SAVING OUR PLANET:

MAKING A DIFFERENCE

GRADES 3-5

Foreword

We know that Mother Earth is the most beautiful planet in our Solar System and today it is in deep crisis.

Together, we need to save the ecosystem and bring back the balance. We need to save and conserve the myriad species of plants and animals, restore forests, reclaim oceans and other habitats to ensure a clean and green planet.

The ravages of urbanization, industrialization, pollution and deforestation have resulted in global warming and climate change and this needs to be reversed and the time is now.

So, what can we do? How do we begin? We can create awareness about caring for the environment and practice small steps from an early age. Young learners can be sensitized to conserve and save water, save electricity, help to plant trees, eat vegetables and greens and practice health and fitness activities. Simple things like reusing paper, walking to school, re-using waste water for plants and turning off the taps while brushing one's teeth or washing dishes can go a long way in conserving the environment and saving the planet.

These series of activities on 'Saving Our Planets: Baby Steps' is a milestone in an attempt to make a difference. Each one of us can help save our planet and create a better world.

I hope that the teachers handling Classes 3 - 5 will find this document useful and would be able to use the activities provided in a meaningful way. Any suggestions for further improvement are always welcome.

Content


Grade 3

Activity 1

Impact of Oil Spill on Water Bodies

Theme: Water

Background:

Normally there is no oil in water bodies. When oil rushes into a body of water due to accidents, it makes the water bodies unsuitable and dangerous for birds and other aquatic animals. This experiment illustrates the impact of oil spill on birds. Students will also learn about the function of bird feathers.

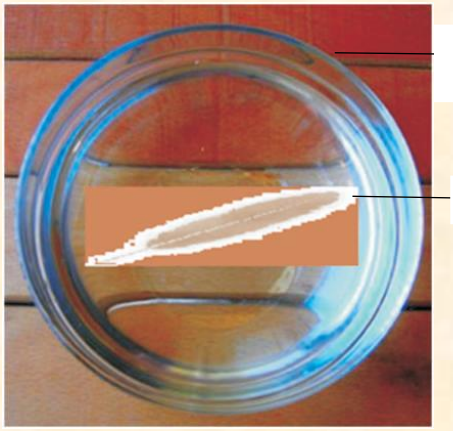
Time: 40 minutes

Learning Outcome: Students infer that oil pollution in water damages aquatic life.

Materials:

- ✓ A few feathers
- ✓ Hair oil
- ✓ A trough/pan
- ✓ Some water
- ✓ Some liquid detergent (optional)
- ✓ A few tooth brushes
- ✓ A hair dryer (optional)

Methodology:



- Fill half of the trough/pan with tap water.
- Examine a bird feather. Record your observations in Sr. No. 1 of observation table.
- Drop the feather into a pan of clean water. Does it float? Shake it off. Allow it to dry completely. Drop the feather into a pan of clean water once again. Does it still float?
- Record your observations in Sr. No. 2 and Sr. No. 3 of observation table.
- Pour some hair oil in the water in the trough/pan.
- Gently swirl the water around in the trough/pan to simulate waves. Record your observations.
- Drop a bird feather into the pan of water with oil. What happens to it? Record observations in Sr. No. 4 of the observation table.
- Try to clean the oil off the feather. Some students may use liquid detergent; others may just scrub with a toothbrush.
- Allow the feather to dry naturally, or dry it with a hair dryer. Does it still fluff up?
- Record the observations in Sr. No. 5 of the observation table.
- Drop the cleaned, dried feather into a pan of water. Does it still float as it did before?
- Record the observations in Sr. No. 6 of the observation table.

Note:

- The teacher points out to the students that natural oils on the feather keeps them from becoming waterlogged. Let students observe how it can fluff out after it has dried.
- When the feathers of birds are weighed down by oil, they cannot fly. It not only means that they cannot seek shelter during a storm, or fly to find a better source of food, but they are also in danger of attack from predators. Oil can also enter the animals' intestinal tract when they are in oil polluted water.
- The oil added will float on top of the water in the trough. Similarly, oil spilled in the ocean floats on top of the ocean water.

Observations:

S. No.	Feather/in oil/in water	Observations	Remarks
1.	Examine a bird feather		
2.	A feather dipped in water		Natural oils on the feather prevents them from becoming waterlogged
3.	A feather dried after being dipped in water		
4.	A feather dipped in oil		
5.	A feather dried after being dipped in oil		
6.	Does the cleaned, dried feather dropped into a pan of contaminated water with oil, float when put back in the tap water?		

Result:

- Healthy feathers, those not contaminated by oil, float on water.
- The feather dipped in water contaminated with oil, will not float on water so easily; rather the feather will be droopy and weighed down by oil.
- When the feathers of birds are weighed down by oil, birds cannot fly.

Conclusion: Oil pollution in water is dangerous to aquatic life.

Handout 1

Answer the following questions:

Q1. When you dropped the feather into a pan of clean water, you observed that it floats. What is found in the structure of the feather that helps it to float on water?

_____

_____

_____

Q2. Why does the bird feather, not get water logged when put in water?

_____

_____

_____

Q3. What happens to the bird feather when put in water that is contaminated by oil?

_____

_____

_____

Q4. What would happen to aquatic birds when they visit the water body which is contaminated by oil? Write about the dangers the birds would face due to oil pollution.

_____

_____

_____

Did you know?

About 97% of water present on Earth's surface is sea water.

Activity 2

Water is Essential for Life

Theme: Water

Background:

Water is a basic necessity, to maintain a healthy body and a good balance within tissues of a living body. A large part of the living body is made up of water, and it must constantly be replenished, as it is used continuously in the process of life.

Learning Outcome: Students deduce that water is essential for life.

(3.3.1), (5.2.1)

Materials:

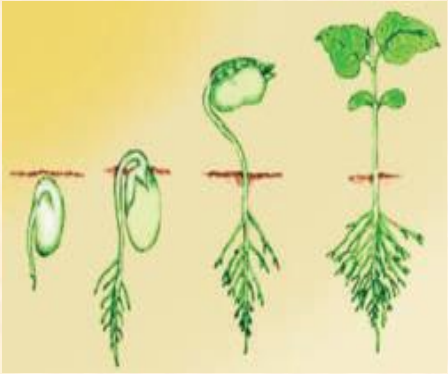
- ✓ A slide
- ✓ Some tap water
- ✓ A beaker
- ✓ A few bean seeds
- ✓ A piece of thread

Time:

- ❖ Setting up of the experiment-20 minutes
- ❖ Process of germination-approximately 2 days

Methodology:

- Fill the beaker half with tap water and keep it at room temperature.
- Tie a bean seed half way down on the slide and one seed towards top of the slide.
- Place the slide in the half filled beaker in such a way that one bean seed is above the water level and the other bean seed is half dipped in water.
- Leave the beaker with the seed slide, for a day or two at room temperature and observe.



Observations:

The seed placed in the centre which is half dipped in water starts germinating, a small root emerges out of the seed, while the seed placed above water does not germinate.

Result: Water was available to the germinated seed placed in the centre of the slide while, water was not available to the seed placed at the top of the slide which did not germinate.

Conclusion: Water is essential for life processes.

Handout 2

Answer the following questions:

Q1. Do both the bean seeds given to you for experiment have life?

_____

_____

Q2. Why did the seed which was half dipped in water germinate?

_____

_____

Q3. What happens when a potted plant is not watered for a few days?

_____

_____

Q4. Why can't we survive without water?

_____

_____

_____

Activity 3

Air is Essential for Life

Theme: Air

Background: Air envelops the earth and makes life possible. Air is a mixture of gases. The major components of air are O_2, CO_2 , N_2, water vapour etc. They are important for life. Air around our earth is called atmosphere. The majority of the living forms require oxygen for respiration which is responsible for releasing energy for all life processes.

Learning Outcome: Students infer that air is essential for life.

Materials:

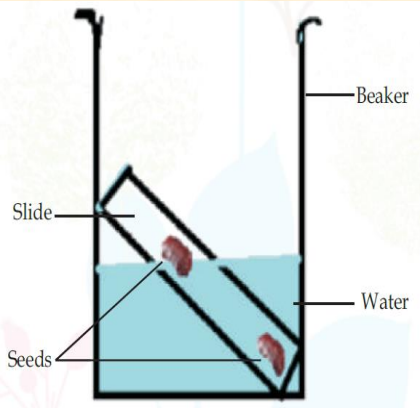
- ✓ A slide
- ✓ Some water
- ✓ A beaker
- ✓ A few bean seeds
- ✓ A piece of thread

Time:

- ❖ Setting up of the experiment-20 minutes
- ❖ Process of germination-approximately 2 days

Methodology:

- Fill half the beaker with tap water and keep it at room temperature.
- Tie a bean seed half way down on the slide and one seed towards the one end of the slide.
- Place the slide in the half filled beaker in such a manner that one bean seed is below water level and the other bean seed in centre is half dipped in water.
- Leave the set up for a day or two at room temperature and observe.



Observations:

The seed placed half dipped in water start germinating while the one placed under water does not germinate.

Result: Air is available to the seed placed in the middle of the slide, while air is not available to seed placed under water.

Conclusion: Air is essential for life processes and hence for life.

Handout 3

Q.1 You know that both the bean seeds given to you have life. Why did the seed which was half dipped in water germinate while the seed kept fully immersed in water did not germinate?

_____

_____

_____

Q.2 Compare the life processes of seeds in this and the previous experiment with reference to:

i) Seeds kept at the extreme end of the slides

_____

_____

ii) Seeds kept in the centre of the slides

_____

_____

Q.3 Why can't we survive without air?

_____

_____

_____

Air is essential for organisms to live

Activity 4

Watching Bird Behaviour

Theme: Biodiversity

Background: Across the country, people use bird feeders to attract interesting species of birds. While the birds are eating, it is possible to observe many aspects of their lives. These include what they eat, what other animals they associate with, what they are scared of, what they look like and much more. Many other animals also like to eat seeds; so don't be surprised to find species from other animal groups eating away bird seeds as well. Students will be using different kinds of bird feeds to observe the abundance and diversity of animals in the school yard.

Time:

One/two periods, every working day for a month.

Learning Outcomes: Students

- Develop a sense of observation and understand bird behaviour.
- Learn to be kind to animals, birds etc.

(3.1.2), (3.9.1), (4.1.2)

Materials:

- ✓ types of bird seeds such as millet, peanuts, cracked corn
- ✓ bird feeders/a few containers to store the bird feed
- ✓ earthen pots to put fresh water for birds to drink
- ✓ worksheets
- ✓ observation table (Chart)

Methodology:

- Students may be given two types of bird feed in two different containers/bird feeders.
- The class is divided into four groups.
- Under the supervision of the teacher, a group of students (group-1) may be assigned the task to feed the birds (only one type of feed) at two different times continuously for a few days at the same location and note the observations in the observation table.
- Activity to be repeated by another group (group-2) of students at another location in the school with the same feed. Students write their observations in the observation table.
- A third group to feed birds at different locations with a mixed feed and write their observations.
- The fourth group to place bird feed at another location in the school with a different feed. Students write their observations in the observation table.

- Students change the duration of the feed kept and write observations separately.
- After a month, when the exercise is over, the teacher first discusses the outcomes with the students and puts all the three observation tables on the class display board. A worksheet is provided to each student to analyse and write his/her inference.

Note: Allow students to continue to feed for at least a month. After the study, students continue to feed birds once a day as gesture of caring for the animals/birds.

Observation Table:

Day	Time	Names of bird varieties	Approximate no. of birds in each category	Time	Names of bird varieties	Approximate no. of birds in each category
1	8.00 am			11.00 am		
2	8.00 am			11.00 am		
3	8.00 am			11.00 am		
4	8.00 am			11.00 am		
.....	8.00 am			11.00 am		
24	8.00 am			11.00 am		

Result: Students are able to internalize the various behaviour patterns they have observed while feeding the birds at different timings, different locations or using different feed.

Safety First: Precautions

Areas where the birds visit and the water pots must be cleaned regularly.

Conclusion: Students develop awareness about bird behaviour and may become interested in bird watching.

Handout 4

Answer the questions on the basis of your observations:

Q.1 Does the diversity of visiting birds change when the feed is same but the time of the day is different?

_____

_____

_____

Q.2 Does the time of day affect the diversity of birds visiting the same place using the same feed?

_____

_____

_____

Q.3 Does the location of the feed affect the abundance of birds?

_____

_____

_____

Q.4 Is the diversity of birds at a particular feed, affected by its location?

_____

_____

_____

Q.5 Does mixed bird seed attract more variety of birds than a single variety?

_____

_____

Q.6 Between two types of seed, which bird seed attracts a higher number of birds?

_____

Q.7 If a bird feed is left in one place for a long time, does it attract a greater number/ varieties of birds than a feed that has been in place for only a short time?

_____

_____

_____

Diversity in birds

Activity 5

Living and Non-Living Things

Theme: Things Around Us

Background: Up to class II, students have learnt about their immediate environment, their needs and caring for the environment.

In order to be familiar with his/her environment, the student requires to understand the components of the environment. An attempt is made here to help students understand more about themselves as living and intuitively learn to differentiate between living and non-living things.

Time: 35 minutes

Learning Outcomes: Students identify living and non-living things as different components of his/her immediate environment.

(3.1.1), (3.1.2), (3.4.1), (4.1.1), (4.1.2), (5.1.1)

Materials:

- ✓ An observation sheet

Methodology:

- The teacher should brief the students that all the components around them either belong to living or non-living category.
- This could be an indoor or outdoor activity.
- Divide the class into groups of 5-6 students.
- Each group could be given a different location.
- Inspire students to look for different kinds of living and non-living components around them i.e. on the ground, in the sky and in a puddle and list them in the table given.
- In a group of five, each student makes one entry of living and one non-living thing which is in some way useful to the living things.

Observations: Students will have a broad idea that all the components of the environment around them are either living or non-living. This will help them to identify or discriminate between living and non-living in any other given situation and understand the importance of nonliving things in the life of living beings.

S. No.	Living	Non-Living
1.		
2.		
3.		
4.		
5.		

Result: Students will know that there are living beings and many other things, which are unlike them, are also living.

Conclusion: The environment consists of living and non-living things.

Handout 5

(At the end, the teacher could give the following exercise to help students understand the inter-dependence of living organisms on non-living components of the environment.)

1. Fish can live without water. Yes/No

2. We can live without air. Yes/No

3. We depend on plants for our food. Yes/No

4. Plants can grow if there is no soil, air or water. Yes/No

Activity 6

A Child's Need

Theme: Environment and Child's need

Background: So far, students have known that they need food. Children must be made aware of the fact that three meals they take during a day includes different food items.

Time: 35 minutes

Learning Outcomes: Students identify different food items they eat.

(3.3.1), (4.3.1), (5.2.1)

Materials:

- ✓ Cereals and pulses in bottles as stored in the kitchen.
- ✓ Some common fruits and vegetables.

Methodology:

- Divide the class in the group of 5-6 students each.
- The teacher displays the cereals, pulses, fruits and vegetables to the students and draws an observation table (as sample given) on the blackboard to note down suggestions given by the students.
- One student from each group is asked to give names of the food item he/she ate at breakfast. Similarly other students will repeat the same for lunch and dinner respectively.
- Other students will help in identifying the sources of food for the items mentioned under breakfast, lunch, dinner (teacher can assist them).

Complete the table

Meal	Food Item	Source (raw food item)	Pictures
Breakfast	1. A Slice of bread	Wheat	
	2.		
	3.		

Note: Students may be provided a similar observation chart and asked to fill in on their own at home.

Lunch	1.		
	2.		
	3.		
	4.		
	5.		
Dinner	1.		
	2.		
	3.		
	4.		
	5.		

Observations: The teacher may brief children to classify sources of food in different categories i.e cereals, pulses, fruits and vegetables.

S.No.	Food items	Category
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Result: The students will be aware of the raw food items from which the different food items are prepared.

Conclusion: Students develop awareness that different food items are a part of different meals.

Note: Parents may be asked to repeat these facts to their children, while eating at home.

Handout 6

Q1. Name five cooked food items which you like to eat and five food items that you like to eat raw.

_____

_____

_____

Q2. Name the raw food materials used to prepare the following food items:

Chapati: _____

_____

Omelette: _____

_____

Ice-cream: _____

_____

Activity 7

Functions and Festivals

Theme: Functions and Festivals

Background: It is important that students know more about the local festivals and also understand their environmental significance. This shall help the students to relate their environment with each festival.

Time: 35 minutes

Learning Outcomes:

- Understand the importance of festivals and their environmental significance.
- Develop feelings of love for the country and the countrymen.
- Appreciate the beauty in our culture in spite of the diversities.
  (3.4.2), (3.9.1), (5.3.2), (5.4.2)

Materials: As per celebration

Methodology:

- On the occasion of Baisakhi, Onam, Pongal, Bihu, Vasant Panchmi, Holi, Diwali, Milad-un- Nabi, Christmas or any other local festival which is related to environment either through the season or with regard to crop harvesting, the students may be asked to perform musical and cultural activities which reflect the significance of the festival during assembly. Some other items could also be included like:
  - A talk on the festival, which also explains the role of environment.
  - Significance of the festival and its history.

- Encourage each student to describe her/his own experience of the celebrations of the festivals in the family. This would help the students know about the different ways of celebration of different festivals, even the ones that are not celebrated by their families.

- Try to talk about the festivals mentioned in the lesson 'Our Festivals' on the occasion of each festival. Let the children share what they, as individuals, did on such occasions such as – what they ate and what type of dresses they wear and what occasion was being celebrated etc.

Baisakhi: Time-mid April

Areas: Punjab, Haryana, and other parts of India.

Purpose of Celebration: Celebrating a good harvest and expressing gratitude towards nature.

Result: Children will be able to relate the importance of different seasons, content of different festivals and all the other activities related to life.

Conclusion: Celebrating festivals together will help students develop social skills.

Handout 7

Q1. Do you enjoy participating in festivals at school and at home?

_____

_____

Q2. Do you like to celebrate these festivals alone or in company of your friends' relatives?

_____

_____

Q3. Name a festival you like to celebrate in school and the one at home.

_____

_____

Activity 8

Water for Life

Theme: Water

Background: Our environment is full of the various interactions between the living and non-living things around us. The plants and animals represent the living world of our environment. We take a glass of water when we feel thirsty. We have seen animals drinking water from the water bodies and we provide water to our pets. At home, we regularly water the plants potted by us. This water is provided to us by the environment, the sources being the various water bodies, rain, ground water etc.

Time: 3 days (depending on the month in which this activity is performed).

Learning Outcomes: Students conclude that presence of water in the environment is a must for the plants as well because plants also need water regularly for their daily life activities.
(3.3.1), (3.9.1), (5.2.2)

Materials:

2 plates per group
4 beakers/glasses
Some cotton wool
Some water
Four types of seeds – green moong, gram, black gram, red kidney beans

Methodology:

Divide the class into four groups. Ask them:

- To soak seeds in water kept in beaker/glasses overnight.
- Next morning decant the water.
- Soak cotton wool in water.
- Place the seeds on soaked cotton wool kept in a plate 1.

Each group takes a few saplings from the soaked cotton wool in plate 1 and place them in separate plate (plate 2). Do not water this plate for two days and compare the growth of seedlings on this plate with that of seedlings placed in the watered plate.

Observations: Students record their observations on a daily basis in an observation table.

S.No.	No. of days	Observation Plate 1	Observation Plate 2
1.	1st		
2.	2nd		
3.	3rd		
4.	4th		

Result: After two days – the saplings grow in plates with water and dry up in plates without water.

Conclusion: Like human beings and animals, plants too need water for their life. It is the same water needed by all living organisms. Our environment provides water for all living beings.

Note: The teacher may develop this into an ongoing activity for six months by asking one set of plants to be grown for six months. Children would water them everyday and would appreciate that like us plants consume water regularly. Like animals and humans, plants too would require water as long as they are living and for them to be able to live. This water is provided to them by the environment.

Handout 8

Q1. Fill in the blanks:

Birds around us take water from _____ and _____.

Q2. Where do big trees get water from?

_____

_____

Q3. Why do gardeners and farmers water the plants?

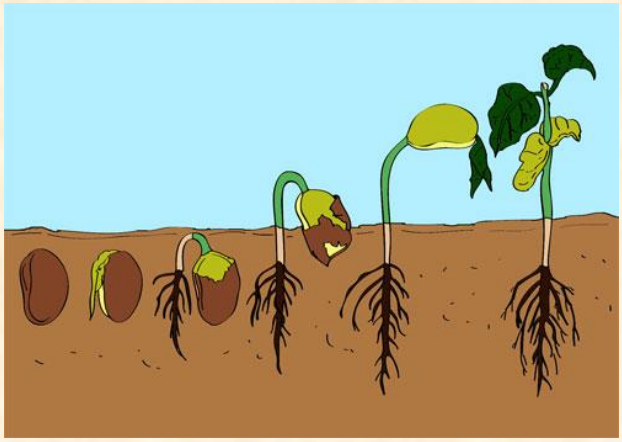
_____

_____

Q4. Who provides water to the plants in the forests?

_____

_____



Activity 9

Life Around Us

Theme: Living beings and their interrelationship

Background: We live in a house to protect ourselves from rain, sun, cold, dangerous and other environmental factors. We cook, eat, live, sleep, study and do so many other essential things in our homes. Our homes are also the homes of many other organisms.

Learning Outcomes: The students:

- Correlate the existence of plants, animals and human beings.
- Create awareness that we share the same environment. (5.2.2)

Time: 80 minutes

Mode:
The whole class is divided into three groups to study the three different situations.

Materials:

Three Situations Required:
- ✓ Classroom
- ✓ Home
- ✓ School

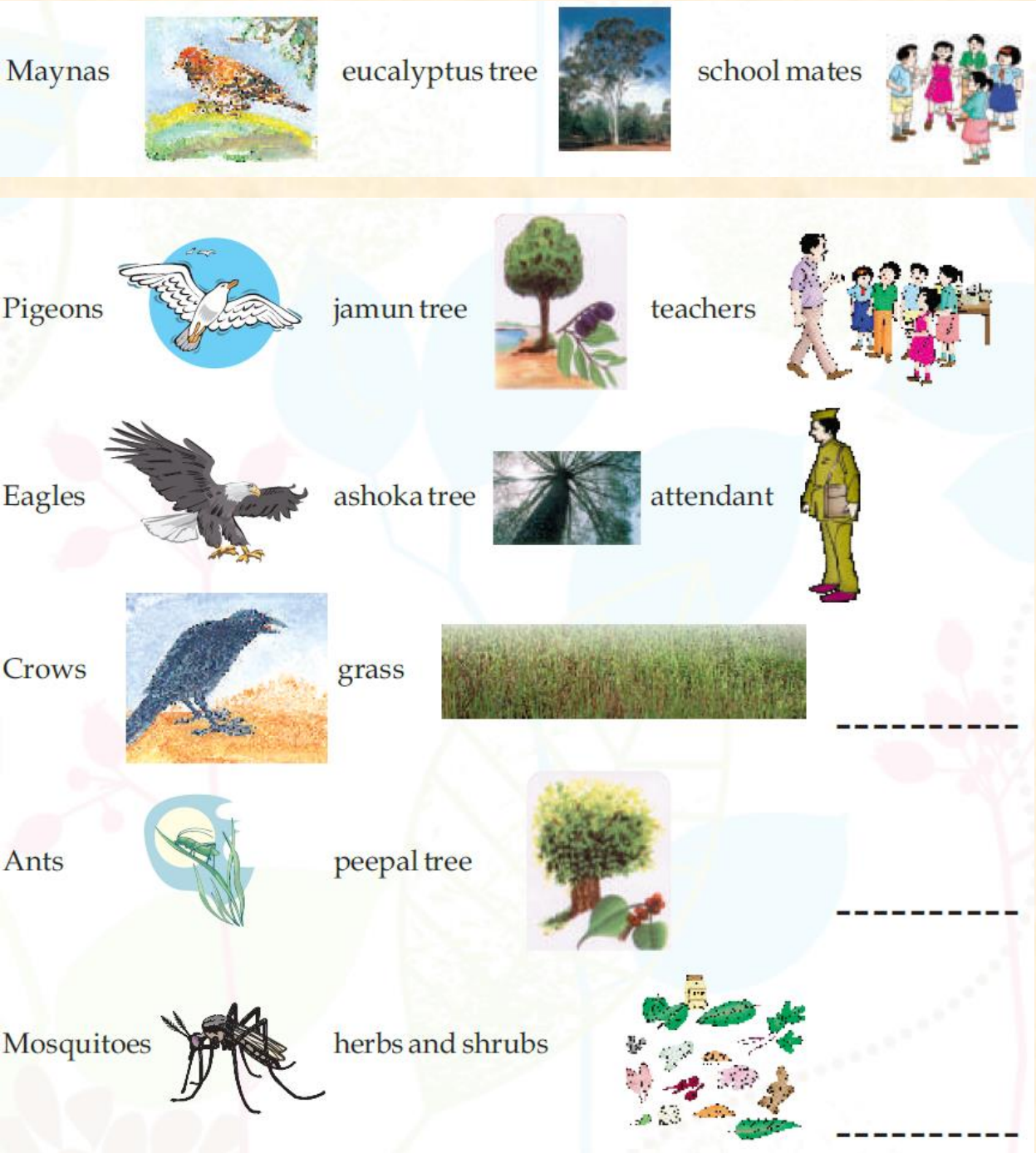
Methodology:

STEP I - Form three different groups and allot each group a separate situation, like school, home, forest, farm etc.

STEP II - The students of the three groups list the birds/insects, plants and human beings present in their respective situations, as given below and fill the blanks .

e.g. SCHOOL SITUATIONS:

Sparrows  neem tree  class mates 



STEP III - Now the teacher should relate the three i.e. plants, birds/insects and human beings in each situation and ask: Why do plants and human beings appear together in these situations?

Observation table: Situations

S.No.	Birds/Insects	Plant	Humans
1.			
2.			
3.			
4.			
5.			
6.			

Result: Human beings, animals and plants are found to be dependent on each other for several reasons.

Conclusion: All living beings are dependent on each other. Therefore, they share common surroundings called – ENVIRONMENT.

Handout 9

Q1. Why do rats live in your home?

_____

_____

Q2. What is the colour of a cockroach?

_____

_____

Q3. Name any two plants growing near your home /school.

_____

_____

Q4. Where do you find cockroaches in your home?

_____

_____

Q5. What does a lizard feed on?

_____

_____

Q6. Why do these plants and animals share the common environment with us?

_____

_____

_____

Activity 10

Clothes Tambola

Theme: Clothing

Background: The students will be acquainted with the types of clothes worn in different seasons, various uniforms and the role of nature in providing us the raw materials for these clothes.

Learning Outcomes: To provide an opportunity to the students to classify clothes according to seasons and find out the source of raw material for these clothes.

Time: 35 minutes

Mode: To be done by each individual learner.

Materials:

- ✓ Tambola slips (to be prepared by the teacher)
- ✓ Pencils

Methodology:

- A discussion on different seasons and their characteristics would precede the activity. Also, students would be made to feel cotton, woolen, silk and nylon fabrics before the activity. They would also be shown flashcards of police, nurse and army uniforms.

- Each learner would be given a Tambola slip and the teachers name a season, a person doing a special job. The student with the corresponding dress/uniform in his/her slip would strike it off with the pencil. The student with all the entries struck of in his/her slip first would be the winner.

Explanatory Statement:

This game would strengthen the concept of different types of clothes worn during different seasons, and our dependence on nature for these clothes. Thus, students would realize our dependence on the environment.

Observations:

Tambola Slip:

Season:			
S.No.	**Clothing item**	**Worn in the season**	**Made from**
1.			
2.			
3.			
4.			
5.			

Result: The students would be able to classify clothes according to seasons and identify different kinds of uniforms.

Conclusion: Students will be able to select appropriate clothes as per seasons.

Handout 10

The reason for wearing cotton clothes during summer and woolen clothes during winter, and the source of cotton and wool would be discussed. Thus, it would be concluded that seasons influence the types of clothes we wear and we obtain the raw material for most types of clothes from nature.

Q1. Which clothes do you prefer to wear in summer? Why?

_____

_____

Q2. Which clothes you prefer in winter? Why?

_____

_____

Q3. Name some raw materials used for your summer and winter clothes.

_____

_____

Q4. Find out from where raw materials for clothes come from.

_____

_____

_____


Grade 4

Activity 1

Knowing about Our Soil

Theme: Soil

Background: Growth of the plant is dependent on the soil. Getting to know the soil is half way to determining how well our plants will grow. Soil can be clay, sand or loam. Different soil types differ in their water holding capacity and nutrients availability. This knowledge can help us work with the soil.

Time: 35 minutes

Learning Outcomes:

Students identify the soil types.

Materials:

- ✓ Some soil, such as, sand, clay and loam (with any coarse organic matter and stony material removed)
- ✓ Some water

Methodology:

- Take a sample of each soil type, sufficient to fit comfortably into the palm of one hand.
- Moisten the soil with water, a little at a time. Add water until the soil reaches a consistency where adding more water would cause the soil to stick to the hands.
- Feel the texture.
- Roll the soil into a ball.
- Form a roll and bend it to make a ring.

Observations:

Write your observations:

S. No.	Soil Type	How it feels to touch	Forms a coherent ball Yes/No	Can be rolled Yes/No
1.	Sand			
2.	Clay			
3.	Loam			

Note: Teacher inform students that:

- ✓ **Sandy soils** are easy to dig up, but water and nutrients flow through them easily, meaning they dry out quickly and will have to be replenished regularly.
- ✓ **Clay soils** are very sticky to dig up, but retain water better and therefore keep their valuable nutrients far longer.
- ✓ **Loamy soils** (are not difficult to dig up as they contain sand and also retain just the optimum water to help crop grow and retain nutrients.)

Result:

- ❖ **Sandy**: Feels gritty. Does not form a coherent ball. It cannot be rolled.
- ❖ **Clay**: Feels much finer than sand. The soil can be rolled and can make a ring. Forms a coherent ball very easily.
- ❖ **Loamy:** Feels somewhat greasy to touch and there is no obvious feel of sandiness or 'silkiness'. Can be rolled but breaks up as you try to make a cylindrical tube like structure. Forms a coherent ball with careful handling.

Conclusion: Soils differ in their texture and coherence.

Handout 1

Q.1 Is sandy soil good for the growth of all types of plants? Give reasons.

_____

_____

_____

Q.2 Is clay soil good for the growth of all types of plants? Give reasons.

_____

_____

_____

Q.3 Which type of soil is good for the growth of most types of plants? Give reasons.

_____

_____

_____

Save plants, save soil and save the planet

Activity 2

The Best out of Waste

Theme: Waste management

Background: Many resources can be recycled and reused, e.g., paper, plastic bottles etc. While recycling is doing away with a product and making it into a new product, re-use is simply changing the way we use it and prolonging the life of a particular item.

Some of the advantages of reusing waste products are to:

- Keep them out of the waste stream.
- Cause less air and water pollution.
- Save on purchases and disposal costs.
- Create an affordable supply of goods.

Learning Outcomes: Students develop awareness about converting many waste items/ products into a usable resource.

(4.9.2)

Materials:

- ✓ Safe and reusable waste materials

Time: 80 minutes

Methodology:

- Encourage students to use reusable containers to have their snacks, drinks and lunches - so that no plastic or paper has to be thrown away.
- Place a scrap paper box in a convenient location. Collect partly used paper in it. Strongly encourage everyone to use both sides of a piece/sheet of paper.
- This is a project for the class if the school does not already have a recycling programme. If your school already recycles, find out if the class can improve the current system.
- Many of the items bound for the garbage actually make wonderful craft materials. Boxes, string, and plastic bottles are just some of the items, students can use to make great projects. Collect plastic bottles and give them to the science laboratory attendant. Many experiments in this unit are carried out using, plastic or used empty bottles.
- Method of making a photo frame:

  1. Cut some old newspaper into four equal parts.

  2. Roll the newspaper sheets into fine thin rolls with the help of knitting needles; make many such rolls.

3. Cut piece of used cardboard to the small note book size/any small size to use on your table as a photo frame (Decide the space needed to place the photo, depending on the photo size and draw the outline on the cardboard).

4. Cut the rolls to this size and paste on all four sides with some glue.

5. Keep pasting rolls one after the other, after measuring and cutting to the size needed from the inside to outside.

6. Make the border as broad as they wish. (5-6 roll width is enough).

7. Paste a piece of card board behind the photo frame, as to be used as a support to help the frame stand.

- Use used invitation cards to make fresh smaller cards as tags to be used as book markers.
- Carry bags can be reused in the shops or as bin bags around the house. Paper bags also make useful wrapping paper.
- By sticking labels over the address on used envelopes, they can be reused. Alternatively, old envelopes can be used as scrap paper to make notes on.
- Students give ideas to use waste materials in creative ways.
- Create a corner in the class where these items can be displayed.

Observations: Students develop habit of reusing waste materials. They will not consider waste as 'waste', but resources for their creativity.	**Result: Waste material is reused.**

Conclusion: Waste generation is reduced.

Safety First:

Precautions

Teacher must frequently instruct and guide students not to collect any waste which can cause injury while handling them.

Products Made Out of Waste

Handout 2

Q.1 When you pass by or visit a village, you see a lot of raw materials like hay, cow dung, waste generated from farm products etc. which are stocked. Why, do you think, people stock such waste materials in villages?

_____

_____

_____

Q.2 Who is more environment friendly in connection with waste generation – a person from a village or a person from an urban area? Why?

_____

_____

_____

Q. 3 Do you think technology has promoted waste generation? Give reasons.

_____

_____

_____

_____

Q.4 How can we take advantage of technology and also save our planet from waste generation? Suggest some ways.

_____

_____

_____

_____

Q.5 You may find that people living in villages use available resources to the optimum. Give reasons for their practice.

_____

_____

_____

_____

_____

_____

_____

_____

Did you know?

Waste if not properly managed or disposed, can cause serious health problems.

Activity 3

Water Conservation: Water-Efficient Toilets

Theme: Water

Background: Water is a very important constituent of life. Without water there is no life on earth. We use water in so many ways in our daily life. Water covers ¾ part of the world. It means water occupy a larger portion compared to land. But very little is available for the use of living beings. This usable water is becoming more polluted because of our unmindful ways. So, it is necessary to conserve water. Water conservation means reducing the usage of water and recycling of waste water for different purposes.

Learning Outcomes: Students develop awareness about the importance of conservation of water.

(4.3.1), (5.8.2)

Materials:

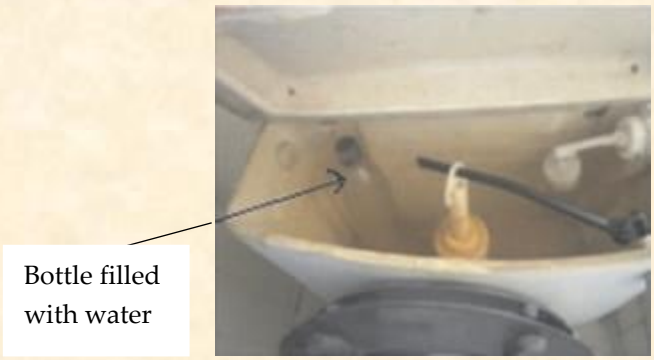
- ✓ One litre empty plastic water bottles
- ✓ Some sand or water

Time: 80 minutes

Methodology:

The teacher explains the following:

- Toilets which are more than fifteen years old means they probably use about 18 or more liters of water per flush.
- Retrofitting:- It means **adapting** or **replacing** an older water-using fixture or appliance with one of the many water-efficient devices.
- A simple product like a one litre empty water bottle (waste) can be used in the following manner:-
    - ❖ Fill the water bottle with either water or sand.
    - ❖ Replace the cap tightly and keep it in one corner of the cistern, so that it does not disturb the functioning.
    - ❖ This will help by saving one litre of water every time you flush.
    - ❖ Calculate the amount of water.
        - Saved, in a day by counting the number of times, you have used the flush in a day.
        - Your family saved.
        - Your class saved.



Observation Table:

S. No.	Name of the family member/ class student	Amount of water saved per flush (with bottle) in the cistern	No. of times flush used in a day	Amount of water saved per day
1.				
2.				
3.				
4.				
5.				
-				
-			Total amount saved per day	

Result: Water is conserved in large amounts.

Conclusion: We must consciously develop and promote water conservation practices.

Safety First:

Precautions

The cap of the bottle must be tightly replaced. Sometimes the bottle falls on the side due to the movement of water and pressure.

We conserve water, we conserve life

Handout 3

Q.1 Water is important for life. Why?

_____

_____

Q.2 Have you ever heard of water shortage or crisis?

_____

_____

Q.3 Do we have sufficient potable water on mother earth for all the living forms to survive?

_____

_____

Q.4 Find out the percentage of potable water available on earth.

_____

_____

Q.5 Why do we feel, there is a need for conserving water?

_____

_____

_____

Activity 4

Measure Rainfall in your Town

Theme: Water

Background: A rain gauge is an instrument that measures the amount of rain that falls in a given amount of time at a given place. Meteorologists, hydrologists and weather reporters use information gathered from rain gauges to report how much rain a specific area has received, both for a single event and accumulation over time. Comparing current data to previous years, helps them gauge, if an area is receiving too much or too little rainfall and how that will affect plant life, food and water supplies. Rain gauge data are also useful to farmers and gardeners for planting and harvesting.

Learning Outcomes: Students develop understanding about the amount of rain fall their area receives.

(5.8.2)

Materials:

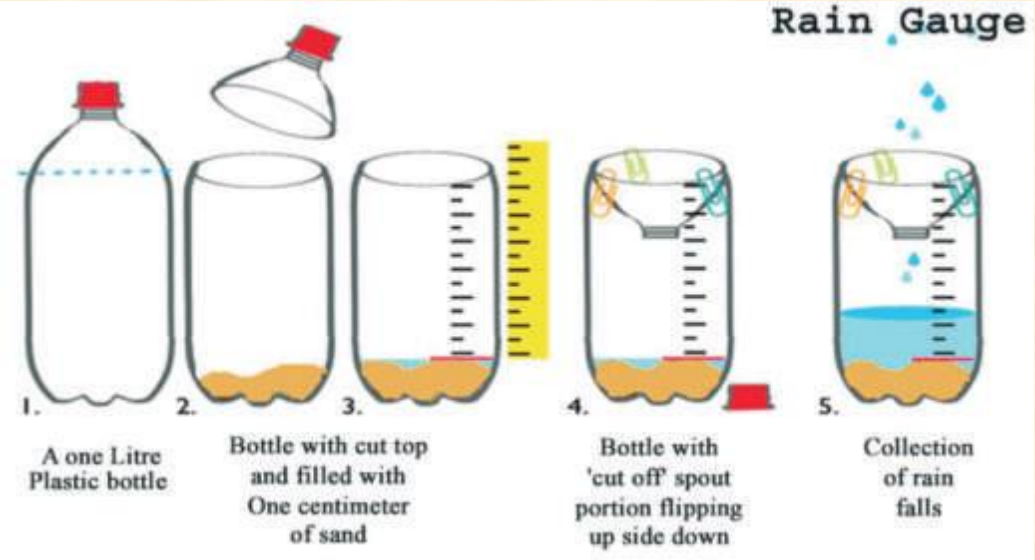
- ✓ One litre discarded plastic bottle
- ✓ A pair of scissors
- ✓ Adhesive Tape/ Paper clip
- ✓ Some sand
- ✓ Sharp Marker/ Permanent Marker
- ✓ A ruler
- ✓ Some water

Time: 35 minutes

Methodology:

- Empty and wash out the plastic bottle so that it is clean.
- Take the scissors and cut off the spout top from the place where it starts tapering or the curve begins.
- Fill bottom of the bottle with 1 cm of sand. This will create a level surface at the bottom and also keep the bottle from falling over.
- Pour in just enough water so that the water level above the sand can be seen. This is called the saturation point.
- Use a marker pen to draw a line at the saturation point above the sand on the cut bottle. Next to the line, write "starting point".
- Create/ draw/ take a print out a ruler with centimeters marked on the plain paper. Each centimeter needs to be further marked in millimeters. Mark or paste the ruler from the starting/saturation point on the bottle.

- Take the top "cut off" spout portion of the bottle and place it upside down. Insert it into the bottle and use some adhesive tape or paper clip to secure it. This part will help catch and collect the rainfall by funneling it into the bottle.
- Find a suitable place to put the rain gauge. Make sure nothing is blocking it from above (like trees, electric wires, or the edge of a roof) and it's in a stable, wide open area.



Observations: Measure the rain fall and enter the height of water in the bottle in the chart given below every time. If there is a long gap between the rainfall, drain out the excess water and bring the level to starting/saturation point.

S.No.	Date	Initial height of water in cms h1	Final height of water in cms h2	Rain fall h2-h1	Observations
1					
2					
3					
.....					
.....					

Result: Students will be able to measure rainfall day-wise/month-wise/season-wise.

Conclusion: Measuring of rainfall will help students to compare the rain fall with the expected rain fall.

Safety First: Precautions

Since most rain showers are usually quite windy, the rain gauge needs to be fastened in a place where it does not shift or got blow away.

Handout 4

Q.1 Name the place in India that receives maximum rain fall.

_____

Q.2 Why do you think it is important to have such information?

_____

_____

_____

Q.3 Suppose you measure the rain fall of your area every day during rainy season, for three consecutive years. How is it going to help you, community and your town?

_____

_____

_____

_____

Rain water is the purest form of water

Activity 5

Functions and Festivals

Theme: Importance of Functions and Festivals

Background: In order to help students to commit themselves to community and ultimately to the nation, it is important that they participate in functions which are of common interest. This generates harmony and appreciation for their own culture.

Time: 35 minutes

Materials:

As per the occasion.

Learning Outcomes: After completing this activity, the students:

- Understand the message behind each celebration.
- Understand the environmental significance of the festival.
- Love their community and fellow citizens.
- Appreciate the beauty of our culture in spite of the diversities.
- Learn to enjoy in the company of people from different states.
- Develop awareness about related environmental issues.
  (4.9.1), (5.3.2), (5.4.2)

Methodology:

- In the beginning of the session, plan few local and three national festivals' celebrations in the diary.
- Give each child a role in the festival celebration in advance and explain to parents in writing.
- Activities can be a:-
  - Skit depicting the significance of the festival
  - Group dance
  - Mono-act
- Every activity must carry a message for protection of environment which will ultimately help community/nation to survive.
- The school authorities can include following days, besides local and national festivals:-
  - Earth Day on 22nd April
  - National Energy Conservation Day on 14th December

Observations: Students enjoy participating in such events.

Result: Any festival or national day celebrated in the school will leave an impact in the mind of the child so that the child becomes sensitive towards community/nation's requirements and contributes positively towards its growth.

Such celebrations during school years, which are the formative years of students' life, help them develop a positive attitude towards their community/country and the environment.

Conclusion: Measuring of rainfall will help students to compare the rain fall with the expected rain fall.

A Parade

Handout 5

Q1. Prepare a chart on a festival of your choice.

Q2. How can you spare more time and effort to make such celebration a success?

_____

_____

_____

Q3. Give an instance when you contributed to make such celebration a success.

_____

_____

_____

_____

Activity 6

The Environment and Child's Needs

Theme: Child's Needs – Food

Background: So far students have known about the variety of food items included in their meals. Now through this topic, they will know its significance.

Time: 35 minutes

Learning Outcomes: After completing this topic, the students:

- ❖ Relate the different food items with their health.
- ❖ Develop awareness about healthy food habits.
- ❖ Identify healthy food items.

Materials:

- ✓ Observation sheets

Mode:

Group Work

Methodology:

- Divide class in groups of 5-6.
- Prepare observation sheets as per the sample given and distribute them.
- Each group gives names of food items they normally have for breakfast, lunch and dinner and then identify their category.

Observation Table:

S. No.	Breakfast	Food Items	Food Category (Cereals, pulses, vegetables, fruits, dairy products)	Pictures
1				
2				
3				
4				
5				

Lunch				Pictures
1				
2				
3				
4				
5				
Dinner				
1				
2				
3				
4				
5				

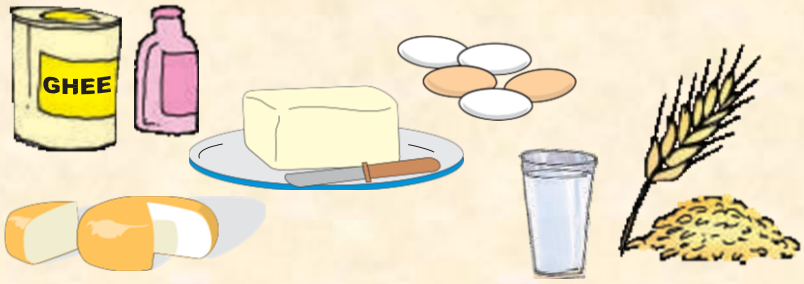
Result: Reinforces the significance of variety of food in our diet.

Conclusion: Students will understand the role of variety of food in keeping good health. This will also help them develop good food habits.

Handout 6

Q1. Students in groups, study the table given below and comment if their diet contains all the components of food for a healthy body.

S.No.	Function of Food	Food Category
1.	Body Building	Pulses, egg, milk, meat
2.	Energy giving Fatty – butter, ghee, cheese, oil Dairy products.	Starchy – potato, rice, wheat
3.	Protection against diseases	Fruits, vegetables, dairy products



Q2. Find out which food category is not part of your diet.

_____

_____

Q3. What may be the consequence of not consuming it?

_____

_____

_____

Q4. How will you modify your diet in order to keep good health?

_____

_____

Activity 7

Things Around Us

Theme: Living and Non-Living Components of Environment

Background: Students have learnt to identify living beings as a separate entity of environment from non-living components. As both components are part of the same environment, it is important to know how the two components are similar and different from each other.

Learning Outcomes: Students differentiate between living beings and non-living forms of the environment.

Time: 35 minutes

Mode:

Group Work

Methodology:

- This could be an indoor or outdoor activity.
- Students are divided into groups of 5-6.
- Students may be guided to observe living organisms like a seedling, a plant, a puppy or a kitten and also non-living objects like any chair, table, stone, a toy etc.
- The observation could be noted in the sheet provided.

Observation:

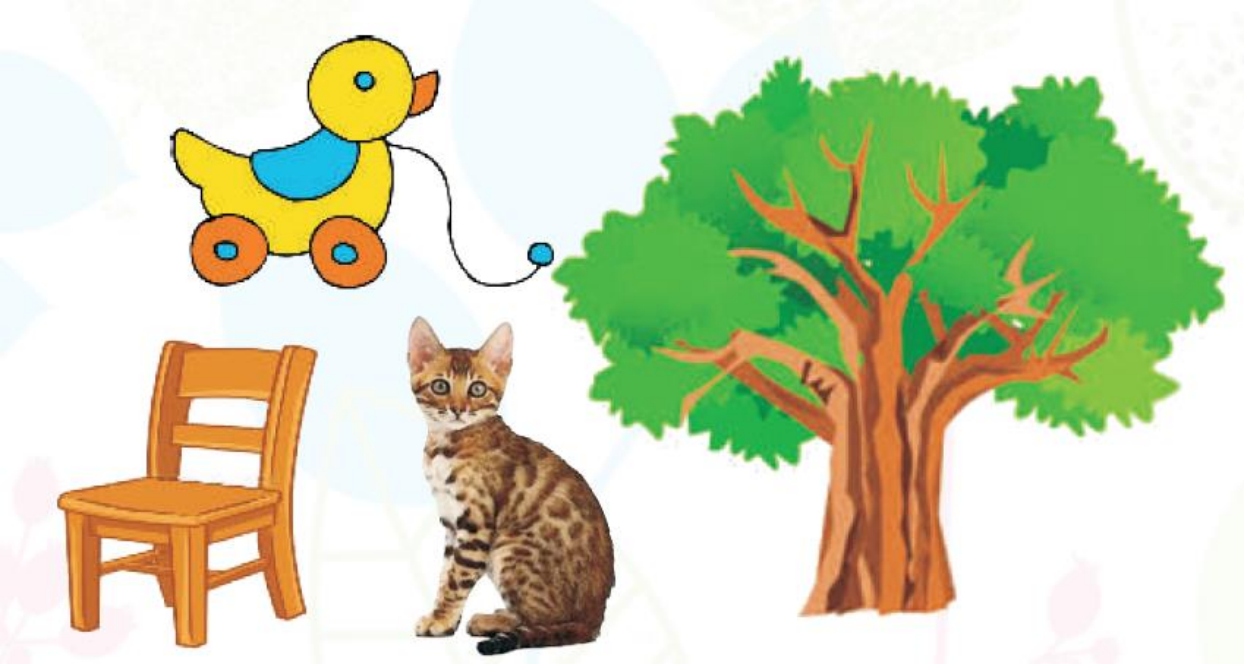
OBSERVATION SHEET

Observation	Living (Your Pet) A	Non-Living (Chair) B	Remarks for A & B
Shows growth	Yes/No	Yes/No	Similar/Different
Occupies space	Yes/No	Yes/No	Similar/Different
Has weight	Yes/No	Yes/No	Similar/Different
Has matter	Yes/No	Yes/No	Similar/Different
Does it reproduce?	Yes/No	Yes/No	Similar/Different
Does it need food?	Yes/No	Yes/No	Similar/Different

Responds to changes around it	Yes/No	Yes/No	Similar/Different
Does it breathe?	Yes/No	Yes/No	Similar/Different

Note:

- Students may find living organisms to be different from non-living in certain aspects.
- Let children write, "Do not know" wherever they find no answer.
- The teacher should devise an appropriate activity to explain and clear the confusion.
- Teacher should discuss with students the interdependence of these two components which exist together in the environment.



Result: After doing this activity, students will be able to understand that living and non- living components of the environment share some common features but at the same time differ from each other in some ways.

Conclusion: Students will also learn that living beings are dependent on non-living forms for their survival.

Handout 7

Note: To evoke students imagination and thinking, they may answer some questions such as:

Q1. Have you noticed any kind of interdependence among living and non-living things in nature?

_____

_____

Q2. If yes, give five examples of your own.

_____

_____

_____

_____

Activity 8

Effect of climate on the Pattern of clothing

Theme: Effect of climate

Background: Learners already have some basic idea about the states of India and the physical features of those states. A discussion on the types of clothes worn in some important states would precede the activity.

Learning Outcomes: It aims to enhance the creative potential of the learners, along with acquainting them with the clothes worn in various physical and cultural environments (with reference to India), and our dependence on the climate.

(5.3.2)

Explanatory Statement: Students creativity would be enhanced through puppet-making and writing short poems. They will be sensitized to the environment and will also acquire the confidence to speak in front of a large group.

Mode:

Group activity (in groups of six).

Time:

- 1 period for making puppets and poem writing
- 1 period for presentation

Materials Required:

- ✓ Cardboard
- ✓ Chart paper
- ✓ Colours
- ✓ Glue
- ✓ Straw
- ✓ Paper
- ✓ Pencils
- ✓ Pair of scissors
- ✓ Reference books about climate.

Methodology:

- The class would be divided into six groups, groups of six.
- Each group would be given a state of India (Rajasthan, Jammu and Kashmir, Punjab, West Bengal, Kerala and Assam).
- Two students would make cutouts of men and women of that state and stick them on straws to make hand puppets, with special emphasis on their dress; two students would make a placard on the important physical features of that state and two

- Students would write a poem on the state, describing its people, climate and the dress.
- Each group gives a presentation, the next day by reciting the poem with actions and using the hand puppets/placard.

Observations: Through the research work done by the students and their poems, the clothes worn in different climatic conditions and the reasons for wearing them would become clear, and they would learn by doing.

Result: The students would relate that our life is dependent on the environment.

Conclusion: Since climate affects us in many ways (dress, food, house, occupation), we must take care not to pollute it and cause changes in the climate.

Dresses of Manipur

Handout 8

Collect some newspaper articles on climate change and read them. Prepare a brief note on what you have understood from your reading.

Activity 9

Safe drinking water

Theme: Water

Background: We get water from different sources available in the environment around us. Melting of glaciers leads to formation of rivers which contains pure water fit for drinking. It is, we human beings who pollute this water.

Learning Outcomes: Students differentiate between clean and safe drinking water and they develop a sense of responsibility towards caring for the environment.

Time: 35 minutes

Mode: Activity will be done individually by students after the teacher's demonstration.

Materials Required:

- ✓ Samples of water collected from different sources
- ✓ Beakers
- ✓ Tumbler
- ✓ Filter paper and funnel.

Methodology:

- This activity may be done on a rainy day.
- Each student should bring a water sample from different sources of water on their way from home to school and in school from the tap, puddle, well, drain, rain etc.
- Transfer water from different sources to 100 ml. beakers and label them.
- Leave the water undisturbed in the containers on the table.

Observations:

- ➢ Solids (mud and sand) settle down in the beakers. Students will be asked to decant and filter it with the help of filter paper and funnel. Now, the different samples of water are colourless and odourless.
- ➢ Also, they observe the material left behind in the filter paper of each sample of water.

Result: Students now know that water which we get from the environment is clean, but we pollute it. They should learn to prevent pollution of water bodies and the environment.	**Conclusion: Water that may look clean is not always safe for drinking as it may have germs that cause diseases.**



Handout 9

Q1. Which sample of water was the purest?

_____

Q2. What pollutes water?

_____

_____

_____

Q3. What makes water unsafe for drinking?

_____

_____

_____

Q4. Give two ways of preventing water-pollution.

_____

_____

Q5. How can we make water safe for drinking?

_____

_____

_____

Q6. Can we make water safe for drinking by heating alone?

_____

_____

Activity 10

How to Handle Waste

Theme: Waste Management

Background: Waste is generated in large quantities and its disposal has become a matter of great concern. Waste material pollutes the environment and causes health hazards and reuse of waste will reduce its generation. This could be possible only if waste is collected separately.

Time: One period per week

Mode: Group Work

Learning Outcomes: The learners identify different categories of waste generated at school and explore different means of disposal.

(4.9.2), (5.8.2)

Materials Required:

- ✓ Green and blue dust bins or dustbins made from cardboard boxes.
- ✓ Labels **Food Waste, Paper** and **Plastic Waste.**

Methodology:

- The class students may be divided into 7 to 8 groups.
- One group will paste Food waste labels on the green dustbins and Paper and Plastic Waste on blue dustbins or on the cardboard boxes. Now identify the location in the school where these dustbins can be placed. It could be in the rooms, near the canteen, in the corridors and any other place where required.
- One group will work to ensure that children develop awareness about this project and use these dustbins appropriately. This could be done by making announcements regularly during the assembly and putting up notices.
- All the areas of the school may be divided into three to four zones and each zone to be monitored by one group to ensure that students throw waste in different bins as per instructions.
- One group can take responsibility that all the food waste at the end of the day is put into a composed pit (This could be made with the help of a gardener). If there is problem it can be done in a large pot (meant to grow plants). The gardener may be asked to come every four to five days. Composed manure will be ready in three to four months.

- One group can monitor the collection of Paper and plastic waste from all bins in previously identified storage space. This group can also find out about scrap dealer in the locality who picks up segregated dry waste.

Observations:

- Find out from the school authorities if they still need the services of a garbage collector.
- Ask the school gardener if he requires manure to be purchased from the market.

Result: Students will learn about reusing and recycling waste.	**Conclusion: Waste management helps to save the environment.**

Handout 10

Q1. Take two small cans. Fill one with Food waste and another with Paper and Plastic Waste. Leave them for two days and write your observations.

Q2. Based on assignment one, what other names would you give to the two different kinds of waste.

Q3. Collect waste separately at home and also use the same ways for its disposal. Has this made any difference in usage of insecticide in your home with regard to the presence of insects/cockroaches in your kitchen?


Grade 5

Activity 1

Can We "See" Air?

Theme: Air

Background: Air is present all around us. It appears to be transparent. It is not true that you can't see air. Air is transparent because it neither absorbs nor reflects much light, but it reflects a tiny bit of blue colour of light and that is the reason the sky is blue. You can see the earth's atmosphere from space, just as you can see water from land. Air is present all around us. We may use these properties to see air in this experiment.

Time: 35 minutes

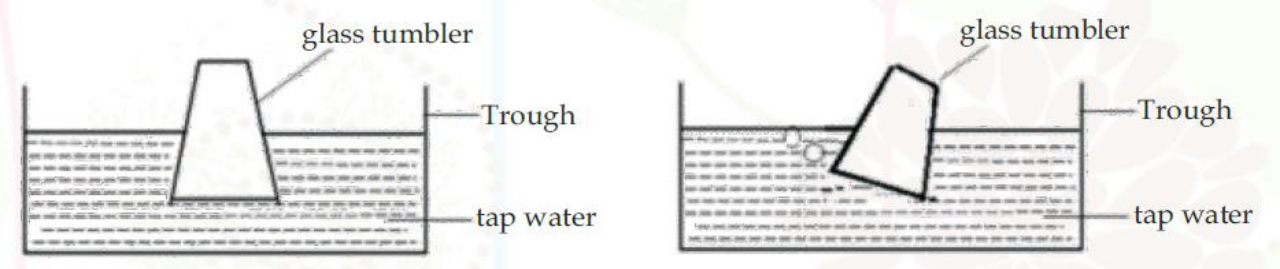
Learning Outcomes: Students see air bubbles coming out of water.

Materials Required:

- ✓ A trough or a large bowl
- ✓ Some water
- ✓ A piece of transparent plastic/glass tumbler

Methodology:

- Take a trough or a large bowl of water.
- Turn a clear and empty plastic or glass tumbler upside down and push it down into the water.
- Observe what happens. Is there any water inside the plastic/glass tumbler?
- Now, tilt the plastic/glass tumbler slightly on its side and observe.



Observations:
Initially water does not enter the glass when it was pushed in the upside down position into the water. As the glass was turned slightly to one side, air got the opportunity to escape in the form of big bubbles towards the surface and the water entered the glass.

Result: Air occupied the space in the glass and could not escape; this prevented water from entering the glass. On turning the glass slightly to one side, air escaped in the form of bubbles and water entered.

Conclusion: We can see air released in the form of bubble.

Handout 1

Q1. Why did it take thousands of years for human beings to understand that air exists?

_____

_____

_____

Q2. Can we feel air? Why or why not?

_____

_____

Q3. Have you ever felt that air exerts pressure? Give an example.

_____

_____

_____

_____

Q4. Is air important for life? Give reasons.

_____

_____

Balloons with air

Activity 2

Eco-friendly Practices

Theme: Ecology

Background: The term "eco-friendly" is used to describe activities which are good for the environment. Learning to save the planet while doing routine work requires some thought, but there are many ways we can reduce the negative impact of various activities on the environment. Here are a few simple ways to help us to adopt a more ecofriendly practices. They range from manufacturing products in an environment – friendly way to making lifestyle changes which can benefit the planet.

Time: 35 minutes

Learning Outcomes: Students develop an eco-friendly attitude.

(5.8.2)

Materials Required:

- ✓ Some powdered sugar
- ✓ Some baking soda or borax
- ✓ A small dish
- ✓ Soapy water
- ✓ Some pure beeswax
- ✓ A potted plant
- ✓ Some vinegar
- ✓ Some water
- ✓ Some yeast
- ✓ Some brown sugar

Methodology:

- Mix equal parts of powdered sugar and baking soda or borax. Set the mixture out in a small dish to control cockroaches.
- Wash your pet with lots of soapy water to drown fleas instead of using chemical sprays.
- Use only pure beeswax furniture polish.
- Spray plant leaves with soapy water to kill small insects.
- Use baking soda as an air freshener for refrigerators, garbage containers and carpets.
- Mix 1 tablespoon of vinegar with 1 litre of water to clean windows and floors.
- Add yeast to brown sugar; dissolve in hot water and use it as mosquito trap.

Observations:
These practices are effective.

Result: These practices help prevent the negative impact of chemicals on the environment.

Conclusion: Eco-friendly practices must become a part of daily routine and subsequently the attitude of all to save the environment.

Safety First: Precautions

Students should carry out these practices under teachers'/parents' supervision.

Some Eco-friendly Practices

Handout 2

Q1. Give five examples from your surroundings that make you feel that our environment must improve.

_____

_____

_____

_____

Q2. Is it only the government's responsibility to provide a healthy environment to public? Why/Why not?

_____

_____

_____

_____

Q3. How can we, individually, contribute to help improve our environment?

_____

_____

_____

_____

Q4. Add two more eco-friendly practices which you have already tried at home, to the list that your teacher has provided.

_____

_____

_____

Activity 3

Tree Signature

Theme: Biodiversity

Background: Trees play an important role in the web of life in a rural or urban location. They provide food and shelter to a variety of wildlife. Without trees life on the planet would not be possible. Certain tree species can contribute in determining the habitat of insect, bird, and directly or indirectly the presence of big animals and production of crops. Thus different features of trees contribute to survival of an ecosystem. At the primary stage, it is important that students develop an interest in observing trees and appreciate bio-diversity.

Time: 35 minutes

Learning Outcomes: Students discover and appreciate the variety of plants found in their local environment.

(5.8.2)

Materials Required:

- ✓ 2 pieces of card board (of A-4 size) to make a folder
- ✓ 5-15 pieces of white A-4 paper placed inside the folder
- ✓ Staples or tape/ paper fasteners/tag
- ✓ Some paper clips
- ✓ Old newspaper
- ✓ White paper
- ✓ A pair of scissors
- ✓ Some glue or tape
- ✓ Some pencils
- ✓ Trees in school garden/ neighbourhood park
- ✓ A punching machine

Methodology:

- Make a folder to hold all your findings by stapling or fastening 2 pieces of card board together with 5 to 15 pieces of white paper between the two pieces of card board. Label the front of the folder "Signature of Trees" and draw a picture of a tree on cover of the folder.

- Select a day when temperature outside is comfortable. Go for a walk through your school garden / neighbourhood / in a park / through the woods. Look for and identify trees with interesting patterns on their trunks and those with interesting and pretty leaves.

- Observe the selected trees one by one and write down information about them such as the names, how tall the tree might be, how big the trunk is, what the leaves look like, how old the tree might be and any other things one can think of. Take a sample of one of its leaves.

- Place a piece of white paper up against the trunk of the tree and rub on it evenly with a pencil until an even impression of the bark is got. Do the same with the leaf sample. Repeat this exercise for all the selected trees.

- Keep the sample of leaf (pressed between two newspapers and held together with paper clips), notes and rubbings of each tree together so that they don't mixed up. Use paper clips/tags to fasten them.

  - Take all the notes, samples and rubbings to home. Put the leaf pressed between the newspaper sheets under the mattress.
  - It will dry up in 4-5 days.
  - When dry, paste the leaf on a A-4 cardboard / white sheet.
  - Cut out a fixed size sample from each tree rubbings and paste onto the separate A-4 white sheet.
  - Label each tree part.
  - Punch all the sheets and tie them with the help of a tape/tag into the folder.

- Inquire from local people about the local name of the plant/s you have selected. Also do a search, on the internet to identify the scientific name of the tree/trees from where the samples are taken. Label them accordingly in the project.

- Students in school may be given this exercise as part of collaborative work and the activity may be divided in parts to help all students actively participate and also finish field work in less time.

- The teacher may fix a period to conduct individual/group presentation so that students would learn about many more trees, which have been studied and presented by their classmates.

Observations:
Students would have directly or indirectly observed and acquired knowledge about the trees of their area and internalized that, there are many variety of trees exist in their locality.

Result: Students will develop keen observation skills which will help them to become more knowledgeable.

Conclusion: Students will learn to appreciate nature.

Safety First:

Precautions

- **While taking students out for field work, the teacher/parent must be with the students to ensure a location where there is no risk of any insect or animal attack.**
- **Teacher/parent must ensure that the field work is finished in as short a time as possible.**

"What we are doing to the forests of the world is but a mirror reflection of what we are doing to ourselves and to one another."

–Mahatma Gandhi

Handout 3

Q1. What would happen if there are no trees around us? Describe the scene.

_____

_____

_____

Q2. Are trees important for our survival? Give reason.

_____

_____

Q3. What is the role of trees in our life? Give any three roles.

_____

_____

_____

Q4. Ask your parents / any elder at home if the number and variety of trees have changed during last twenty years. Make a note of their observations.

_____

_____

_____

Q5. Observe the birds visiting trees in your neighbourhood regularly. Note down if you see some specific bird (s) visiting a specific tree.

_____

_____

_____

Activity 4

Food Relationship in the Living World

Theme: Ecosystem

Background: All living forms i.e. plants and animals need food which provides the energy they need to live. Green plants use the energy from sun to make their own food. Some of this food is used by plants and some is stored in the roots, stems, and leaves. Plants are called producers (they make/produce their own food by photosynthesis.) Animals cannot make their own food. Animals get their energy and biomass by consuming (eating) other plants and animals. All animals are consumers (they consume/eat).

Time: 35 minutes

Learning Outcomes: Students understand the food relationship among all the organisms in the living world.

(5.2.2)

Materials Required:

- ✓ Markers/chalk to mark each group's position
- ✓ Honeyeaters/sun birds could dress up with slender and long beaks
- ✓ Predators like falcons/hawks may wear masks
- ✓ Cats could wear a cat mask, and so on, to aid identification
- ✓ Plastic or real flowers
- ✓ Toy insects
- ✓ Labels

Methodology:

- Class is divided into 6 groups.
- Each group symbolizes a family of honey-eaters/Sunbird i.e. adults plus fledglings. Fledglings in each group link arms to form a circle symbolizing the safety of the nest.
- The one adult bird per group leaves the nest to bring back "food" (nectar, symbolized by either large flowers strewn around open space between the groups), or insects, (symbolized by plastic toy insects strewn around open space).
- The adult honeyeater/sun bird has 30 seconds to collect as much "food" as possible and return it to the nest. If there are six groups, lay out nine or ten pieces of "food" (i.e. flowers or insects).
- In the next stage remove some pieces of "food "so that there are only five pieces but six birds seeking food.

- Allow the honeyeater/sun bird to go out in search of food again. Now introduce the first predator (a cat) who tries to label the birds who are out in their hunt for food. A tagged bird is a dead bird that must sit down and take no further part in that game. Birds are safe once they have got the food and have returned to the linked-arm "nest". Families whose adults return safely to the nest with food receive one point per game.

  Note: The teacher debriefs the class after part of the game is over and ask them what is happening here when the variables change. Teacher may ask the question: "What happens when there is not enough food?"

- Teacher may play with the variables e.g.(i) increase/decrease the distance between groups, and hence the distance to get to food, (ii) increase/decrease the number of flowers/insects (food) so that not every bird will get the food.
- Introduce a second predator as well as the cat, e.g. a hawk or falcon, who hunt for small birds.
- The winning group is that which has the most points at the end of all the game.

Observations:
Students will be able to relate this game with real life situations and understand:
- ✓ How each living thing struggle to get its food in nature.
- ✓ Interaction among different living forms in terms of **who eats whom.**
- ✓ Plants are always at the base of the food sequence (chain).

Result: Living beings depend on each other for their food.

Conclusion: Life on the earth is possible because of the interactive relationship among living organisms.

Flower

Sunbird

Falcon

Handout 4

Q1. What does the game show about life in the real/natural world?

_____

_____

Q2. What happens when the honeyeaters/sunbirds have to travel further to get food?

_____

_____

Q3. What happened when two predators were introduced?

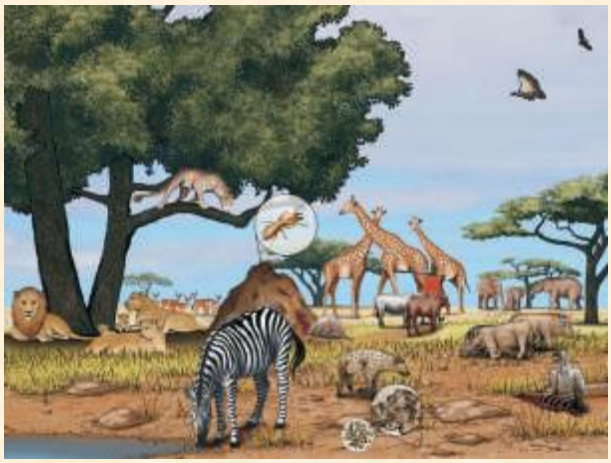
_____

_____

Q4. Do you think the cat/falcon/hawk would have got their food, if there were no flowers?

_____

_____



Activity 5

Understanding Living Forms Around Us

Theme: Things Around Us

Background: Through participatory activities, students will develop ability to compare and contrast one form of living beings with the other forms of living beings.

Time: 35 minutes

Mode: Group Work

Learning Outcomes: Students identify differences and similarities between plants and animals and develop team spirit.

(5.1.1), (5.4.1)

Materials Required:

✓ Observation sheet.

Methodology:

- Divide the class into groups of 5-6 students.
- Ask each group to list at least ten living things from their surroundings i.e. inside and outside the classroom or in the playground.
- The teacher instructs students to categorise these into two main categories i.e. plants and animals.
- The groups note down various life processes/activities carried out by plants and animals.
- The groups can also compile their information in tabular form in the given observation table.

Observation Table:

S. No.	Activities/Life process	Found in Plants	Found in Animals	Found in Both
1.	E.g. Growth			
2.				
3.				

4.				
5.				
6.				
7.				
8.				
9.				
10.				

Note: In case there is any confusion among the students, the teacher can devise an appropriate activity to help students clarify doubts.

Result: Students become familiar with the distinctive features of plants and animals.

Conclusion: All the living forms around us are mainly categorized as either plants or animals. They are similar in various ways but at the same time they have their own specific features, which make them different from each other.

Handout 5

To evoke thinking among students, teacher may ask the following questions:

Q1. How are plants useful to animals? Give five uses.

_____

_____

_____

_____

_____

Q2. In nature how do animals help plants? Give any five examples.

_____

_____

_____

_____

_____

Plant or Animal?

Is it a plant or an animal?

Does the food product come from a plant or an animal?

- Bread slice
- Egg
- Tofu
- Milk
- Eggplant
- Asparagus
- Corn
- Rice
- Pita
- Chicken
- Beans
- Peanut
- Steak
- Fish
- Apple
- Cucumber
- Cheese
- Potato
- Broccoli
- Shrimp

Answer Key: Plant or Animal?

From a plant:

- Bread slice
- Tofu
- Eggplant
- Asparagus
- Corn
- Rice
- Pita
- Beans
- Peanut
- Apple
- Cucumber
- Potato
- Broccoli

From an animal:

- Egg
- Milk
- Chicken
- Steak
- Fish
- Cheese
- Shrimp

Activity 6

Celebrating Functions and Festivals

Theme: Functions and Festivals

Background: In order to help child to relate herself/himself to community, nation and ultimately to the world, it is important that he/she participates in functions which are of common interest. This helps to generate harmony, appreciation for his/her own culture, feeling for the world community and respect for environment.

Time: 35 minutes

Mode: Group Work

Learning Outcomes: Students

- Get the message behind each celebration.
- Understand the environmental significance of the festival.
- Respect the fellow citizens and world community.
- Learn to work in a group of different people (known or unknown).
- Develop awareness about related environmental issues.
  (5.3.2)

Materials Required:

According to activity

Methodology:

- In the beginning of the session, plan for a few local and three national festivals in the diary.
- Give each student a role in the festival celebration in advance and explain to parents in writing.
- Activities can be :
  a) a skit depicting significance of the festival
  b) a group dance
  c) fancy dress competition
  d) debate competition
- Every activity must carry a message for the protection of environment which will ultimately help the nation to survive.
- The school authorities can include following National/International days besides local and national festivals:

International Ozone Day: 16th September

World Environment Day: 5th June

National Energy Conservation Day: 14th December

- Hiroshima Day - 6th August
- World Food Day - 16th October
- World Community Day - 5th November
- World Water Day - 22nd March

Observations: Any festival National/international Days celebrated in the school must have an impact on the students so that they become sensitive towards their community, nation and become aware of international requirements and contributes positively towards their growth.

Result: Such celebrations during school years, which are the formative years of students' life, help them develop a positive attitude towards their community, country, world and its environment.

Conclusion: Students start thinking and caring for their environment.

Handout 6

Q1. Write 5 sentences about the festival you have enjoyed celebrating the most.

_____

_____

_____

_____

Q2. What precautions have you taken so that no damage is caused to the environment, while celebrating the festival?

_____

_____

_____

_____

Q3. Name one festival related to the environment which the local community regularly celebrates.

_____

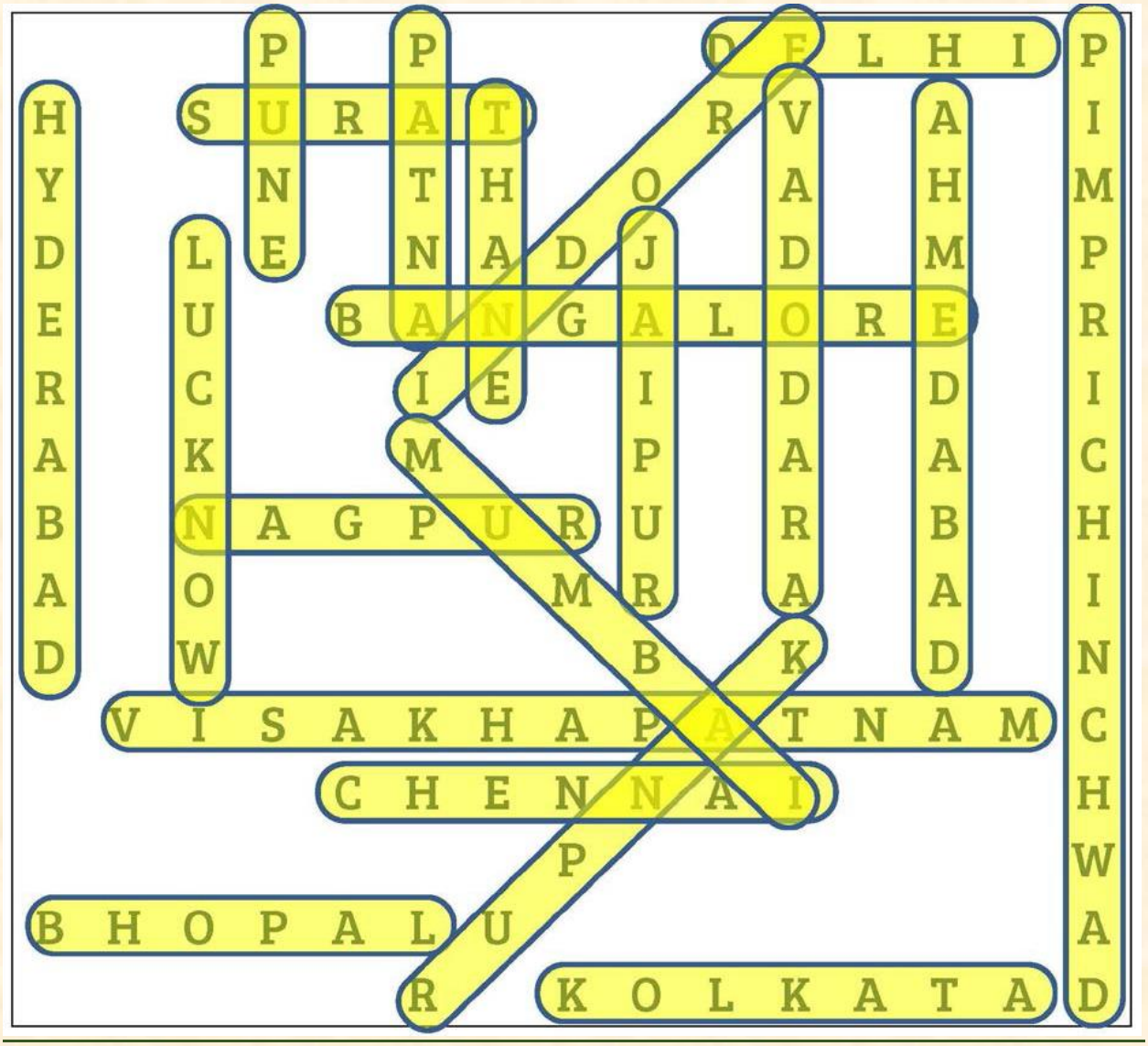
Indian Cities Word Search

Find these cities in the word search:

Mumbai	Jaipur	Indore
Delhi	Pune	Thane
Bangalore	Kanpur	Bhopal
Hyderabad	Nagpur	Visakhapatnam
Ahmedabad	Surat	Patna
Chennai	Lucknow	Vadodara
~~Kolkata~~	Pimpri-Chinchwad	

R	D	O	P	Z	P	H	B	R	D	E	L	H	I	P
H	Q	S	U	R	A	T	N	J	R	V	O	A	G	I
Y	K	P	N	V	T	H	G	O	I	A	V	H	Q	M
D	B	L	E	S	N	A	D	J	C	D	J	M	D	P
E	X	U	W	B	A	N	G	A	L	O	R	E	F	R
R	O	C	L	R	I	E	U	I	A	D	I	D	Z	I
A	Y	K	L	H	M	L	M	P	B	A	E	A	J	C
B	Q	N	A	G	P	U	R	U	N	R	M	B	A	H
A	C	O	E	A	Y	H	M	R	A	A	P	A	H	I
D	S	W	X	F	K	W	G	B	K	K	T	D	L	N
Q	V	I	S	A	K	H	A	P	A	T	N	A	M	C
T	I	E	N	C	H	E	N	N	A	I	X	C	E	H
N	T	F	U	O	G	D	P	V	W	M	F	C	P	W
B	H	O	P	A	L	U	Y	R	P	M	J	D	Z	A
S	U	B	S	K	R	I	K	O	L	K	A	T	A	D

Indian Cities Word Search: Answers



Activity 7

Child's Need-Food

Theme: Environment and the Child's Needs

Background: It is important to generate awareness among the students about the relative nutritive composition available in different food items. This will further help students to be aware of developing good food habits.

Learning Outcomes: The students will develop ability to identify the nutritive importance of different types of food obtained from the environment. The students will also be able to plan their diet to remain healthy by using local food resources.

Time: 35 minutes

Mode: Group Work

Materials Required:

- ✓ Chart
- ✓ Observation sheet

Methodology:

The teacher gives an introduction before starting the topic in order to make students familiar with the nutrients (This could be achieved by various ways).

A chart as given below could be prepared and displayed on the display board –

S. No.	Food Items	Nutrients Present	Function
1.	Wheat, rice, potato, sugar	Carbohydrates	Energy giving
2.	Ghee, oil, butter, cheese	Fats	Energy giving
3.	Pulses, egg, milk, meat	Protein	Body building, repairing
4.	Fruits and vegetables	Vitamin and Minerals	Protective

Observation:

1. Give each student a copy of the observation table and guide him/her to fill in the table below. List items of food you had in your breakfast, lunch and dinner yesterday. Put a tick mark (tick) against the nutrients which were present in the food.

Meals	Food Items	Carbohydrates	Proteins	Fats	Vitamins
Breakfast					
	1				
	2				
	3				
	4				
	5				
Lunch					
	1				
	2				
	3				
	4				
	5				
Dinner					
	1				
	2				
	3				
	4				
	5				

2. Ask students to identify the components of food either missing or negligible in their diet.
3. Based on this the students will learn to modify their diet to make it a complete/ balanced diet.

This exercise will help students assess their own diet, eating habits which in turn will make them diet conscious and develop healthy food habits.

Result: Introspection of their own diet chart will definitely help students analyze their food habits and its consequence.

Conclusion: Healthy food habits must be cultivated from childhood.

Handout 7

Please see the chart given below carefully. Answer the problem given:-

Sr. No.	Absence of the nutrient	Health Problems caused due to deficiency
1.	Carbohydrates	Under weight, physically weak, retarded mental growth, low energy level
2.	Proteins	The bones of legs bend, chest protrudes (in children), retarded physical growth
3.	Vitamins	Night blindness, Vit-A Beri Beri, Vit-B Scurvy, Vit-C Rickets, Vit-D
4.	Minerals	Iron – Anaemia Iodine – Goiter
5.	Roughage	Constipation
6.	Water	Dehydration

Rahul and Sita are studying in the same class. Rahul is fond of noodles, burgers and pizzas. He hates to bring tiffin from home and prefers to have a cold drink and chips from the canteen during break time/recess.

Sita's parents are conservative. She has developed a regular food habit which includes all that an Indian family has in its daily diet. She carries her tiffin regularly and many a time shares it with her friends.

During the athletic meet, Rahul fainted while participating in one of the races, while Sita got a bronze medal in her event.

Comment on the possible reasons responsible for Rahul's health condition.

_____

_____

_____

Activity 8

Making and Dyeing Cotton

Theme: Clothing

Background: A discussion on people involved in making of clothes (farmer, spinner, weaver, dyer, tailor and designer) and the procedure for obtaining colour from beetroot would precede the activity.

Learning Outcomes: The students will be able to experience wearing cotton clothes and developing a sense of responsibility among the students towards their environment (through the use of natural colours such as beetroot).

(5.8.2)

Explanatory Statement: The students through this activity, would be given hands-on experience in making cotton cloth and dyeing also.

Mode: Group Work

Time: 35 minutes

Materials Required:

- ✓ Cotton balls
- ✓ Cotton thread
- ✓ Thick cardboard / wooden / plastic frame
- ✓ A bowl
- ✓ Colour of beetroot.

Methodology:

- The class would be divided into three groups.
- One group would dye the cotton balls with beetroot colour.
- The second group would make cotton fibre from the cotton balls and dye it using the natural colour.
- The third group would take the frame and run the cotton thread brought by them, along the length of the frame, after tying it at one end. Then they would run another piece of thread along the width of the frame, by taking the thread in between the loops. They would carefully take out the woven cloth from the frame and soak it in beetroot colour for 2-3 minutes. The excess water would be drained and the dyed cotton balls, fibre and cloth would be left for drying.

Observations: The students would get an idea of how cotton cloth is made from cotton pods and that natural colours are safe for our skin and environment.

Result: Nature is very resourceful and can provide for all human needs.

Conclusion: Students would understand that nature, which is so rich, has to be conserved. The pod, fibre and cloth made by them would turn red due to the beetroot colour.

Handout 8

Collect more information about natural colours and their sources.

Activity 9

Water Cycle in Nature

Theme: Water

Background: Water is very important in our daily life. We use it for a variety of purposes like drinking, cooking, bathing and washing clothes. The ultimate source of water is rain which is formed by the melting of snow which percolates underground or fills the rivers and is available to man in the form of various sources like hand pumps, taps, wells or tube wells. It is important to keep the water clean so that clean water is available to us.

Time: 40 minutes

Learning Outcomes: Students explain the relationship between snow, water and water vapour to understand the water cycle.

(5.3.2)

Materials Required:

- ✓ Some ice
- ✓ Some water
- ✓ A kettle/pan
- ✓ A beaker
- ✓ A gas burner
- ✓ A tray

Methodology:

- The teacher shows the ice cubes - relates them to the snow on the mountains.
- Put the tray of ice cubes on the table. The ice soon melts into water. The snow on the mountains melt because of strong sunrays.
- The water is put in the kettle and heated until the water boils. Water vapours in the form of steam come out of the spout of the kettle. The changing of water into vapour is **evaporation.**
- The beaker full of ice cubes is put in front of the spout of the kettle from where the steam comes out.

Observations:

- **The water** vapour change into water when it touches the cold walls of the beaker. The water vapours change into water on cooling. This is **Condensation.**
- Nature gives us clean water. The water droplets fall in the form of rain on the ground and become dirty.
- If a clean glass is put below, the water droplets will fall into the glass and can be used for drinking.

Result: Water exists on earth in different forms and keeps changing its form and circulates in nature.

Conclusion: The water, a main component of environment keeps circulating in nature. We need to conserve the water, the water bodies - so that natural balance is maintained.

Water Cycle in Nature

Q1. Draw the natural water cycle.

Q2. Name different forms in which water exists in nature.

_____

_____

Activity 10

How can I make paper?

Theme: Art and Craft

Background: Paper making is an ancient process that has retained its methods for over 2000 years. Ts'ai Lun, a member of the Chinese court, was the first person recorded to make paper in 105 AD. In 1150 the first papermaking mill (in Spain) was opened. Since then, paper has spread all over the world and has many uses.

Learning Outcomes: Students create paper using a variety of local/waste material.

(5.8.2)

Time: 40 minutes

Materials Required:

- ✓ Scrap paper
- ✓ Egg cartons, or other tree-based products
- ✓ Newspaper
- ✓ Water
- ✓ Towels
- ✓ 8 x 8 inches (20 cm) window screening
- ✓ Scrap wood
- ✓ Nails
- ✓ Hammer
- ✓ Pair of Scissors
- ✓ Large plastic tub
- ✓ Potato masher

Methodology:

- Make a mould by framing a piece of screen with scrap wood.
- Tear scrap paper and egg cartons into small pieces.
- Add a few pieces of paper and grind using a potato masher.
- Add more paper until the mixture is a pulpy soup.
- Pour pulp in the dish tub (3/4 full). Petals, small leaves or glitter can be added to the pulp for extra interest.
- Dip screened mould into pulp.

- Move the screen back and forth in a sifting motion to form an even layer of pulp on the screen.
- Hold the mould over the tub to drain excess water.
- Slip the screen between layers of newspaper.
- Slide the newspaper between folded towels.
- Press evenly to remove water from the pulp paper.
- Open the towel and newspaper from the pulp paper.
- Place a dry sheet of newspaper over the pulp paper.
- Carefully turn the pulp paper onto the dry newspaper.
- Set in a warm place to dry.

Result: Students become capable of understanding the process of papermaking from wood.

Conclusion: Students understand the basic procedure used in making paper.

Handout 10

Q1. Look around your house for objects that can be reused and recycled. What are the things you can reuse and recycle to make new objects out of? Write your answers below with a brief outline.