

**ANNEXURE - I**  
**EFFECT OF TRAINING PACKAGE ON DEVELOPING VISUAL SKILLS OF**  
**CHILDREN WITH LOW VISION**

**PERSONAL DATA BANK**

**SCREENING OF IMPAIRED VISION:**

**Personnel Data:**

1. Name
2. Class :
3. Name of the School :
4. Date of Birth/ age :
5. Sex :
6. Father's name :
7. Qualification :
8. Occupation of the Father :
9. Income per month :
10. Mother's name :
11. Qualification :
12. Mothers Occupation :
13. Income per month :
14. Type of Family : Nuclear / Joint
15. Status of the family : Intact /Broken
16. Consanguinity :
17. Causes of Visual Impairment :
18. Eye Problem and history :

**I Visual Acuity (Distance Vision)**

Without Correction                      With Correction

Right Eye  
Left Eye

**II Near Vision**

N     48  
N     20  
N     8

**III Visual Field**

Normal / Restricted / Severely Restricted

Date

Signature of the Assessor

**ANNEXURE - II**  
**EFFECT OF TRAINING PACKAGE ON DEVELOPING VISUAL SKILLS OF**  
**CHILDREN WITH LOW VISION**

**FUNCTIONAL VISION ASSESSMENT CHECKLIST**

**Name:**

**Std:**

**School:**

**ACTIVITIES**

**ITEMS GIVEN**

**RESPONSE**

**A. VISUAL AWARENESS**

1. Response to light
2. Aware of forms
3. Aware of 3D Objects
4. Aware of 2D Objects
5. Aware of Colours

**B. VISUAL ATTENTION**

1. Attention to Big Object
2. Attention to small object
3. Attention at Short distance
4. Attention at long distance
5. Attention to pictures

**C. VISUAL FIXATION**

1. Fixation light at short distance
2. Fixation light at long distance
3. Fixation object at short distance
4. Fixation person at short distance
5. Fixation person at long distance

#### **D. VISUAL FOCUSING**

1. Using both eyes to focus on object
2. Using both eyes to focus on person
3. Depth perception

#### **E. VISUAL TRACKING**

1. Tracking big object
2. Tracking small object
3. Tracking vertically
4. Tracking Horizontally
5. Tracking Circularly

#### **F. VISUAL SCANNING**

1. Scanning big object
2. Scanning small object
3. Scanning to identify details in object
4. Scanning to identify details in picture
5. Scanning in a surface

#### **G. VISUAL DISCRIMINATION**

1. Discriminating 3D Object
2. Discriminating Shapes
3. Discriminating 2 D Objects
4. Discriminating colours
5. Discriminating Textures

#### **H. VISUAL FIGURE-GROUND**

1. Identifying Particular object in a group
2. Identifying Particular Object in a Picture

3. Picking Out a Particular item in a group of objects

### **I VISUAL MEMORY**

1. Recalling number of items seen in 1 minute
2. Recalling number of shapes in 1 Minute
3. Recalling the items in the pictures
4. Recalling the clues in the known environment

### **J VISUAL CLOSURE**

1. Identifying the whole object from the part
2. Identifying the missing details in Picture
3. Identifying the missing letters

### **K SPATIAL RELATION AND FORM CONSTANCY**

1. Judging distance
2. Seeing object at different angles
3. Identifying objects at different positions

### **L VISUAL MOTOR COORDINATION**

1. Moving in the Known environment
2. Moving in the unknown environment
3. Performing hand eye activities

Date

Signature of Assessor

## **TRAINING PACKAGE FOR DEVELOPING VISUAL SKILLS OF CHILDREN WITH LOW VISION**

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## **ANNEXURE - III**

### **TRAINING PACKAGE FOR DEVELOPING VISUAL SKILLS OF CHILDREN WITH LOW VISION**

#### **I. The Aims of Vision Training**

About 90% of students or adults with visual impairments have functional or residual vision called low vision; only 10% are functionally blind or totally blind. It is necessary to find out how low vision affects children's ability in their day to day life. The purpose of low vision training programme is to encourage and help each child with low vision to make use of their remaining vision.

Difficulties of children with low vision are often not as apparent as blind. On the other hand, students with low vision require direct instruction in education, appropriate low vision devices, and to train their remaining vision, training to use prescribed low vision devices, and to develop compensatory skills and more.

Parents of low vision children do not have enough information about their child's vision problem; it affects the child's all round development. This often leads to a sense of hopelessness. And they were not accepted as socially useful persons. So it is essential, early identification and planning of intervention strategies to sensitize parents and community members, teachers and school authorities about the education of children with low vision.

The aim of vision training is to encourage and help the student with low vision make use of their remaining vision effectively. Providing a variety of opportunities and experiences for the student to learn about and understand their environment.

There are three aspects in training effective use of vision:

1. **Stimulation of Vision:** Children who have a very little vision or have not use vision need to know that they can use their vision. They may also need encouragement to do so.
2. **Visual Efficiency:** How vision is **used** can be improved with training. Measurers of vision do not change after this training, that is, visual acuity or visual fields will not change because of the training.
3. **Knowing when and how** to use vision leads to knowing how to change the environment (for example lighting), choosing suitable materials and using low vision devices if needed.

## **II. Procedures to be followed while providing training on developing visual efficiency to children with low vision**

The visual efficiency refers to the extent to which available vision is used effectively. The term visual efficiency includes visual acuity at long and short distance, control of eye movements, accommodation ability (shifting gaze from one place to another) etc. This also includes processing ability of the brain. Visual efficiency is unique to each student. To assess the skills the investigator used various low cost materials.

The Functional Vision Assessment check list developed by Vijayan, P. and Victoria,. G. was used to find out the visual efficiency of low vision children through pre and post test procedure.

Clinical Assessment was done and certificate procured from ophthalmologist along with the prescription of low vision devices. The visual acuity of each child was recorded before and after correction for both near and distance vision, about 78% of children with low vision benefited out of optical devices.

## **III. Administration of Visual Efficiency Training Package**

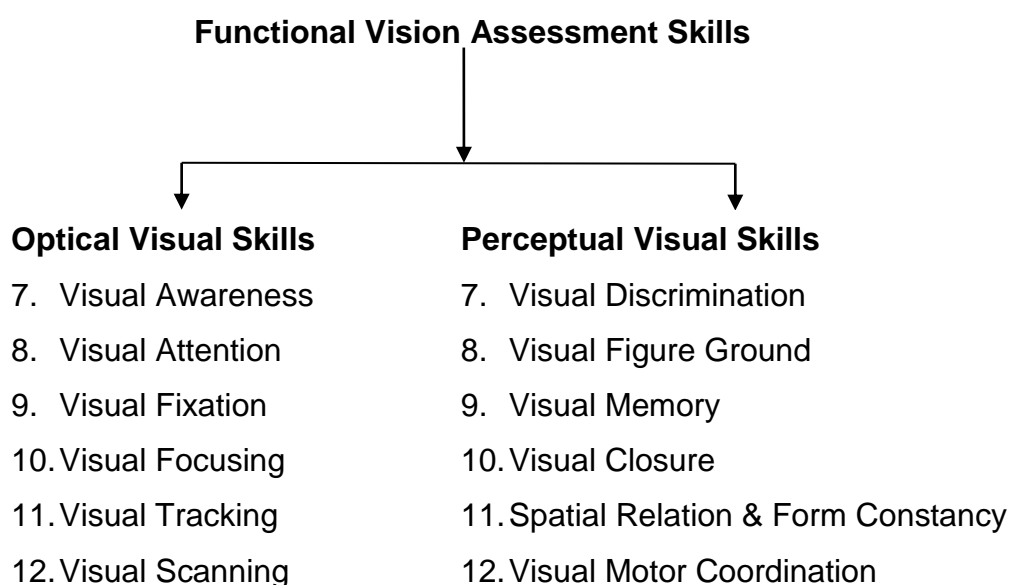
Visual efficiency training was administered to each child individually. Care was taken to consider the type of vision loss and organized the training programme. The visual efficiency training given from 30 to 45 minutes per day for each child based on the visual abilities of the child for duration of six months. The investigator sought the help of special teacher to assist in training and visited all schools on rotation and hence each school children were assisted at least thrice in a week.

The students were asked to wear the distance vision spectacle throughout the day, for near vision activities they were advised to use the near vision aids i.e. Optical and non optical devices will help them to enhance their visual efficiency. The same instructions were given to the parents and to the class teachers.

### **Visual Efficiency Training Package**

The tool consisted of optical and perceptual visual skills consisted of 49 activities under 12 main areas of visual skills as listed below.

Since visual efficiency training is planned to provide for younger low vision children care was taken in selecting the objects, those objects should be manipulated easily or with the minimum assistance of parents or by teachers, attractive colours, and non hazardous without distracting the students and cost effectiveness. The investigator used locally available and familiar objects, models. In addition, pictures and diagrams have been included in the visual efficiency training package to train the children with low vision.



Materials and objects selected for training package

### **I. Optical Visual Skills**

To develop **optical skills** following materials were used:

1. Toys and objects with reflecting light, torch light.
2. Toys and objects with different size colour and contrast.
3. Toys and objects with wheels for moving
4. Toys with lighting
5. Toys that make sound and without sound
6. Pairs of same object with slight difference
7. Age appropriate real objects (spoons, plate, eraser, sharpener, scale)
8. Fruits and vegetables (real and mould)
9. Black and white towel/cloth/chart paper to improve contrast for visual display
10. Toys with light and etc

### **II. Perceptual Visual Skills**

To develop **perceptual skills** following materials were used:

1. Pictures
2. Simple drawings
3. Uncluttered and cluttered pictures
4. Tracing
5. Identification of letter, number, shapes etc
6. Copy drawing, shapes and lines
7. Matching objects
8. Matching drawings
9. Matching pictures
10. Dot to dot diagrams

## A. Visual Awareness

Visual awareness is something visible in any part of the visual field and visual attention is attending objects / persons visually.

### Respond to light

**Activity:** Take a pen torch and present the pen light in front of the student face at about 15cm. Observe if the child blinks to the light. Flick the light on and off to get the attention. Move the light to the left, right, above and below the students face at 15 cm. Repeat each step at different distances. The student response will indicate his preferred distances.

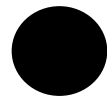
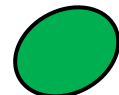
If the child is not able to visually attend encourage them to visually attend the light up toys. Most of these toys have sound this may help a student orient towards light. Materials have lighting include toys with light, disco balls, bubble lamps, stick light, rope light etc.



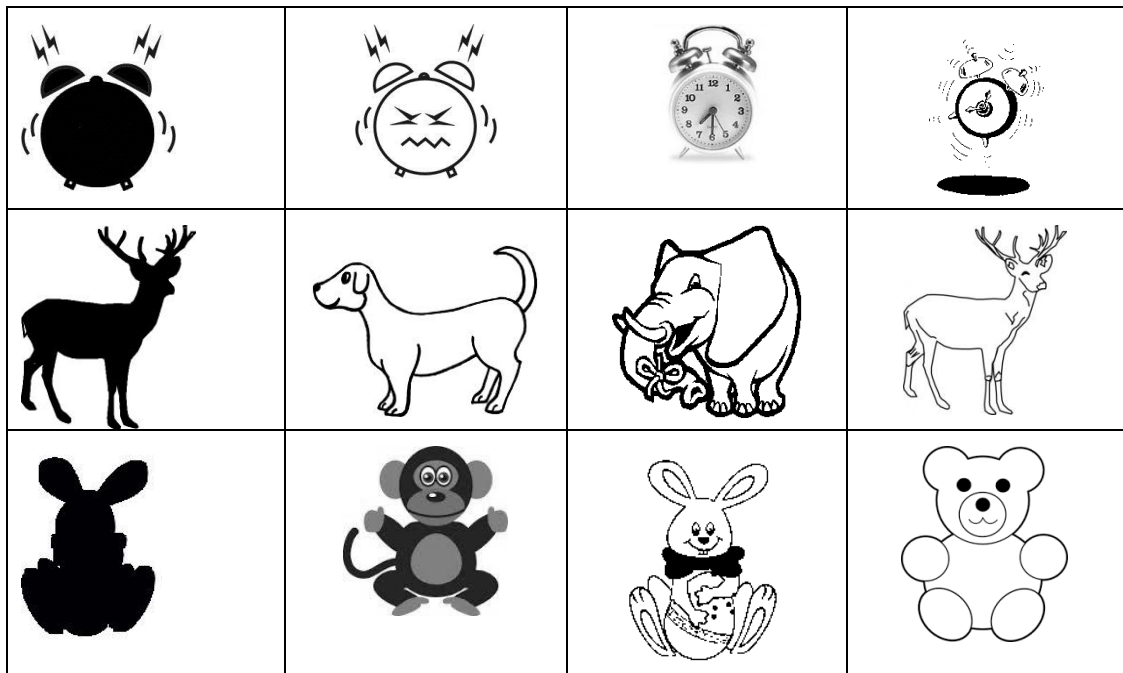
### Respond to Light

## 2. Aware of Forms

**Activity:** Ask the students to attend visually to identify two dimensional forms. Pictures of shapes in solid colours and outlines as well as pictures of objects with distinct shapes, after completion of identification ask name of the shape. Present shapes one at a time, in different order and require student to identify again and name it.



**Activity: Matching outline pictures**



**Aware of Forms**

**3. Aware of 3D objects**

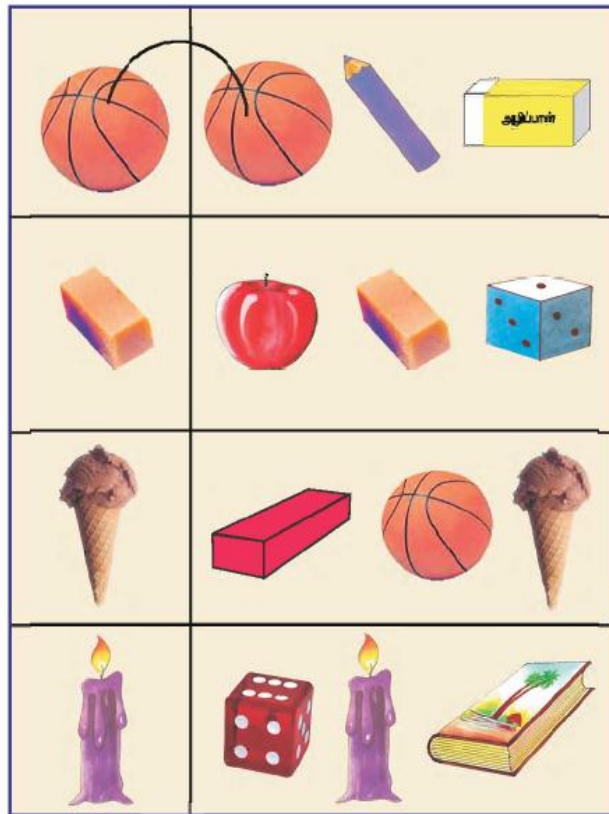
**Activity:** Choose a bright or shiny object like toys or balls about the size of our hand. Hold the object at the child's eye-level, stand one meter away from the child. Let the child look at the object. Ask him to reach for it and touch it. If the child doesn't show any response to the object (because he cannot see the object from a distance of one meter) the same procedure is followed by standing half a meter away from the child. If the object cannot be seen at less than half meter, try to attract the child's attention with sound or movement.



**3D Objects**

#### 4. Aware of 2D Pictures

Activity: Encourage the student to match 2D Pictures



#### Matching 2D Pictures

Activity : Ask the child to name the objects.



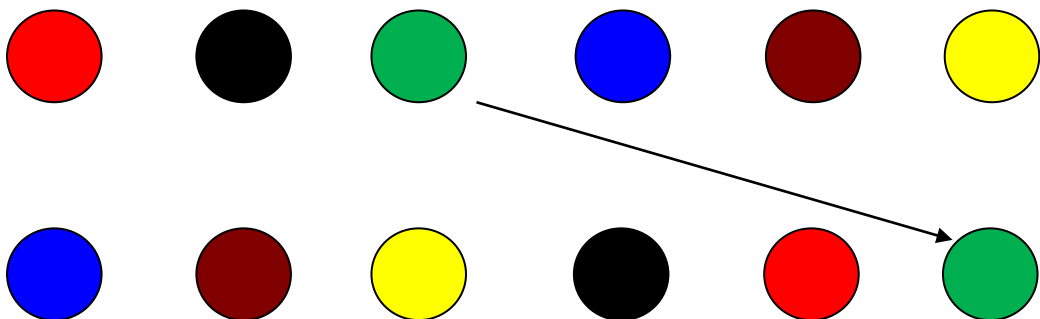
## 5. Aware of colours

**Activity 1** - ask the student to identify, discriminate and sort color buttons.



### Identifying, Naming, Discriminating and Sorting Colours

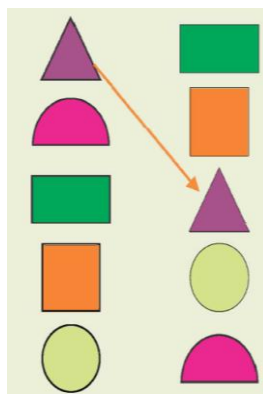
**Activity 2:** A worksheet paste with different colours. The students were asked to match colours pasted in the sheet. Start with primary colours (blue, green and red) if the child is able to match, provide secondary colours (green, purple, orange) and then provide depth colours (dark blue and light blue, bright green and pale green)



### Matching Colours

Encourage the student to match and sort geometry shapes by size and colour.

**Activity: Matching pictures by shape and colour**



## B. Visual Attention

Visual attention is the ability of the child to attend to an object.

Activities related to attention to big object, small object, at short and long distance.

**Activity 1:** Take a bright colour object a toy, Ball (different sizes) move the object in your hand and watch the student's eye to observe if the object has been noticed, practice many times till fixation can be maintained. Try to increase the period of fixation up to 3 seconds. When student attend to big object decrease the size of the object, and increase the distance and hold the object in different positions in front and to the sides. Encourage the child to reach out and touch the object. After the touch is accurate tell the student to pick up the objects

**Activity 2:** Present different sizes of balls: with a good contrast, balls with small size, ball with dull colours, and ask the child to close his eyes before presenting the object and ask the child to reach out with one hand and pick up the object and note the response and repeat the activity by placing the object in different positions.

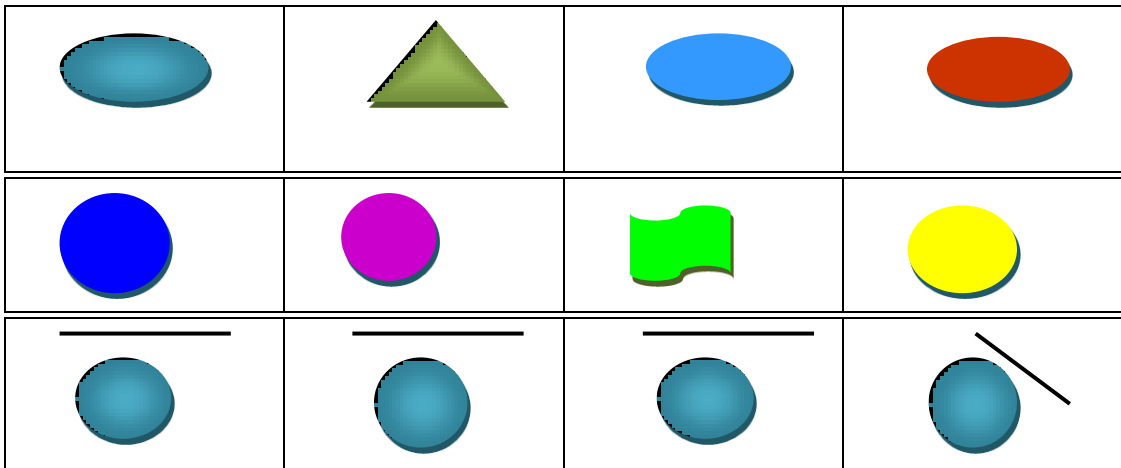


**Balls with different size and colour**

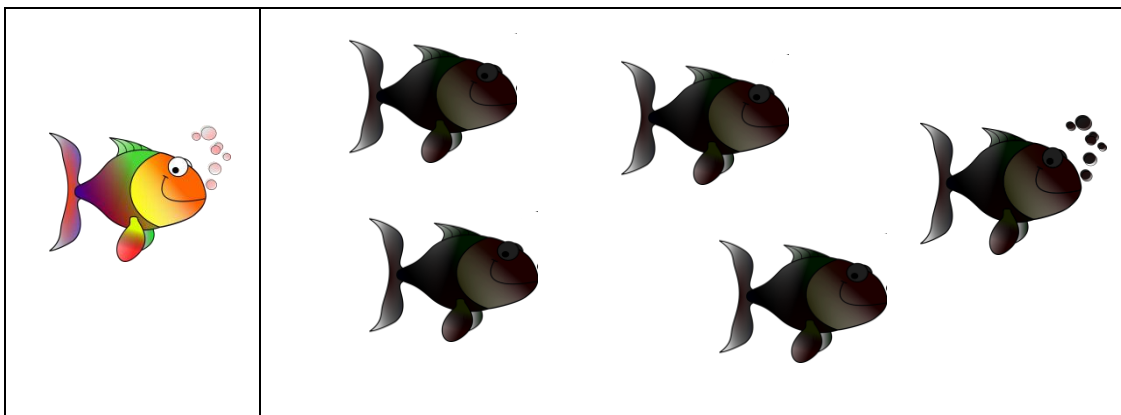
### Attention to pictures

Pictures of the same objects, but with different patterns and details are used. Ask the child to name each geometric shape (square, rectangle, and its different features - corners, points, straight lines, curved lines etc. to teach these provide different shapes in with black and white and with colors.

**Activity 1: Which is different in shape?**



**Activity: 2 Match the object to its correct shadow**



**Activity: 3 How many toy cars are here? Count a**



## C. Visual Fixation

**Fixation** or **visual fixation** is the maintaining of the visual gaze on a single location.

### 1. Fixation light at short and long distance

**Activity: 1** Use disco lamp in the dark room and ask the child to identify the colours in the light.

**Activity: 2** Roll ball with light and ask the child to identify where is the ball?



### 2. Fixation object at short distance

Activity : To change fixation between near and far objects.

Ask the child to hold a small object in one hand held below the eyes and in front of the chest. Stand opposite the child about 3 meters away. Hold bright object about the hand size of your hand. Ask the child to look at the object held in his hand and then to look at the object you are holding and then look back to the near object in his hand. Observe if gaze is shifted accurately from one object to another- near, distance, near.

If the object cannot be seen at 3 meters, move to 2 meters or even 1 meter. Repeat the activity and record the distance.

### 3. Fixation person at short distance and at long distance

Activity 1: To imitate body gestures or actions.

Ask the child to repeat the action. Move away about 5 meters and face the child. Wave one arm as a sign of greeting or use the usual greeting sign. Use large and obvious movements. If your action cannot be copied move closer until it can. Other actions moving one or both arms or one or both legs can be used. Record the distance that the child could see to copy the actions.

### Activity 2: Identify and copy the facial expressions



## D. Visual Focusing

- 1 Using both eyes to focus on object
- 2 Using both eyes to focus on person
- 3 Depth perception

**Activity 1:** Use two different objects about the size of your hand. Stand one meter away from the child. Hold the objects in outstretched hands at your sides and in front of the child at the eye level. Name the objects held in each hand. Let the child look at one object and then to other object in turn. Show one object and then the other. Repeat this at least once. Example look at the fruit and now look at the tumbler, back to fruit and to the tumbler.

**Activity 2:** There should be distinct horizontal eye and head movements from one object to the other. If the object cannot be seen from a distance of one meter move closer and record the distance at which the child could scan both the objects. Repeat the activity with vertical, horizontal and with circular movements.

## E. Visual Tracking

Tracking is the ability to maintain visual attention on an object as the object is moving. It is an ability to follow a moving object with eyes. It is an important skill for reading. The child should move eyes accurately in order to read across a line of print.

Activities for tracking big object, small object, tracking vertically, horizontally and circularly.

**Activity 1:** Bright ball can be rolled towards side of the child in a well lighted area. Stand beside the person and show him the object. Tell him to watch the object as you roll it and ask him to walk to it where it has stopped. You need to watch the child to see how far he was able to follow the object with his eyes. Note the distance he was able to track. Activities are provided to the child's central and peripheral (side) field of vision. When the child is able to track the ball, as next activity, a ball which is smaller in size or has less brightness can be used. When the child performance is not appropriate, training is given to achieve the activity. Repeat the activity using shorter or longer distance depending on the results and record the distance till which the child was able to track the object. For creating interest we can use the different types of wheel toys.

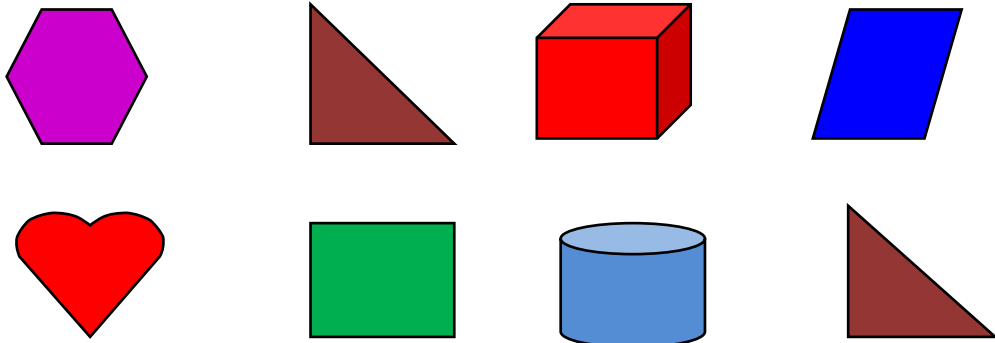


**Balls and Toys with Wheel**

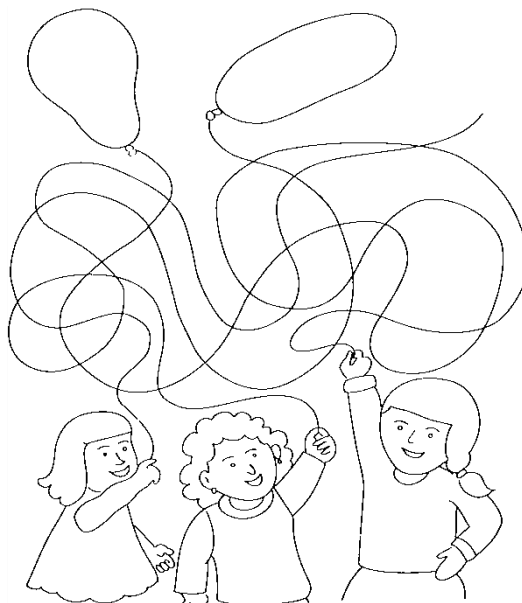
**Activity 2:** Use pen torch light. Ask the child to hold his head still while following the moving light or object. Present the light from right to left, up and down and in circles. Ask the child to follow it with his eyes without moving head. Increase the distances when the child progresses.

**Activity 3:** Take the balloon. Tie it on a string. Ask the child to follow the balloon with his eyes as it bounces up, and down and around on the string. Suspend or hang a ball from hook. Swing the ball. Ask the child to follow it as swings from side to side.

**Activity 4:** Identify the similar one.



**Activity 4:** Which child has lost the balloon?

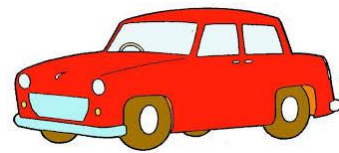


## F. Visual Scanning

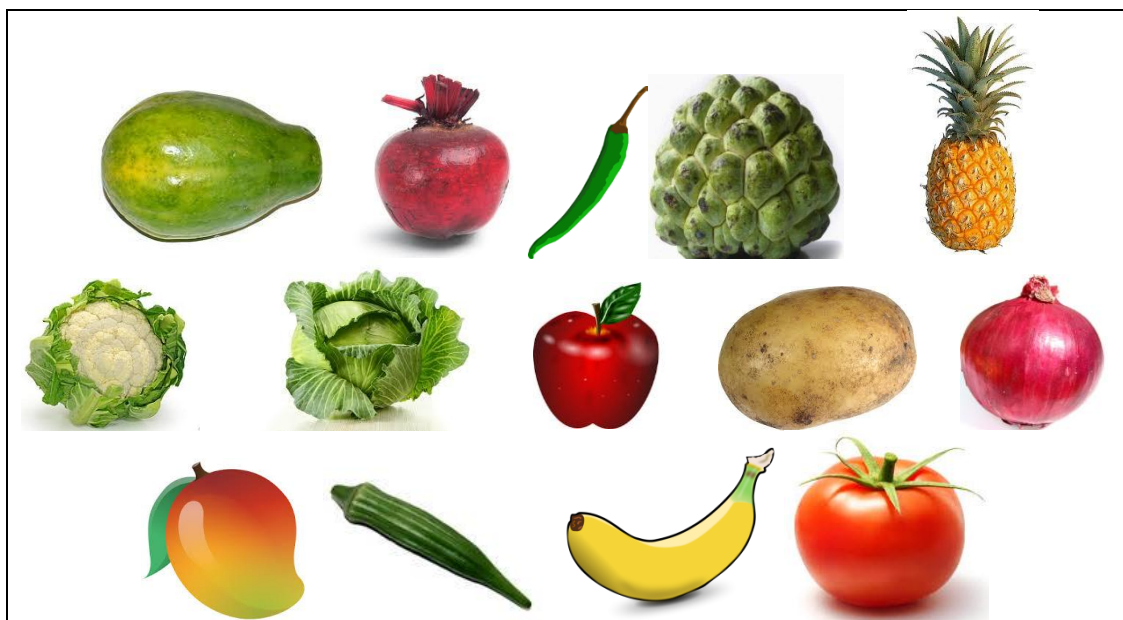
Scanning is searching for particular objects or things visually. Visually scan is to visually search in a systematic pattern such as looking on different planes (high, middle, low) to find objects or to avoid obstacles. Scanning requires the students to view an area in order to locate an item or information as opposed to maintaining visual contact while an object /person moves from one place to another.

Activities related to scanning big object, small object, Scanning to identify details in object, details in picture and scanning in a surface.

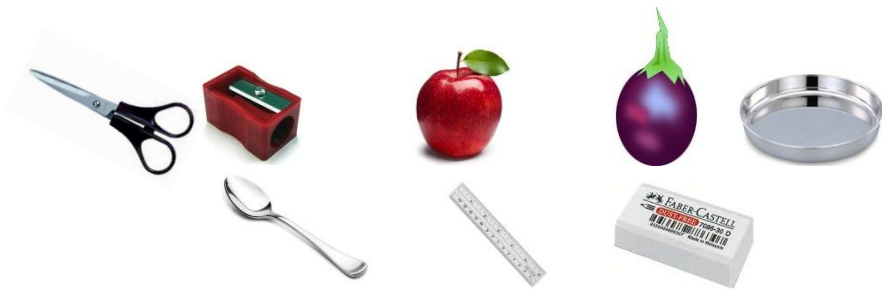
**Activity 1:** Place three objects like ball, a model car, a toy etc. and note whether the child searches in a line from one object to another. Place the object within the child's field of view. Practice with central and peripheral field.



**Activity 2: Naming Vegetables and Fruits**

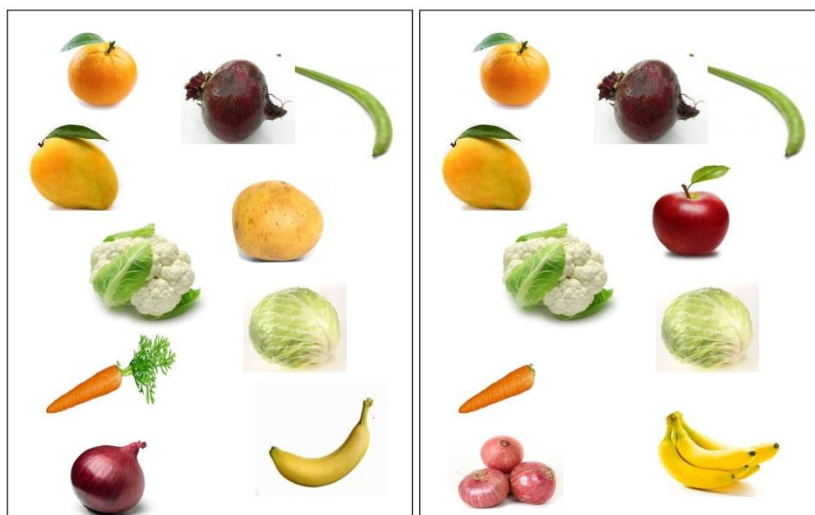


**Activity 3:** Place a row of objects on a table or in the ground in front of the child while they close the eyes. Tell them to open the eyes and start at the beginning of the row. They have to find an object from the row. Objects can then be scattered and the activity can be repeated. Eye movement should be from one object to another without going back to objects. Practice these activities to improve the speed of scanning. We can use materials like food items, materials used at school and home ex. Spoon, plate, vegetables, fruits, sharpener, scissor, eraser, scale etc.

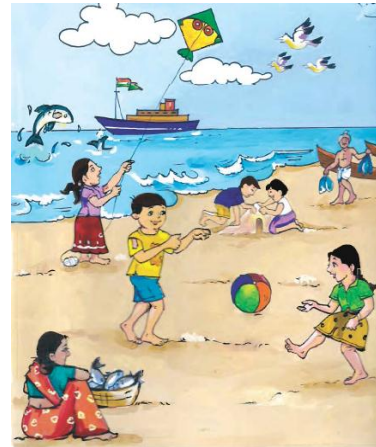


**Activity 4:** To find objects in a complicated picture. Ask what the picture shows. Record whether the picture could be matched and the named objects found. Note if some kinds of objects in the picture were easier to find than others.

**Find 5 differences in the two pictures and circle the same**



**Activity 5:** Finding and identification of people, objects and / or actions in familiar scenes. Describe what is happening in this picture. Identify people and objects



**Activity 6:** Arrange pictures in sequencing order



**Matching numbers and letters**

A	F	s	I	A
3	4	1	3	7
A	A	o	C	E

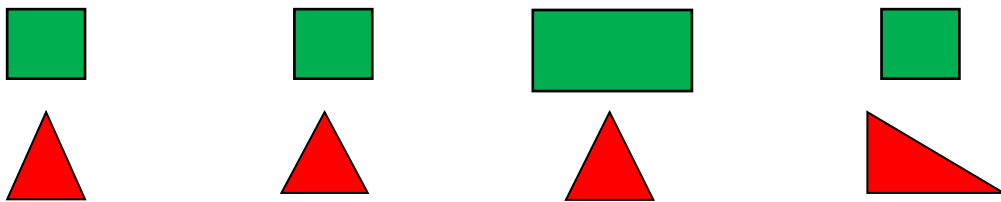
## G. Visual Discrimination

It is an ability to recognize the objects from an outline or general shape. Discriminating 3D Object, Shapes, 2 D Objects, colour and textures.

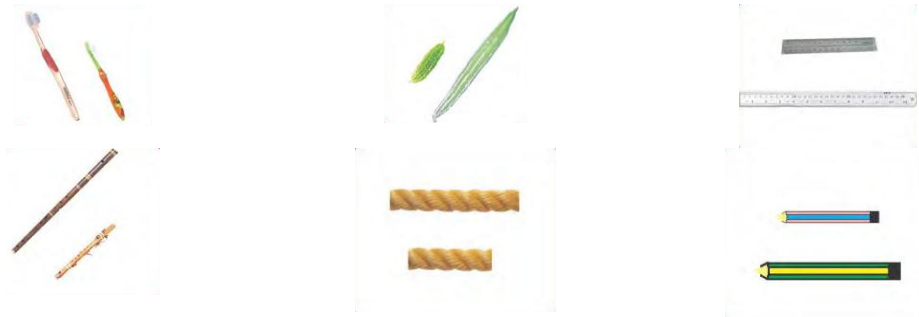
**Activity 1:** Place 3 to 4 objects in which 3 same object and one with different. Ask the child to identify the different one without touching the object (odd man out).



**Activity 2:** Present four shapes in which one will be different. Ask the child to identify the different one by seeing.



**Activity 3:** Matching and sorting the length of objects and matching objects by size.



**Activity 4:** Imitation of the expression of the face. Start by working close to the person (less than 1 meter) make expressions to be copied - lifting right hand, left hand, right leg, left leg, closing eyes, smiling etc. Imitate or describe the facial expressions you see in each of the pictures.

## H. Visual Figure-Ground Discrimination

Figure Ground is the perceptual skill that allows a student to pick out details without getting confused by the background or surrounding images.

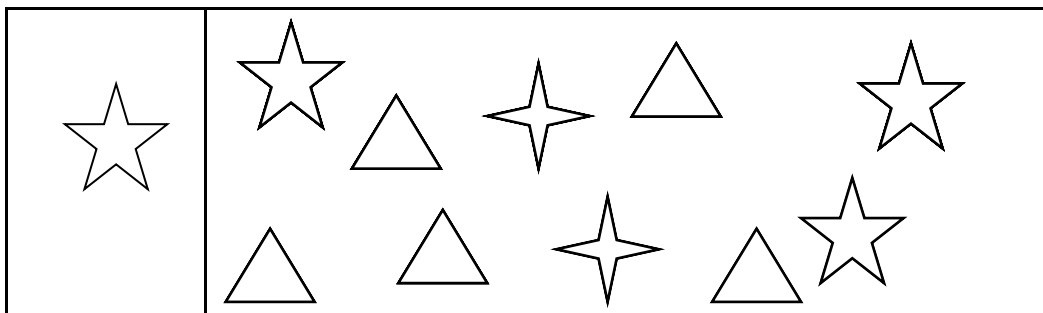
### 1. Identifying Particular object in a group

**Activity:** Place known objects about 5- 6 (using at home and school) and ask the child to identify particular object.



### 2. Identifying Particular Object in a Picture

Identify the stars which are similar to one in the small box



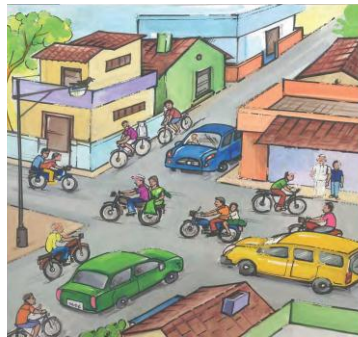
## I. Visual Memory

The ability to store and recalls past experiences and integrate those with new ones.

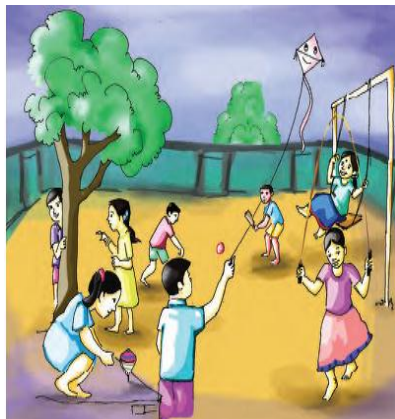
### Activity 1: Recalling number of items seen in 1 minute



### Activity 2: Recalling and naming the objects seen in 1 Minute



### Activity 3: Recalling the items in the pictures



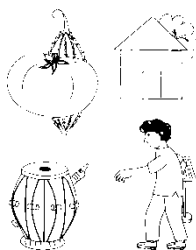
### Activity 4: Recalling the clues in the known environment

Ask the child to narrate the items seen while coming to school (clues and land marks)

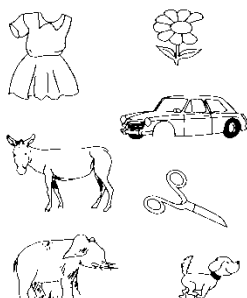
## J. Visual Closure

It is a ability of the child to perceive a total picture or object when only a part is visible/ available. Ask the child to identify the missing part in an object figure.

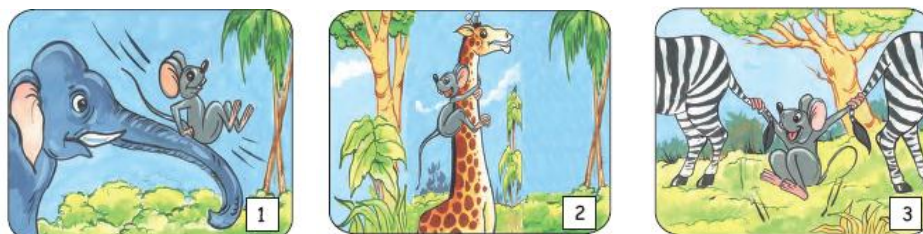
### Activity 1: Identify the hidden objects



### Activity 2: Identifying the missing details in Picture



### Activity 3: Identifying the whole object from the part



### Activity 4: Identifying the missing letters

*Example:*

Letters



F

Numbers



2

5

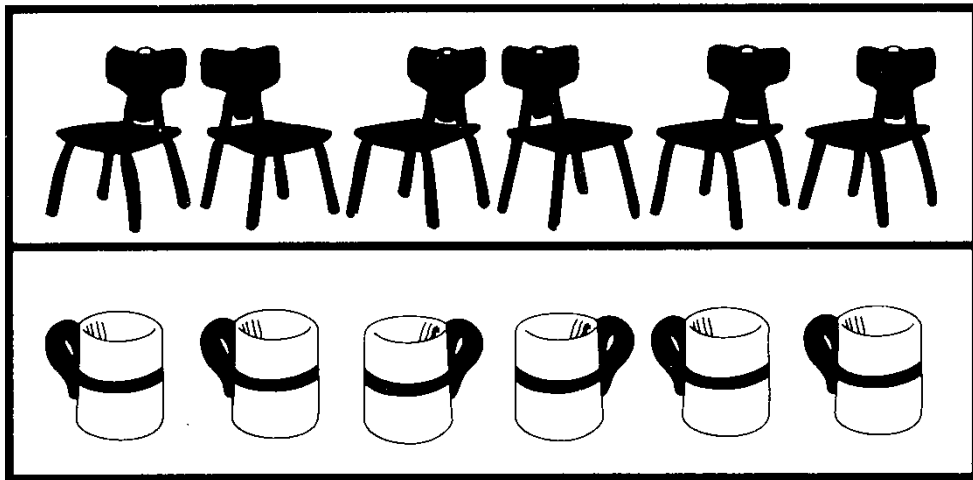
## K. Spatial Relation and Form Constancy

The same object when viewed from different angle may have a different appearance to children with low vision. The child needs practice in viewing an object in different angle.

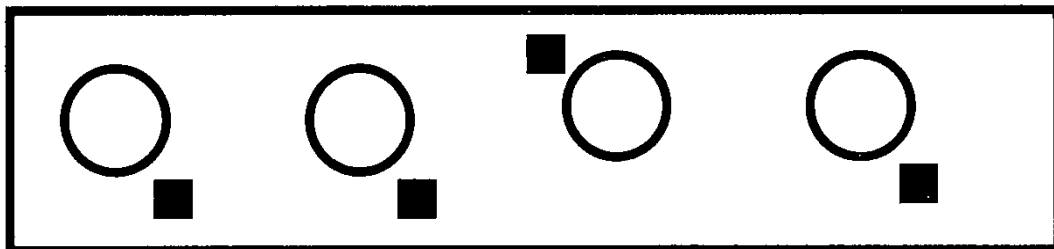
### Activity 1: Seeing object at different angles

Identifying objects at different positions two dimensional objects like bucket, watch, flower, spoon, pencils can be pasted in different angle and practice the skill.

Mark the pictures that point to the rights



Which one is different? Explain why?



### 2. Judging distance

By asking questions related to their daily works. What is the distance between home and school? Distance between main gate and classroom. Rolling a ball and ask the where is the ball? Ask him to judge the distance.

## L. Visual Motor Coordination

Visual motor skills are the skills to coordinate vision with the movements of the body. A student with low vision may need assistance in developing and facilitating gross motor movement, positioning to a destination or object and in performing fine motor activities. Visual motor skills help to coordinate eyes and feet as well as eyes and hands.

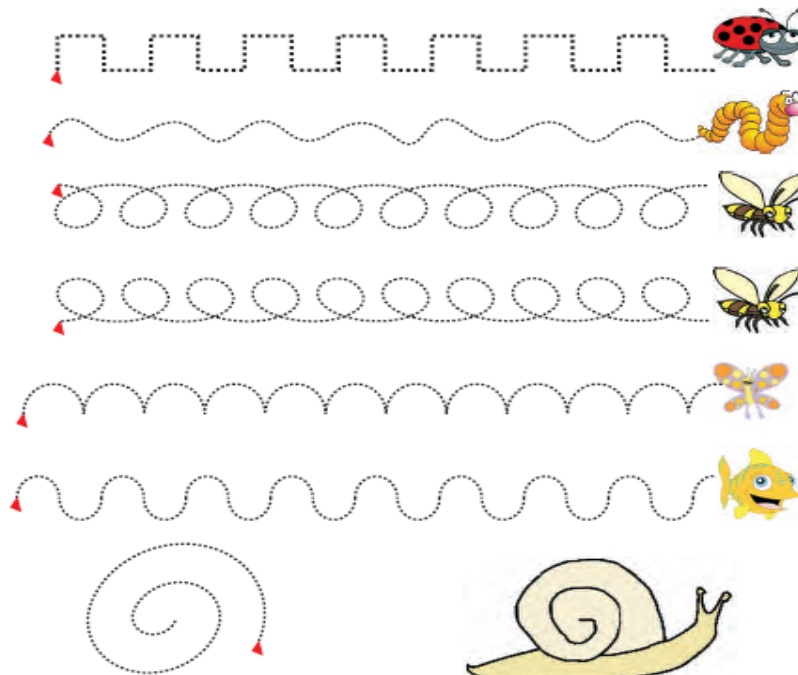
**Activity:** Moving in the Known environment, Moving in the unknown environment with assistance and slowly withdraw the assistance and let the child move by their own.

### Performing hand eye activities

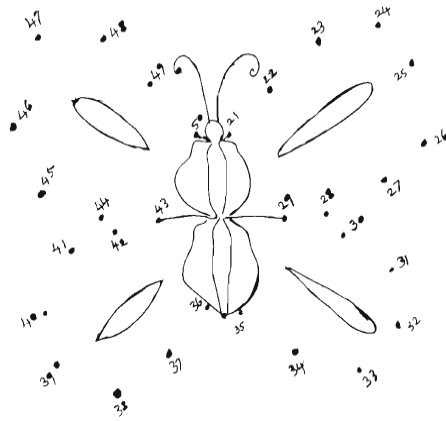
**Activities:** To develop spatial relationship and eye hand integration encourage the children to:

**Activity 1:** Ask the child to drop beads or stones, coins in the narrow opening box

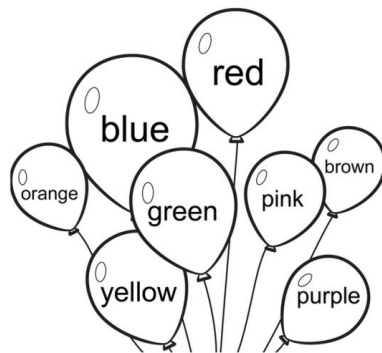
**Activity 2:** Ask the child to connect the dots to form straight or curved lines.



**Activity 3: Join the dots and identify the hidden picture**

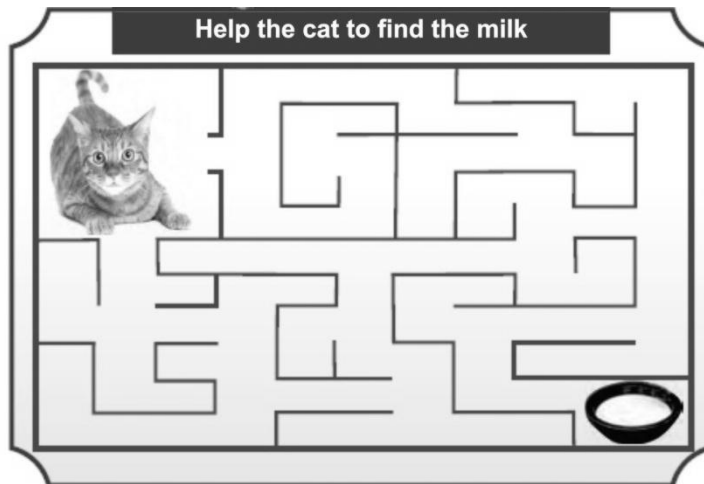


**Colouring**



Color the balloons!

**Activity 4: Tracing**



## **Eye foot coordination**

- Activities**
1. Ask the child to kick the ball
  2. Ask the child to roll the ball and move towards it
  3. Ask the child to walk up and down stairs
  4. Ask the child to go short routes by himself

## **Conclusion**

This package gives only examples. Children will need more practice with different shapes, pictures and/or words to master each skill. And select objects available easily and with cost effective and according to the environment which is suitable to the learner as well as the trainers. Our ultimate aim is to train the children with low vision to use their residual vision in a better way.

## **Reference:**

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- Vijayan, P & Victoria, G (2006) Education of Children with Low Vision, Kanishka Publishers, New Delhi.