world around her. For example, if she says, "Blanket, "in a requesting tone of voice, respond by saying," here's your blanket. It's soft, isn't it?"

4. Provide time for exploring and listening. Give the child opportunities, to make her own discoveries. Offer a stimulating environment with a variety of appealing toys within easy reach, along with the freedom to play with a toy she wants. Then, fill in the gaps and show the child other ways of manipulating or playing with the toy.

5. Describe the world. Everyday experiences can be language-learning opportunities. Tell the child what she is doing. Talk about the environment and encourage her to touch smell, taste, and listen to her surroundings. Learning language means more than knowing the names of people, objects, and activities. Talking about what other people are doing may make it easier for a child to develop an interest in her environment.

6. Express your feelings and put the child's feelings into words for her. The child who is visually impaired cannot see facial expressions and cannot read feelings from the frowns, smiles, and expressions of others. Describe your feelings with words and use your tone of voice so the child can feel the smiles and expressions she cannot see. Explain the feelings of other people and teach her how to appropriately express your feelings. When she smiles or laughs you might say," you're smiling, you must be happy" or, when the child is fussing and expressing anger, you can label the feeling by saying," You sound very angry."

7. A child's early attempts to communicate must be encouraged. By imitating and expanding her language, you encourage her to continue talking. If she says, "Kitty," in response to the meow of the family pet, you might respond with, "Yes, the kitty's in the room."

8. Acknowledge the ideas and feelings in the child's speech. Careful observation of the child's actions and the events taking place around her will enable you to respond appropriately to her underlying intentions. If she is playing with a ball that rolls out of reach and then asks, "Ball?" in a requesting tone of voice, you could respond by retrieving the ball, giving it to her, and saying," here's your ball. It rolled away, didn't it?"

9. Provide hands-on experiences. This makes it easier for the child to link the language she is hearing to what she is experiencing.

10. Introduce change in the experiences and language you provide. In addition to talking about the things the child understands, it is important to introduce new objects and activities on a regular basis and talk about them. For example, if the children are going to visit a farm, talk about it before they go. Tell the children about the kinds of things found on the farm and the kinds of animals that live there and the sounds they make. Talk about how things on the farm smell and feel. Use toys animals, songs, and a toy farm to prepare the children for the visit by letting him know what to expect.

11. Encourage appropriate behaviour. There are times when you need to let the child know that her language is not appropriate. You may need to model the language best suited for that situation. For example, during snack time you might ask: Do you want an apple or banana?" If she responds, "you want an apple?" you can say," I think you mean, 'I want an apple."

The child may not be aware of the concept which is used while using the words. It may be ideal that child's mother gives him every opportunity to feel different things in his sense. While doing her household work she can explain the VIC about what she is doing, how she is doing it. This way the child can learn meaningful use of language / words.

In outdoors similar role can be played by father. Father can explain the VIC about things around him. The child can touch things, smell things, explore things and label / give names to the things.

Check Your Progress

What are the various activities which you can carry out for language development of VI children?

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Section 7

Activities of Daily Living

Outline of the Unit

7.1 Introduction

7.2 Guidelines for teaching ADL

7.3 List of suggested activities of ADL for VIC

Objectives

1. The learner will understand the meaning or ADL for VIC
2. The learner can prepare a list of age appropriate daily living skills required by particular VIC
3. Train the VIC in ADL using appropriate methods and materials.

7.1 Introduction

Daily living skills are those skills which enable us to carry out our day-to-day activities on our own. A visually impaired child because of difficulty in imitation can not perform the routine activities in a required manner. VIC is not mentally retarded but still he needs guidance in performing daily routine activities. This guidance can mean explaining him the correct order of doing things or holding things in a particular manner. Every child may not need the same type of training, it has to be individualized and need-based. The child who is visually impaired by birth may need more training as compared to the child who is adventitiously blind. Training helps the child socialise effectively in the society. The list of training activities can range from toilet training to preparation of a complete meal.

It is important that visually impaired child masters as many skills of daily living as possible, because this will make him more independent and confident.

7.2 Guidelines for Teaching ADL

- Select age appropriate activities. Observe the sighted child of the same age and then list out the activities for VIC
- Break each activity into small steps. Help the child master the activity step-by-step.

- Work closely with the child's family. They must take a regular follow up of the activities which he has practised
- Remember child will master these activities by **practice** and not by lectures
- Have a work plan which will guide you about the correct procedure and each step of a particular task
- Gather the materials and equipments **before** starting the activity
- After the activity is completed, make sure that the child cleans and returns all the equipments and materials to their correct storage space so that they can be easily located later.

7.3 The following is a list of activities of ADL which the visually impaired child should be able to do:

Self-help skills: Eating, brushing, dressing, bathing, toilet training, combing and washing hair, cutting nails, applying make-up, care and identification of clothes, taking care during menstruation, shaving

Home skills: sweeping and mopping the floor, dusting, washing utensils, washing-drying-folding-ironing clothes, sewing, polishing, money identification and management, feeding cattle, cutting grass, cleaning yard

Cooking skills: Buying food-stuffs from the market, cleaning, peeling fruits and vegetables, correct storage of food-stuff, identification of fresh/ stale fruits and vegetables, lighting stove/ gas stove, cutting firewood and lighting chulha, preparing simple food, safe use of knives, measuring food items, cleaning and cooking fish / non vegetarian food.

Training Strategy

Before planning any activity for a visually impaired child try to understand in which area what adaptation is required and then design your programme accordingly.

- Observe a variety of daily living activities performed by sighted children of different age groups
- Think about the areas where VIC may find it difficult to perform that activity
- Adapt the procedure to suit the needs of VIC
- Consider individual felt needs, physical potentials , age, family background, past experience of the VIC
- Always explain the VIC the procedure followed by sighted children while doing that activity

- Stick to simple modifications for e.g. if you want to put ½ a teaspoon of salt he can not see half of a regular spoon instead buy a set of measuring spoons for a VIC. This contains ¼ teaspoon, 1/2 teaspoon, ¾ teaspoon and 1 teaspoon. The VIC can not see ½ but by selecting correct measuring spoon he can follow the same procedure
- Ensure safety of the individual
- Supervise the activity and give instructions wherever required
- Do a regular follow-up of the activities and appreciate when the child masters that activity.

Check Your Progress

1. Write the objective of teaching activities of Daily living to VIC.
2. Prepare a list of tasks related to daily routine activities which can be taught to VIC.
3. What are the problems faced by a VIC while acquiring daily living skills.

Section 8

Orientation and Mobility (O&M)

Outline of the Unit

8.1 Introduction

8.2 Teaching about orientation

8.3 Development of motor skills

8.4 Teaching Mobility

Objectives

After completing the tasks in the learning material the reader will be able to:

1. Explain the concept of orientation and mobility.
2. Explain the importance of O&M skill while travelling independently for a VIC.
3. Understand the classification of mobility techniques.
4. Describe the role of a special teacher/itinerant teacher in teaching O&M to VIC.

8.1 Introduction

When a person becomes blind, one basic limitation which arises out of blindness is ability to move independently and safely. If we think of child's early motor development also we would notice that a VIC considerably lags behind in motor movements. Activities like crawling, standing, sitting, walking are usually delayed in a VIC. Therefore, it is very important to develop O&M skills in every VIC right from the first year of his birth.

Orientation means knowing about the environment in which a VIC lives. As there is distorted or no visual input a VIC has to be trained in various skills, using which he can collect the similar information which a sighted collects by other senses that is by listening, by touching, by smell or by using kinaesthetic sense.

8.2 Teaching about Orientation

A sighted child gathers information about his environment mostly through vision. For a VIC a number of concepts have to be developed for effective use of environment during mobility. Sensory

training is one of the essential areas where the child should be thoroughly trained. The VIC should have a correct body concept. The readiness activities for developing body concept can be:

1. Identification of body parts. Simple e.g. Hand, leg, mouth, head etc.
2. Identification of body parts. Complex e.g. Toe, fingers, uric, jaw etc.
3. Identification of body planes e.g. Top, bottom, front, back.
4. How to maintain correct posture and gait.
5. Knowledge of directions in relation to body.

8.3 Development of Motor Skills

One more area which needs attention is motor development in a VI child. Our body is a collection of various Parts. Each part has a definite function. Each part consists of various units e.g. Muscles, bones, nerves. For functioning of parts different units work in coordination. The movement of these parts is called as motor. Motor skill development is the progression of understanding of the body and its parts as well as the control and ability to use the body to adapt to the demands of the environment.

Motor skills are divided into two:

1. Fine Motor Skills
2. Gross Motor Skills.

Activities of gross Motor Skills: sitting, standing, kneeling, squatting, jumping etc.

Activities related to fine motor movements: daily living activities, threading beads, reading, writing, buttoning, lacing shoes, threading needles, folding clothes, cutting vegetables.

Orientation: Orientation is the ability to locate oneself in one's environment. It is a skill that is related to the use of remaining senses of a person, to establish one's position in' and 'in relation' to significant objects in the environment.

What the teacher should aim at while teaching orientation:

1. Through the remaining senses collect as much information as possible.
2. To use auditory map, mobility map correctly and effectively.
3. To locate the permanent landmarks as well as temporary dues in the environment.

8.4 Teaching Mobility

Mobility is the ability to move from one place to other safely, independently and gracefully. When a VIC has correct orientation of his environment then the teacher can actually start teaching various mobility techniques to him. These techniques include.

1. Sighted guide technique

2. Protective techniques/ Pre-cane technique

3. Cane techniques

Teaching orientation & mobility is very important. It enables a VIC to avail a variety of real experience and enhances his understanding of concepts. It gives him more confidence. It also helps in better integration of visually impaired person in the community.

Sighted Guide Technique

It is the skill of travelling with a sighted person. The guide stands next to the VI person facing the same direction.

1. The VI Person finds the elbow of the sighted person.
2. The VI person stands half a step behind the guide.
3. He can either be on the left or right side of the guide depending on which side he is more comfortable.

Types of Sighted Guide

1. Sitting on a chair

2. Ascending and descending stairs

3. Crossing the road

4. Passing through doorways

5. While approaching narrow spaces

6. About turn

Protective Technique- (Walking alone): Initially a VI person is not comfortable walking alone. Therefore, teacher can start with first technique. When the person is comfortable and gains

confidence slowly teacher can teach him walking alone using certain techniques. These are called protective techniques which include- Trailing, Tapping, Upper Arm and Forehand technique, Lower Hand and forearm technique, locating dropped articles.

Cane Technique (Walking alone)

The white cane is primarily used as an extension of the forefinger. It helps in locating obstacles along the route and provide information about the environment.

It plays a vital role in education, social integration and comprehensive rehabilitation of the visually impaired.

The white cane techniques are simple, universal, can be applied effectively in unknown environment. A visually impaired person can walk confidently, independently, safely and gracefully in the environment using these techniques. The cane has three parts grip, shaft and a tip.

Teaching Cane Technique

1. Grip- While holding the cane the thumb should be on the front & the index finger on the side/ flat portion of the cane.
2. Hand Position- The hand holding the cane should be in line with the middle of the body.
3. Wrist Movement- The hand movement should be restricted to wrist only with the tip of the cane touching the ground.
4. Arc- The cane movement on the ground should be a little wider than the width of the person's body.
5. Instep- As the left foot steps forward the cane moves to the right and as the right foot comes forward the cane goes to the left.
6. Rhythm- The cane should be moved back and forth at steady speed as the visually impaired person walks.

Check Your Progress

1. Explain the terms: orientation and mobility.
2. What are pre-cane techniques?
3. Describe the six points of cane technique.
4. Make a list of motor activities for three year old VI child.

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Section 9

Teaching Braille

Outline of the Unit

Objectives

After completing the activities specified in this capsule the following objectives can be realized:

(i) The learner will know about the prerequisite skills: Braille reading and writing

(ii) The learner can describe the various teaching techniques of teaching Braille to VIC

9.1 Introduction

Ever since the Braille is invented, Braille remains the best medium of reading and writing for the visually impaired all over the world. It is bulky, may require more time to read, it's production may be expensive still it is the most effective means for access to the printed word for the visually impaired.

Reading Readiness for a VI Child

It's difficult to teach Braille to any VI child unless he develops good tactual discrimination and finger dexterity (ability to move fingers). It takes time and a variety of activities to develop the sense of touch. Just like a normal child is curious about reading print, a VI child also should be made curious about learning the Braille script. Sighted children become aware of the script at very early stage. They observe their parents reading newspaper, magazines. In the surrounding also they see different signs. Although they do not know what the letters mean, they know that print exists and objects have names which are written in a particular manner .The VI child does not have this advantage. To create this awareness, Braille labels can be pasted on the objects in the

child's house. Reading story books which are in Braille can be one more activity. This way he becomes familiar with Braille.

The Basic pre-requisites for Braille Reading

Before the child actually starts reading Braille, he must have a number of concrete experiences which give him knowledge about things and relationships between them and also understanding of relationship between cause and effect.

A VI child should also acquire basic language skills and sufficient vocabulary to correspond with his experience.

The child's basic comprehension about direction has to be there.

The child should develop good hand movements, correct finger positions and light finger touch.

9.2 Pre-Braille Tactual Activities

1. Open and close locks with keys
2. Screw and unscrew top of the plastic bottles
3. Identify shapes (square, circle, triangle)
4. Identify objects made of wood, cloth, paper, sandpaper, glass, plastic
5. Clay modelling
6. Tearing paper, collage work
7. Colouring with crayons
8. Let the child sort objects based on size, texture, shape and length.

Teacher can teach these activities at home or at school. He should use material which is available at home or in the surrounding of the child. The activities should be part of child's daily routine. These activities will help in increasing child's sense of touch. The pre-braille worksheet is shown on next page.

9.3 Seven Line System in Braille

The name 'Braille' has been derived from the inventor of this six dot system- Mr. Louis Braille. Braille is the tactile approach to reading and writing. The basic Braille symbol is called a Braille cell. It consists of six dots arranged in the formation of a rectangle three dots high and two dots wide. The six dots are arranged like

1 0 0 4

2 0 0 5

3 0 0 6

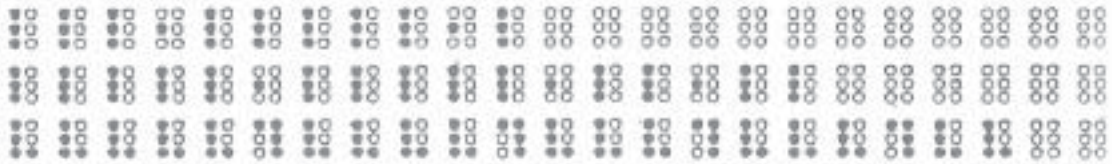
Pre-Braille Worksheets

Worksheet A. Follow the braille lines.

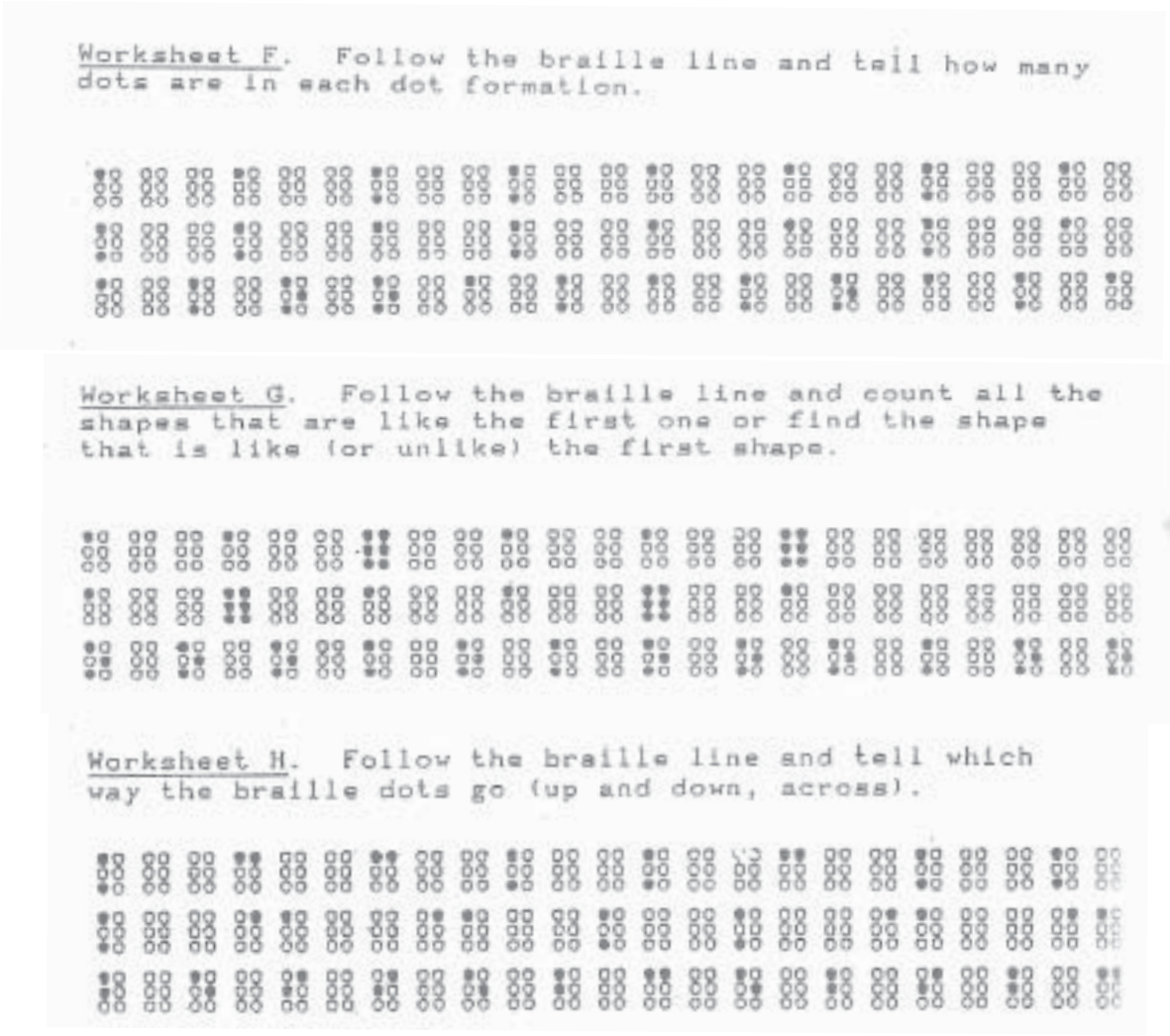
Worksheet B. Follow the braille line and identify breaks.

Worksheet C. Follow the braille line and identify the "misplaced" dot (a dot that is out of place).

Worksheet D. Follow the braille line and identify the "misplaced" shape.



Worksheet E. Follow the braille line and count the dots.

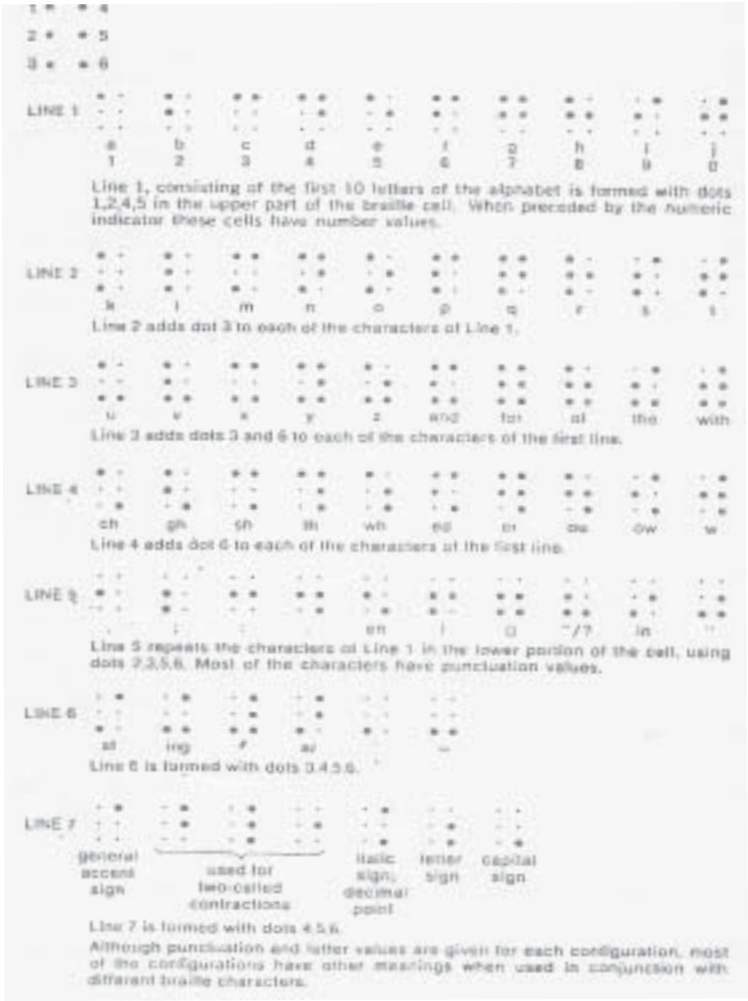


There are 63 combinations of these six dots, each of which represents a different character as illustrated in Standard English Braille Chart shown above.

The first line consists of first ten letters of the alphabets formed of the top four dots. Line 2 adds dot three to each of the characters of line 1 thus forming the next ten letters of the alphabet. Line 3 adds dots 3-6 to each of the character of line 1. Line5 repeats the character of line 1 in the lower position of the cell, using dots 2-3-5-6. Line 6 comprising seven symbols is formed of dots 4-5-6.

9.4 Braille Reading

When the VI child is able to discriminate tactually the teacher can introduce a series of pre-Braille worksheets. These worksheets are useful in orienting the child in moving his fingers from left to right. Slowly the child starts identifying the location of Braille dots. He then differentiates between various combinations of Braille dots. It also helps in increasing his tactual awareness.



These worksheets are useful and help in teaching Braille. The teacher should remember that these worksheets are not for teaching Braille letters.

Points the teacher should remember

1. Just like a normal child learns reading first, a visually impaired child also needs to learn to read Braille first.
2. Before introducing reading make sure the child is sitting straight.
3. The Braille reading material is at a comfortable height.
4. Check the child's finger and hand position. Braille should be read with the tips of the fingers. The fingers slightly bent and wrist slightly elevated.
5. Ensure the child is using both the hands when reading.
6. Have the child lightly touch the dots.

Activities for promoting Braille reading

1. The process of teaching reading skills to a Braille reader is the same as for a print reader.
2. Prepare worksheets with Braille letters. Write print letters over the Braille letters, so that a regular classroom teacher can follow what the child is reading
3. The teacher should aim at VI child using the same text book as other children use in the classroom.
4. The teacher can write simple, small stories in Braille.
5. The VI child also has to build up sight vocabulary. These are basic words that he can identify by looking at them. This helps in increasing his reading speed. For this purpose flash cards can be prepared.
6. When the child masters Braille grade I, the teacher can introduce contractions (Braille grade II). The contractions help the child to read faster

9.5 Braille Writing

When the VI child learns to read simple sentences in Braille, teacher can start Braille writing with him. Even before that the teacher can introduce simple wooden Braille writing slate to improve child's fine motor skills and teach the child the correct position of holding stylus and orientation of writing guide. Allow the child to play with slate and stylus and punch dots, even though haphazardly. The concept of reversal of letters can be given by writing letters or words in their reversed order on paper. The teacher can guide the child's hand on the Braille writing guide in punching the required letters and words and showing the results of child's work by turning the page.

Lessons in writing can start by writing of those very letters and words which were used for teaching reading. The same pattern can be followed till all the alphabets are mastered.

Check Your Progress

1. Suggest a few pre-Braille activities.
2. How will you introduce Braille reading for VIC.
3. Suggest activities for promoting Braille reading.

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Section 10

Curricular Adaptations for Visually Impaired Children

Outline of the Unit

10.1 Introduction

10.2 Principles of curricular adaptations for visually impaired children

Objectives

After completing the activities specified in this capsule you are expected to:

1. Describe the concept of curriculum in general and it's implications for teaching VI children in inclusive setting.
2. Specify curricular adaptations for teaching VI children in inclusive classrooms.

10.1 Introduction

Visually impaired children are expected to cover the same curriculum and syllabus as their sighted peers under inclusive set up. But curriculum in its original form may not be reachable to the VI child. Appropriate adaptations in the curriculum are required so that it is not diluted in terms of content, methods and materials. When you think about content, method and materials in any inclusive class-room, it is basically VISUAL, whereas most information received by a VI child is through TOUCH and HEARING. Hence there is a need for adaptations in the curriculum and special approaches based on multi-sensory experiences.

Lot of incidental learning takes place in case of a sighted child but for a VI child it is mediated learning.

10.2 Principles of Curricular Adaptations for Visually Impaired Children

The special teacher has to convert the visual experiences into non-visual experiences. There are four ways by which you can adapt the curriculum:

1) Duplication- Here the teacher duplicates the content, material or method for a VI child. For e.g. Printed matter in the text book is duplicated in Braille. A printed diagram is embossed for him.

2) Modification- Modifications in terms of content, method of display, type of material used and

response from the child. At primary level especially when the child is in first standard the evaluation can be done orally. By the end of first standard the VI child with normal intelligence masters Braille. Later he can write his exams in Braille.

3) Substitution- Sometimes there is no suitable means of modification then the teacher has to substitute the matter. It is expected that a sighted child has to draw a diagram of an eye. A VI child must get the concession of describing the structure of an eye.

4) Omission- Pictures in the textbook, geography maps, science diagrams cannot be adapted instantly in the same textbook because of technical reasons. The principle of omission has to be used in these cases.

While adapting material for VI children teacher must bear the following things in mind:

1. As far as possible try to use materials in the original form.
2. Material has to be duplicated in format accessible to VIC (large print, Braille, JAWS).
3. Models can be effectively used to substitute the experiences.
4. Choose right equipment.
5. Teacher must always carry “material adaptation kit” with him.
6. Adapt material on the spot.
7. A small plastic box with tight lid can be used for this purpose. List of material in the box – scissors, glue, short ruler, sticky tape, Braille slate and stylus, black sketch pen, rubber bands, strings, textured cloth, printed map of the district/ state, twine thread, compass to make circles.
8. Use easiest approach to adapt material.
9. When adapting materials try to make it friendly for sighted also.
10. Be creative in what you make.

Check Your Progress

1. What are the principles of curricular adaptations?
2. As a teacher of VIC which are the important points which you must remember while adapting the curriculum?

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Section 11

Physical Education for Visually Impaired Children

Objectives

1) To understand the areas of intervention related to physical education

2) To develop techniques for VI children to perform various activities related to motor development.

Contents

Introduction

Activities for Physical Development of VI Children

11.1 Introduction

Students who are visually impaired may spend their Physical class sitting out or keeping score if no modifications are made for them to participate. Visually impaired students who are overweight or have limited muscle tone or lung capacity due to inactivity could highly benefit from participating in gym class. It is important for teachers to include and make adaptations for all students with visual disorders so that they can be healthy and fit, take part in their classroom community and develop self-confidence.

11.2 Activities for Physical Development of VI Children

A good physical education or recreation program for visually impaired children can be easy if common sense is used by the educator. If teachers and recreation specialists use their creativity and treat visually impaired children the same as normal children, programs can be very beneficial.

The following are hints that may help your program succeed:

1. Preschool and elementary school children should be taught that movement can be fun and

beneficial (with some adaptations for safety). If you wait until these children reach twelve to fifteen years of age it may be too late for visually impaired children to learn to move with confidence.

2. A good physical education program can provide the prerequisite skills needed for further participation in sports; for example, strength and agility.
3. Choose familiar environments for physical activity or take time for orientation of the child to the surroundings.
4. Allow the child to explore the physical education area alone.
5. Remove obstacles that would interfere with free movements.
6. Use a radio or sounding device for cues in the gym and swimming pool.
7. An aerial guide line, contrasting colors and textures can be used for boundaries and for running.
8. Use audible or brightly colored equipment (i.e. balls, balloons, scarves and goal locators).
9. Accentuate auditory cues and verbal instructions.
10. Expand your verbal directions to children. For example, “Go over there” is inadequate. Where is there?
11. Provide verbal descriptions, manual manipulation and Braille or large print instructions for guidance in activities as needed.
12. Maintain normal voice intensity.
13. Provide auditory starts and stops of activities.

These are a few hints that may help visually impaired children in your programs. Remember that visually impaired students are the same as sighted children in their physical education needs.

Check your Progress

- Suggest activities for motor development of VI children.
- Select one local game and try to modify it for VI children.

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Section 12

Classroom Management for Visually Impaired Children

Objectives

- To understand the special needs of VI children and make necessary changes in the classroom environment of these children.
- To understand the requirements of low vision children related to lighting, seating arrangement, contrast, distance and size.

12.1 Introduction

The RTE Act has resulted in an increasing number of children with a visual impairment being educated in mainstream schools alongside their sighted peers and supported by qualified teachers of the visually impaired.

12.2 Questions to ask

There are many different eye defects and each particular condition has different implications with respect to classroom management. Nevertheless there are certain questions which the teaching assistant may need to ask the peripatetic support teacher. These could include:

1) What level of lighting is necessary for the visual condition?

2) What size print is best?

3) Where should he sit in the classroom? Does he need to be close to the blackboard, positioned to one side or with his back to the window etc?

4) Can his level of visual acuity be improved with glasses or by the use of specialised low vision aids?

5) What is his visual condition and the associated prognosis?

6) Are there any restrictions to his visual field?

7) Does he have vision in both or only one eye?

8) Does he display any eye dominance or preference?

9) What are the implications with respect to games or physical activities?

10) Is there evidence of a colour vision deficiency or blindness?

11) Does the child require medication on a regular basis e.g. eye drops often needed for glaucoma?

12) Is there evidence of any additional impairments?

When information pertaining to the child's level of visual functioning has been considered, the appropriate classroom management and support can be formulated.

12.3 Concept of Classroom Management

It is not realistic to expect the working environment to revolve around the needs of one visually impaired child in an integrated setting. Nevertheless it would be prudent for the following points to be considered:

Seating Position

Besides considering distance from and angle in relation to viewing target across the classroom, many children will also need to hold reading material close to their face and should be provided with an adjustable desk top. This is a facility for bringing reading material closer to the eyes without the necessity of bending over for long periods. This should encourage good posture, enhance concentration and make visually demanding tasks less tiring. Do not discourage or criticise the child who reads with his head touching or very close to the page. He may not see clearly from a distance and may need to get within 5cm. of the page to focus properly. If concerned, consult the specialist peripatetic teacher.

Encourage the visually impaired child to be tidy and methodical during desk-based activities. This not only helps him to find his equipment with ease and expediency, but may provide him with the extra storage space he requires for his specialist equipment. A Braille user will particularly need a large storage area as besides his specialist equipment, Braille books tend to be rather large and bulky.

Lighting

Some pupils may prefer additional specific task lighting provided by an angle poise lamp while some children will prefer to wear tinted lenses and or work in dimmer areas of the classroom. It is important to be aware of the disabling glare elicited by some highly polished surfaces or even play grounds with a light reflective surface.

Generally it is better to avoid glare, including reflected glare whenever possible. Shiny paper can also be a particular problem and matt surfaces tend to be better in this respect. It may be necessary to give consideration to the benefits of window blinds if this is possible.

Safety Considerations

For children with limited or no vision it will be necessary to ensure that close supervision is maintained in any out-of-school activity. However it is important that the teaching assistant does not intervene unnecessarily as over protection can itself constitute an additional impairment and deny the child the worthwhile and meaningful experience he needs. Again it is important to seek guidance from a specialist support teacher regarding how to help the child gain the appropriate mobility and orientation skills; these skills need to be taught if he is to move safely and independently around the school environment and then extend to travel within the locality and beyond.

The teaching assistant should not attempt to teach mobility without prior consultation with a specialist teacher, as inadvertently, false confidence may be nurtured in the child which could result in exposure to danger. However there is no doubt that assistants can be very useful here, providing verbal cues by informing the child about obstacles, doorways, steps, etc and telling the child if the classroom layout has been changed in any way.

During a school trip or when in an unfamiliar environment, if the teaching assistant was to find herself in a situation where the child wished to use her as a sighted guide, then for ease and safety of movement the child should hold the guide's upper arm, just above the elbow, so that the thumb is on the outside and the fingers are on the inside of the guide's arm Positioning their arms close to the body automatically ensures that the visually impaired child is one half step behind his guide.

All staff working with the visually impaired should be aware that the child may find it difficult to judge distance, speed and depth accurately and therefore may be unable to react quickly to fast-moving groups of children and objects e.g. footballs. Allowances may have to be made for this and it would also be prudent to consider the following points:

1) Try to ensure that corridors and stairways are well illuminated

2) Explore the possibility, through the class teacher of the school implementing a "keep to the left" rule for movement around the school

3) Enquire whether any changes in levels could be marked to provide enhanced visual feedback; perhaps for example using painted bright yellow lines

4) Emphasise the importance to other staff of reducing unnecessary hazards around the school e.g. electric cables trailing across the floor, doors left ajar, windows or cupboard doors left open at head height etc.

Work Displays

As a general rule visual displays should be bold, clear, well contrasted and as near to eye level as possible. Tactual displays or those involving Braille should be lower, to facilitate comfortable tactual

exploration. If demonstrating to the child, avoid standing with your back to the window, as glare and light may well silhouette your demonstration.

Writing Materials

Blind children use the Perkins Brailler to write Braille and a range of new technology has been introduced in recent years to provide speech and print output from Braille input. For those children with useful residual vision, a dark felt tip pen on white or yellow paper should provide the necessary level of contrast, moving if possible at a later date to using a dark soft lead pencil. The older child should be able to make his own decision regarding paper preference, but the younger child may be helped by using bold lined or squared paper.

Reading Materials

Besides size of print, it is important to consider the quality and quantity of print used. The size, colour and contrast of print on paper determines quality and should be the primary consideration. Print can be enlarged by some form of magnification using a low vision aid or by an enlarging photocopier but it can be counterproductive to enlarge poor quality copies as the faults are also magnified. We should also remember that magnification is not always the answer as the greater the magnification, the smaller the field; those children with limited fields of vision should be allowed to use the smallest print possible, so that the remaining field of vision receives the maximum amount of information.

Contrast and clarity are essential, it is also important to try and avoid those books which have print across the illustrations, causing unnecessary confusion. Some children may also prefer to place a card or ruler under the line they are reading and “reading windows” can be particularly useful to the child who finds it difficult to focus on a word or line of print.

Always ensure that the visually impaired child has the sole use of work materials, whether it be books, diagrams, maps etc, avoiding the need to share. He will also need extra time to complete visually demanding tasks and it may even be necessary to reduce the amount of reading/writing you can realistically expect in the same time as the other pupils.

As the child moves up the school, the teaching assistant may have to adapt her methods to ensure the child’s access to the curriculum is maintained. For example, if extensive note taking is required, either from the blackboard, dictated or other means, you may have to do one of the following:

1) Ask the teacher to say the notes aloud as he puts them up on the blackboard; they can then be tape recorded if necessary.

2) Ask the teacher to give you the notes in advance so that you can make arrangements for a suitable print or Braille copy to be made.

3) Arrange for one of the child's friends, preferably one who is a neat writer, to make a carbon copy or arrange for his notes to be photocopied.

12.4 Specialised Equipment

The visually impaired child should have free access to any Low Vision Aid (LVA) which will improve his functional vision. LVAs include hand-held or stand magnifiers, illuminated magnifiers, binoculars and hand-held telescopes, spectacles, including those with specially prescribed telescopic attachments and closed circuit TV (CCTV) which is available in black / white and colour models. LVAs are supplied by the Educational Service for the Visually Impaired (see address at beginning of booklet) and many LVAs, apart from CCTVs can be prescribed free of charge by the consultant ophthalmologist in conjunction with the ophthalmic optician attached to the LVA clinic. CCTVs loaned by the ESVI arc particularly adaptable and useful for reading, mapwork and even demonstrations. The CCTVs electronically enlarge material onto a TV screen and most models can accommodate a typewriter. If the teaching assistant is to assist the child to make effective use of their specialised LVA, the assistant should consult the peripatetic support teacher who will advise on how to teach the child to use the LVA efficiently.

Other Equipment Used

The type of equipment used obviously depends on the nature and severity of the child's visual impairment. However other equipment which may be used could include one of or several of the following:

Perkins Brailler for those unable to communicate through print, tape-recorder (perhaps with a variable speech attachment or speed compressor so that listening rate can be speeded up), talking calculator, talking thermometer, Braille ruler, large print typewriter, to name a few as recent advances in electronic devices are too numerous to outline here.

12.5 Specialised Curriculum Areas

Due to their visual impairment, many children will need to develop skills not necessarily required by their fully sighted peers. For appropriate remediation to be provided, again the peripatetic support teacher should be consulted at all times. Such specialised skills could include emphasis being placed on listening skills, typing skills, Braille, mobility and orientation skills, visual-motor and visual perceptual skills, (ensuring the child makes the most effective use of the vision he possesses by concentrating on activities such as matching, discriminating, hand-eye co-ordination, tracking, scanning, copying, fine and gross motor activities etc), and independence and self-help skills.

The teaching assistant's involvement in these areas will be directed and controlled by the specialist but the area of independence and self-help is an all embracing area which is likely to permeate

every area of the curriculum. This booklet cannot hope to direct the teacher's assistant to any depth but it may help to remember the following points:

1) Be calm and patient,

2) Do not rush the child although gently ensure that the child is aware that we do live in a world where time constraints are imposed,

3) Ensure that all teachers/helpers agree on the same strategies when teaching self-help skills such as eating or dressing,

4) Do not apply sighted criteria when assessing what a visually impaired child should know or be able to do; conversely do not allow the child to indulge in behaviour or mannerisms which are clearly NOT socially acceptable. Consult with the specialist teacher on how to channel his behaviour into more acceptable and beneficial channels. Usually it is better to distract the child into another activity rather than draw attention to strange mannerisms,

5) Many skills in the area of self help and independence will need to be taught on an individual basis and broken down into small sequential steps. It is necessary to have some agreed form of record of these skills, detailing those which have been mastered and those which still present difficulties.

You will find that visually impaired children will generally require more one to one demonstrations and do not assume that the child has understood something just because he says 'yes'. Try to be pro-active rather than re-active by attempting to anticipate potential problems and dangers.

Finally it is of fundamental importance that the teaching assistant's general attitude towards the child is positive at all times. Although concepts have to be built up slowly and the cognitive development of a VI child will usually be delayed due to lack of visual experiences, do not allow the sight loss to unduly limit your expectations with respect to standards of work and behaviour. The child's progress should be carefully discussed with his class or subject teacher and a clear consensus reached regarding an appropriate management regime which brings consistency and continuity to his working day. The Educational Service for the Visually Impaired is available to offer appropriate advice as necessary.

Check Your Progress

1. What is Classroom Management?

2. What should a regular teacher consider if he/she has a Visually Impaired Child in a classroom?

3. List out various classroom modifications.

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Section 13

Use of Special Appliances for Visually Impaired Children

Objectives

After completing the activities in this capsule the reader is expected to realize the following objectives:

- The reader can list the equipments / appliances required by a visually impaired child
- The reader can discriminate between different equipments / appliances and their uses
- The reader can suggest appropriate equipments / appliances for different eye conditions.

13.1 Introduction

Preparation of an exhaustive list of equipments and appliances for VI children may not be possible, as it varies from programme to programme, It varies according to the level (primary or secondary) of the child. However the following list may be treated as a basic requirement for any VI child.

- Braille slate and stylus

Braille slate is an important device for a VI child. This is basic writing device for a VI child. This enables children to take their notes in a regular classroom. It is also useful in building vocabulary and teaching spellings to him.

- Brailler or Braille Writer- This is a mechanical Braille writer. This is a fundamental requirement for “today” for a VI child. The child can learn to write faster with the help of this device. It can also be used for teaching Mathematical expressions for VI children.

- Abacus- Abacus was developed in Asia as a mathematical device. It is a manual calculator. With training a VI child can use the abacus for addition, subtraction, multiplication, division, decimal, fractions, percentages and square roots.

- Taylor Frame – Taylor frame is a frame, which has star shaped holes. Types are used to write numbers on Taylor frame. All basic operations related to arithmetic can be carried out on Taylor Frame.
- Geometric Devices for VI children- A VI child can draw diagrams with the help of these devices. The special teacher can draw tactile diagrams and explain geometric figures with the help of these devices. These include a rubber mat, a spurred wheel, compass, tactile ruler, set squares and protractor with raised markings.

The above mentioned appliances are useful for severely visually impaired children. When the teacher comes across a low vision child; he may need altogether different aids.

Low Vision Aids

There are two main types of low vision devices:

Optical Devices which use lenses to magnify objects

Non-optical Devices and techniques which make objects easier to see.

Optical Devices for near vision tasks- Stand magnifier,

telescopic magnifier

hand-held magnifiers, illuminated magnifiers, torch magnifier

pocket magnifiers

Fresnel sheet magnifier

bar magnifier

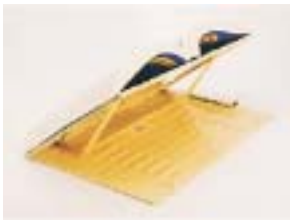
Optical Devices for Distance tasks

Small Telescopes

Small telescopes are used for improving distance vision. They can be used for looking at distant objects such as signs, finding people and animals, reading black-board in school, finding entrance to a building, watching games etc.

Non-Optical Devices

Reading stand



Reading stand which is adjustable is often useful for low vision children. It helps in maintaining good posture.

Felt-tip pens

Black felt-tip pen gives best contrast to LV child.

Lighting- The amount and direction of lighting are very important for best visual functioning.

Typoscope

This is a reading slit which is put over a page of print often helpful for a person with low vision as it reduces the amount of glare from the page.

Large Print Books: When the children are holding book too close to their eyes enlarged print can be given, by which you can increase the viewing distance and make the child more comfortable.

Section 14

Blindesms and their Management

Blindisms are stereotyped behaviors sometimes found in visually impaired toddlers or children. Blindism behaviors range from body rocking, head swaying, eye rubbing, head banging, spinning to finger flicking. These behaviors are repetitive and serve no specific goals, but can calm or soothe the child if they are distressed.

Causes of blindisms include

- The inadequacy of sensory stimulation causes the child to seek stimulation using his own body
- Social deprivation due to limited interaction with other people
- Limited physical and motor activity as the child cannot easily move to another place and change his environment to satisfy the basic need for movement and physical activity
- Lack of ability to imitate and learn socially acceptable behaviors.

Effects

Blindisms can lead to serious consequences if not corrected. Children displaying blindism behaviors may experience teasing or social isolation by other children. Additionally, the skin around the eye may discolor and become callus-like due to constant poking and rubbing.

Prevention

Early intervention may be helpful in preventing children from displaying blindism behaviors. A qualified teacher should arrange an early education program to help develop accurate and effective use of the child's senses.. The parents should also be included in such programs together with their visually impaired children as most parents are unaware of techniques used to teach visually impaired.

Self Check

1. What are blindisms?
2. What are the effects of blindisms? What is the role of a teacher in preventing blindisms?
3. Suggest few activities for sensory stimulation.

Section 15

Barrier-Free Access – Designing for the Visually Impaired

With a rising awareness about disabled population in the world, the importance of designing barrier-free access (such as tactile indicators) for visually impaired in mind becomes more important.

Visually impaired people could be classified into those who do not have sight at all and those who have low vision.

A significant proportion of the children have low vision. The desired result would be an environment in which people with visual impairments can travel independently and safely.

Many people who are blind sometimes have some small amount of residual vision and all people with visual impairment will use whatever vision they have, together with other aids, to find their way around. Some may choose to travel with a sighted guide; others will choose to travel independently. For those who choose to travel independently, continual and extensive use will have to be made of physical cues and other sensory cues.

Physical elements such as walls and curbs can act as cues to assist independent travel. For example, a person using a cane might be able to follow a wall line from one point to another. Physical cues can be identified either by use of a cane or under foot.

People with low vision also rely on information obtained by other ways including touch, sound and smell. Information can also be in the form of tactile or audible information.

Tactile ground surface indicators are one form of tactile indicator. In essence they are a physical cue, which are detectable either under foot or by the use of a cane. Tactile ground surface can serve as warning or directional indicators.

Warning indicators can warn of a hazard e.g. near the edge of a train platform, or steps, pedestrian crossing etc. Directional indicators are used to direct the user from one point to another. For example, a directional treatment might be used in an open pedestrian plaza to indicate a clear path of travel or provide assistance to locate amenities such as restrooms etc.

Self Check

1. How can we create barrier-free environment for visually impaired?

References

1) Visual Impairment Handbook – Dr. Bhushan Punani, Nandini Rawal

2) Source Book for Teachers of Visually Impaired – Sudesh Mukhopadhay, N.K. Jangira, M.N.G. Mani & M. Raychodhary

3) Education of Visually Impaired Pupils in ordinary Schools – J. Kirk Horton

4) Early Preparation of the Visually Impaired Children – Anand S. Athalekar

5) The Handbook for the teachers of the visually handicapped – National Institute for the Visually Handicapped, Dehradun

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