



## **Module 9 (Sample)**

### **Culture 2 (Zoology, Botany & Science Experiments)**

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### Exercise 3 Nature Table

#### Material

- A table equipped with the following;
  - A few objects from the natural world, such as shells, bird feathers, sheep wool, nests, vase of flowers, leaves, a colored leaf in the fall, or a plant etc.
  - A magnifying glass.

#### Purpose

- To motivate the children to take interest in the natural world.
- To provide children with opportunities to carefully examine and explore natural objects.

#### Presentation

1. Invite a small group of children to work with you.
2. Select one object and introduce it to the children, providing some basic interesting information about the object.
3. Show the children how to carefully hold the objects and examine them with the naked eye and also with the magnifying glass for details.
4. Regularly change the objects on the nature table to keep the interest of the children alive.
5. Do not stack the table with too many objects at one time, rather keep just a few.
6. The table and the objects require cleaning, dusting and rearrangement of objects. Engaging the children in these tasks gives the child the feeling of not just looking at those objects but really caring for them.
7. Also encourage the children to bring their own objects from the natural world and display them on the table.

Age: 2.5 years onwards

### Exercise 4 Animals of the World

#### Material

- Three-dimensional models of animals.
- Puzzle Map of the continents.
- Labels of Animal Names.

#### Purposes

- To give the names and some simple information regarding animals around the

world.

- To associate animals with the geographical areas where they belong.

#### Presentation

Refer to Animals of the World in Geography section in Module 8.

Age: 3+ years



## Exercise 5

### Classified Cards of Living & Non Living

#### Material

- Pictures of living and non living objects coded on the back.
- A box with two compartments labelled "Living" and "Non-Living" for sorting (optional).

living



non-living



#### Purpose

To enable the children to distinguish between living and non-living things.

#### Presentation

1. Invite a group of children to work with you.
2. Introduce the term "living things" saying, "Things that take food, grow and reproduce are called living things".
3. Explore the classroom for things which can be called living and non living.
4. Introduce the cards of living and non-living things and show the children how to sort them into two categories.
5. Tell the children to check their work from the back of the cards at the end of the exercise.

**Age:** 3+ years

## Exercise 6

### Classified Cards of General Classification of Animals

#### Material

Sets of classified cards (with labels attached and with separate labels) for each of the general classes of animals, such as;

- Wild Animals
- Domestic Animals
- Birds
- Herbivores
- Carnivores



dog



horse

#### Purpose

- To teach names of the animals in various general classes of animals.
- To prepare children for later scientific classification of animals.

#### Presentation

Beginning with a more common class of animals, such as domestic animals, zoo animals or farm animals, present in the same ways as described in Module 7 (How to Use Classified Cards).

#### Points to Remember:

- Depending upon the interest of the children, do all possible activities, such as three period lesson, sorting, labeling and scribing for a long time in the classroom.
- While doing three period lesson, always provide a little information regarding special features of each animal which will help in later classification e.g. hair on the mammal, feathers on the bird, sharp teeth of the carnivore, etc.

**Age:** 2.5 years onwards

## Exercise 7

### Card Lesson Stories (Life Cycle of Animals)

#### Material

Sets of cards showing different phases of the life cycle of various animals with information printed on the back, such as;

- Life Cycle of a Frog (Pictures depicting Adult Frog, Eggs, Tadpole, Froglets)
- Life Cycle of a Hen (Pictures of an egg, a chick, hen, etc.)
- Life Cycle of a Butterfly

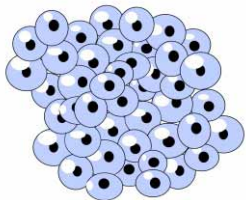
and so on.

#### Purpose

To introduce the idea that life occurs in a series of events, called a cycle.

#### Presentation

1. Invite a group of children to work with you.
2. Show the children where the material is placed, and ask a child to shift the material to the workplace.



eggs



young tadpoles



mature tadpoles



tadpole with legs

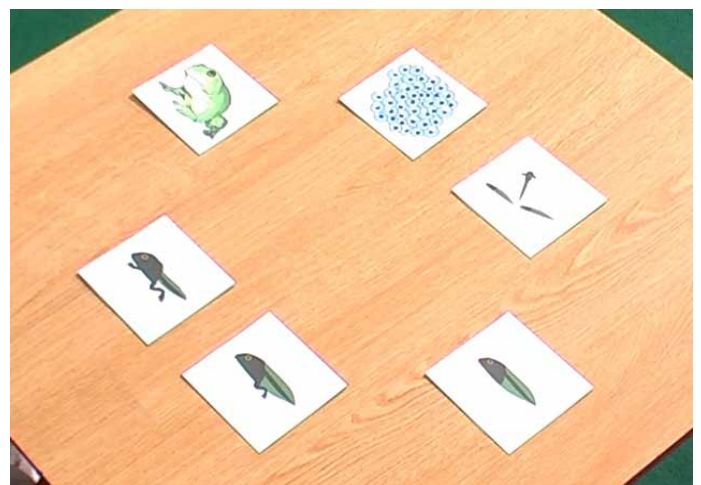


froglet

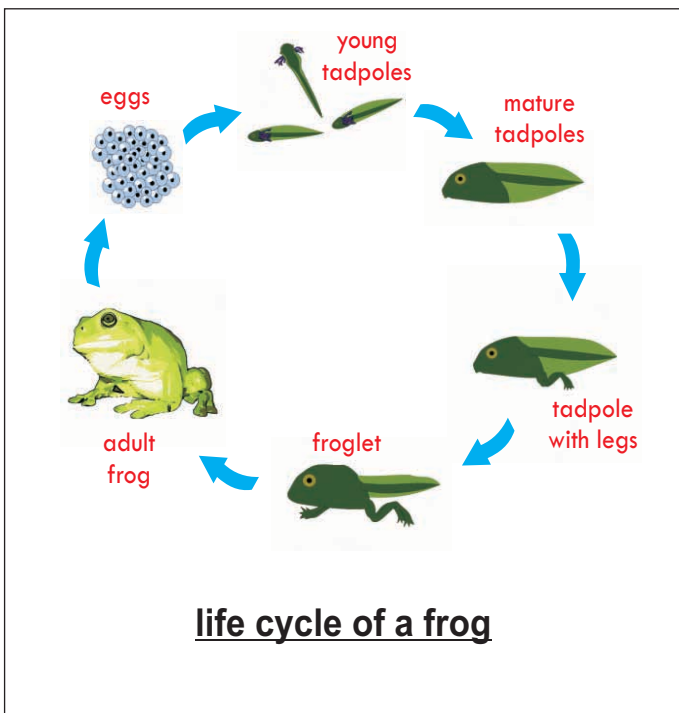
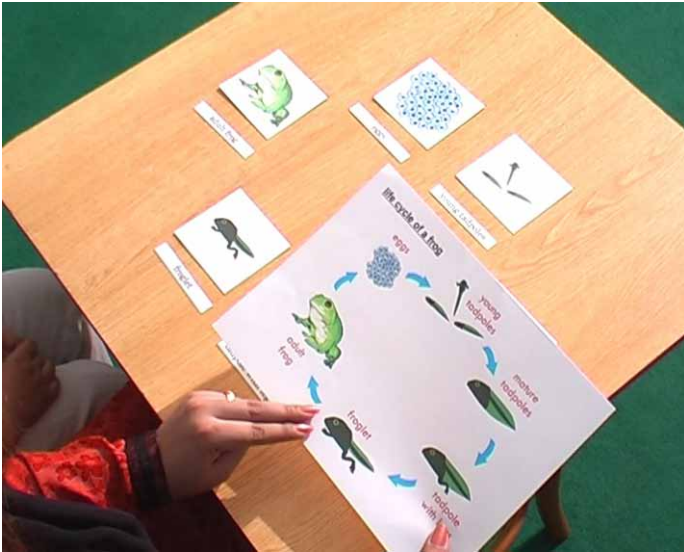


adult frog

3. Introduce the first card i.e. the card of the adult animal such as frog, and say, "This frog has not always been like this, it passed through several phases of its life cycle to become a frog." Place the card on the table towards the left.
4. Show the second card i.e. of eggs, and say, "Every frog is firstly like this egg laid by an adult frog in water. It cannot move or eat at this stage". Place the card next to the first card.
5. Then, show the third card and say, "The eggs then hatch into a "Tadpole". At this stage, it has a tail and the limbs are very small. It can swim in water to find its food."
6. Finally, show the last card and say, "Each tadpole grows into a Froglet. Froglets begin to look like frogs but they are smaller and still have a tail."
7. Pointing back at the first picture, say, "each froglet again grows into an adult frog which again lays eggs and the cycle continues."
8. Repeat the names of the phases i.e. adult frog, egg, tadpole, froglet and frog.
9. Complete the three period lesson.
10. Mix up the cards and invite the child to rearrange them.



11. Introduce labels when the child can read.
12. The child can check his work with the control chart.



### Extensions

- Encourage the children to draw different phases of the life cycles of animals.
- Eventually, introduce the term metamorphosis.
- Make a good selection of books on animals available in the classroom.

### Age

3+ years

## Exercise 8 Scientific Classification (Vertebrates and Invertebrates)

### Material

- A three dimensional model of vertebral column.
- Sets of pictures of vertebrate and invertebrate animals.

### Purpose

- To enable the children to distinguish between vertebrates and invertebrates.
- To give vocabulary to the children, and establish the importance of backbone.



### Presentation

1. Invite a small group of children to work with you.
2. Show them where the material is placed and shift it to the workplace with the help of the children.
3. Introduce the model of the vertebral column to the children, and begin a conversation about it. Allow the children to feel the model carefully, and pass on the following information.

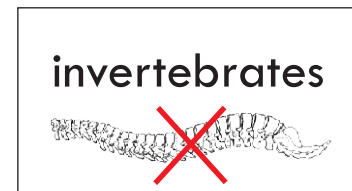
- *Vertebral column is also called the backbone.*
- *It is made up of many little bones called vertebrae.*
- *Animals which have a backbone are called vertebrates.*
- *Because the backbone is made up of several small bones, it allows the animals to be flexible and bend.*
- *The human beings, (you) also have a backbone. Therefore we are also vertebrates. (Show the children where their backbone is and have them feel it. Ask the children to bend in different ways and feel their backbone).*
- *A cord from the brain runs through these vertebrae, which is called the spinal cord. Brain sends instructions to different parts of the body through the spinal cord.*

- Show the pictures of some vertebrate animals, and tell them that these are all vertebrates because they all have a backbone.
- Ask if the children are already familiar with their names. Name the animals that the children do not know through three period lesson.



- If the children are interested introduce the term "invertebrates", else continue at another time as described below.
- Ask the children if they remember what are vertebrates.
- On getting the answer say, "yes, animals which have a backbone are called vertebrates, but the animals without a backbone are called invertebrates".
- Introduce the pictures of invertebrates in the same way as the pictures of vertebrates.
- Mix up the pictures of both the sets. Place a picture representing vertebrates towards top of the table. Then, take a picture representing invertebrates and place next to the first picture.
- Ask the children to look at all the pictures and place the vertebrate under the first picture and the invertebrates under the second picture.
- When finished the children can check their work by the coding on the back.

**Age**  
4+ years



fish



grass hoper



frog



earthworm



snake



fly



lizard



butterfly



bird



starfish

## Exercise 9

### Scientific Classification (5 Classes of Vertebrates)

#### Material

- Classified cards of the five classes of vertebrates i.e.
  - Mammals (*preferably choose pictures in which the mammals are nursing their young ones*)
  - Birds
  - Fish
  - Reptiles
  - Amphibians

with name of the animal, class and some information (or colour code for children who cannot read) printed on the back.

- A box with five colour coded compartments to separately place the sets of cards.

#### Presentation

- Invite a small group of children to work with you.
- Show them the place where the cards are kept. Select the cards of mammals first and shift to the work place.
- Ask the children if they remember what are vertebrates.
- Tell the children that you are going to tell them about a special kind of vertebrates.
- Show the pictures of the animals and help children notice the special features, such as hair on the bodies and young ones nursing.
- Ask if the children are already familiar with their names. Name the animals that the children do not know through three period lesson.
- Say, "All these vertebrates have hair on their bodies, and they feed their young-ones (children) with their milk. We have a special name for them... we call them **mammals**."
- Start a general discussion about each animal and encourage children to share their experiences about a particular animal.
- During discussion, encourage children to use the classification name "mammal" and frequently refer to the general characteristics.
- Introduce the classified cards of other classes, i.e. Birds, Fish, Reptiles, Amphibians, in the same way at other times.

#### Extension

Arrange for children to have live experiences with animals and note their special characteristics.

#### Age

4+ years

### mammals



lion



cow



kangaroo



seal



elephant



rat



sheep



human

## Exercise 10 Animals Sorting Game

### Material

Same as in the previous exercise

### Purpose

To enable children to sort the vertebrates into their zoological classification.

### Presentation

Mix pictures of two different classes of vertebrates, e.g. mammals and reptiles, and then ask the children to sort out the pictures into two groups. Initially, ask the children to sort cards of two classes, then three, four and finally of all the five. The children may sort and place the pictures in appropriate boxes or arrange in columns. The children can check their work by looking at the color coding on the back of the cards.

### Age

4+ years



## Exercise 11 Animals Jigsaw Puzzles

### Material

5 jigsaw puzzles of typical animals of each class of vertebral animals, including;

- Horse (mammal)
- Bird
- Fish
- Frog (amphibian)
- Tortoise (reptile)



### Purposes

- To introduce names of the parts of typical animals of each class of vertebrates and give special information about the parts of animals.
- To enable the child to compare the morphology of animals with that of humans.

### Presentation

**Note:** Complete work cycle is to be observed.

- Invite a child to work with you.
- Take the child to the cabinet of animal puzzles



and introduce the name saying, "This is the cabinet of animal puzzles and these are the jigsaw animal puzzles".

3. Show the child how to remove a puzzle from the cabinet and hold it properly.
4. Select a puzzle e.g. frog, and ask the child to carry it to the mat.
5. Introduce the puzzle map saying, "This is the jigsaw puzzle of the frog. On this puzzle we can see the frog's parts of body ."
6. Draw the child's attention to the puzzle pieces, and tell him that the material is very fragile and should be handled gently with care.
7. Show the child the correct way of holding the insets by the knob and remove them carefully.
8. Then, take out an inset and place it on the mat.
9. Ask the child to remove the remaining pieces and place them on the mat.
10. After all pieces have been placed on the mat, hold an inset by the knob and show how to position it at its place above the puzzle carefully before replacing it.
11. Then, invite the child to replace the remaining pieces.
12. Return the puzzle to the cabinet after the child has worked with it.
13. Encourage the child to take any puzzle on his own and work with it whenever he likes.



**Age**  
4+ years

## Exercise 12

### Naming the Parts of the Body on an Animal Puzzle



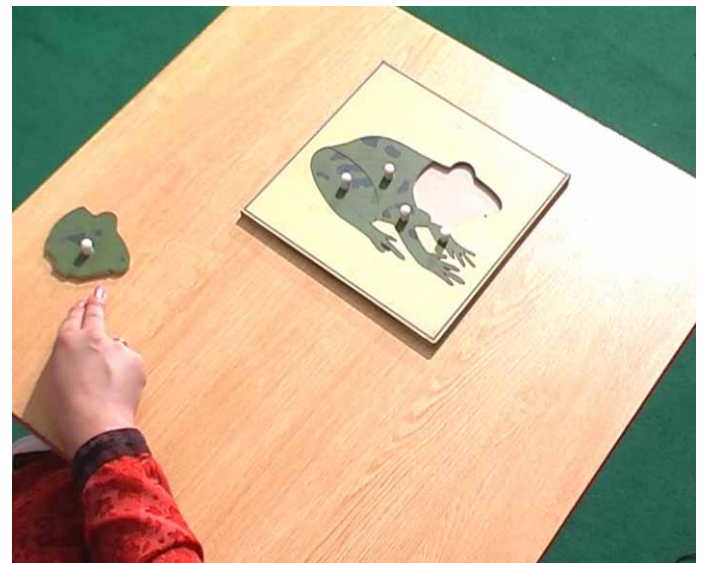
#### Material

- Animal puzzles as in the previous exercise.
- Labels of names of different parts of the puzzle.

#### Presentation

**Note:** Complete work cycle is to be observed.

1. Invite a child, who has worked with animal puzzles, and have him lay out a mat and shift a puzzle map to the mat e.g. that of a frog.
2. Take out any three parts and complete the three-period lesson.





3. While introducing different parts, also give a brief description about each part. For example;
  - These are **hind limbs**. The hind limbs are far big and stronger than the forelimbs. They help the frog leap forward and cover great distances.
  - This is the **face**. The face has two big eyes, the nose and the mouth. Inside the mouth, the frog has a big sticky tongue. It throws its tongue out to catch insects.
  - This is the **trunk or body**. The trunk has important organs like stomach, heart, liver, etc.
4. According to the interest of the child, continue on the same or following days until the child becomes well familiar with the name of each part of body.
5. When the child is reading, introduce the labels and ask him to label different parts.

**Age**  
4+ years

### Exercise 13

#### Drawing the Parts of Body of an Animal

#### Material

- Animal puzzles
- Paper sheets
- Pencils
- Pencil crayons or coloured paper
- Clipboards

#### Purpose

To further the child's familiarity with the shapes of the different parts of typical animals of various vertebral classes.

#### Presentation

**Note:** Complete work cycle is to be observed.

1. Have the children bring the material to the workplace.
2. Ask a child to select any part of the animal's body and give it to you.
3. Place it on the paper sheet and show the child how to trace around the puzzle inset with the pencil.
4. Remove the inset to show the part to the child, and color it with the same colour as in the puzzle.
5. Take another inset and place along with the first drawing in the same way as it was in the puzzle and trace.
6. Continue in the same way till all the parts are drawn and the complete animal is on paper.
7. Encourage the child to do the exercise himself.

**Note:** An alternative to coloring is to paste colored paper or fabrics.

### Exercise 14

#### Nomenclature Cards of the Parts of Body of an Animal

#### Material

Nomenclature material of showing the parts of the body of typical animals of each vertebrate class, including;

- 1) Cards with labels attached
- 2) Cards with separate labels
- 3) Picture Cards and Descriptions Cards
- 4) Booklet of pictures and descriptions.
- 5) Description Cards (with blanks) and Labels to fill in the blanks
- 6) Definition strips to be used with item 5 as the control cards.

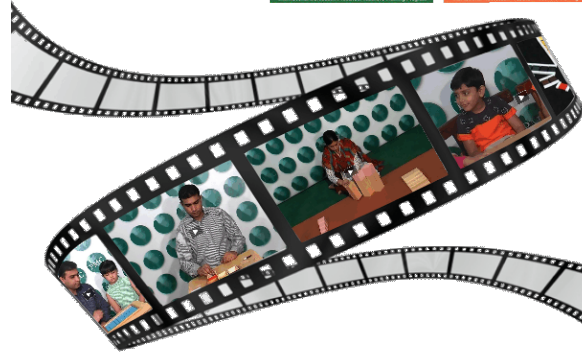
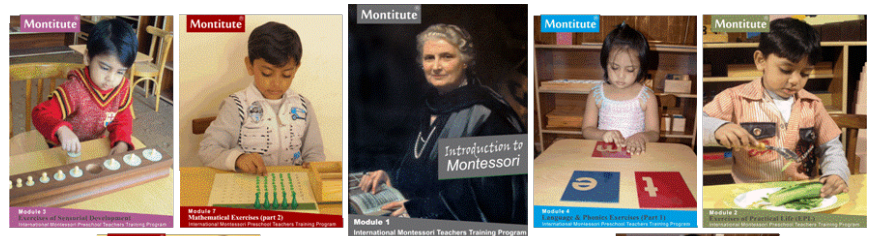
#### Purposes

- To introduce names of the parts of typical animals of each class of vertebrates.
- To give special information about the parts of animals.

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