ENVIRONMENTAL STUDIES
CLASS - V

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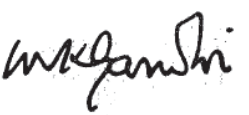
GANDHIJI'S TALISMAN

"I will give you a talisman. Whenever you are in doubt or when the self becomes too much with you, apply the following test :

Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it ? Will it restore him to a control over his own life and destiny ? In other words, will it lead to Swaraj for the hungry and spiritually starving millions?

Then you will find your doubts and your self melting away."



FOREWORD

In keeping abreast with the change in the contents, writing and structure of the text-books at national level and in line with the National Curriculum Framework 2005, the Board of Secondary Education, Manipur, has been developing text-books for the schools of Manipur. Since its inception, the Board has been trying to promote education for improving the quality of life in the state.

Under the DIKSHA (Digital Infrastructure for Knowledge Sharing) initiative, the Board has embedded QR Codes in the text-books of Environmental Studies of Classes III-V. These 'Energised Text-books' will empower both students as well as teachers to bridge the physical and digital world lead to exponential learning.

The text-book in its present form is an outcome of a series of consultations & meetings held with the authors and reviewers. Utmost care has been taken to relate to local context and made suitable for use by students in Manipur. Every effort has been given to make the book holistic and engaging.

I thank the authors and reviewers and all those who have contributed in bringing out the book.

The Board welcomes valuable suggestions for improvement.

Dr. Chithung Mary Thomas
Secretary

HOW TO DOWNLOAD DIKSHA APP

OPTION 1: Type diksha.gov.in/app in your mobile browser.
OPTION 2: Search for **DIKSHA NCTE** in Google playstore and tap on download button.

HOW TO ACCESS DIGITAL CONTENT USING QR CODE ON MOBILE

Launch Diksha App | Allow app permissions | Select appropriate user profile

1 Tap the QR code icon to scan QR codes in the textbook

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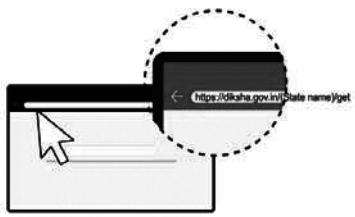
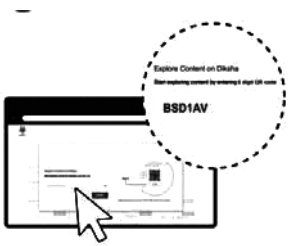
HOW TO ACCESS DIGITAL CONTENT USING QR CODE ON DESKTOP

1 Under the QR code there would be 6 digit code



2 Type diksha.gov.in/MN/get in your browser



3 Type the 6 digit QR code in the search bar

4 View list of content available & click on any new content

MESSAGE ON ENERGISED TEXTBOOKS

This year, we are introducing an innovative education initiative - Energised Textbooks under the DIKSHA(Digital Infrastructure for Knowledge Sharing). This concept enables us to bridge the physical and digital worlds. With the help of QR codes that are embedded in the textbooks, one is able to access relevant digital content supporting the topic under study.

The initiative allows for content creation and sharing across all schools within the state. Access and usage is simplified with the content being available both offline and online.

We thank the providers of the solution and the content creators who have energized the EVS textbooks for classes 3, 4 and 5.

We sincerely hope that this initiative empowers both the teachers in their quest for imparting knowledge and the students in their quest in inculcating knowledge.

We look forward to your active usage and feedback on how we can make it better and more rewarding learning experience.

Dr. M. Meenakumari Devi
Director, SCERT
Government of Manipur

Learning Outcomes

Class V

Environmental Studies

The learner:

- explains the super senses and unusual features (*sight, smell, hear, sleep, sound etc.*) of animals and their responses to light, sound, food etc.
- explains the use of technology and the process of accessing basic needs (*food, water etc.*) in our daily life.
- explains the role and functions of different institutions in daily life. (*Bank, Panchayat, cooperatives, police station, etc.*)
- describes the interdependence among animals, plants and humans.(*e.g. communities earning livelihood from animals, dispersal of seeds etc.*).
- establishes linkages among terrain, climate, resources (*food, water, shelter, livelihood*) and cultural life. (*e.g. life in distant/difficult areas like hot/cold deserts*).
- traces the changes in practices, customs, techniques of past and present through coins, paintings, monuments, museum etc. and interacting with elders.
- groups objects, materials for features such as shape, taste, colour , texture, sound, traits etc.
- guesses (*properties, conditions of phenomena*), estimates spatial quantities (*distance, time, weight etc.*) in simple standard units and verifies using simple tools.
- records observations / experiences / information in an organised manner (*e.g. in tables / sketches / bar graphs / pie charts*) and predicts patterns to establish relation between cause and effect for different activities/phenomena (*e.g. floating, sinking, mixing, evaporation, germination , spoilage*).
- identifies signs, directions, location of different objects / landmarks of a locality / place visited in maps and predicts directions *w.r.t.* positions at different places for a location.
- creates posters, designs, models, set ups, local dishes, sketches, maps (*of neighbourhood / different places visited*) using variety of local / waste material and writes poems / slogans / travelogue etc.
- voices opinion on observed / experienced and relates practices / happenings to larger issues of society. (*e.g. discrimination for access / ownership of resources, migration / displacement / exclusion, child rights*).
- suggests ways for hygiene, health, managing waste, emergency situations and protecting / saving resources (*land, fuels, forests, etc.*).

CONTENTS

LESSON No. 1

3RZDBK

SHIFTING FROM PLACE TO PLACE

A family always grows up. How does a family grow up?

Marriage and giving birth to a new child may increase the number of family member. When the house can not accommodate all the members what will be the solution? Naturally, a small family is separated. The new family is shifted.

Ask your parents from what time your family is staying in the present house?

_____

Before this new settlement where was your family?

_____

Why was your family shifted from the former place?

_____

In early times, settlement was not permanent in a fixed place. Some family moved in search of food, grazing ground for their animals. People who keep on moving for their livelihood or in search of fertile land and grazing land for their animals are called **nomads.**

Sometimes for the construction of dams, flyover or roads people living in that area are displaced.

The expansion of Imphal Airport also affected the people living in that area. They were compelled to shift their families.

With the increase in population the urban slums are growing rapidly. Such illegal places are demolished by the Government. People living in the slums have to move to other places. People from the rural areas migrate to the cities in search of employment.

Due to natural disasters like floods or earthquake, there is a great loss. People have to move to safer places. Sometimes they stay in rehabilitation camps. Finally they are shifted to a new place.

There are some islands in the world which is going to submerge under sea water. Global warming causes the rise of sea water level. Environmentalists warn that one day the islands will be under water and the people will be displaced to some other safe places as environmental refugees.

Find some island that may face the problem. Ask your teachers the problem face by Tuvalu Island and the Maldives.

Tuvalu Island

Maldives

Why should not we start acting to reduce global warming. It may be able to help them to stop displacement.

Ethnic crisis also compelled people to change their families.

Displacement causes a lot of problems. List any three problems people may face due to displacement.

_____

_____

_____

Have you heard about partition of India into India and Pakistan in 1947?

The partition resulted in huge migration of people from one country to the other.

Ask the elders or read reference books to find out the reason behind the partition.

ACTIVITY

1. Find out from your classmates whose father or mother has a transferable job. List difficulties they face due to transfer.

2. Draw family tree with location of the individuals.

LESSON No. 2

WHO LAUGHS THE LOUDEST

To know the qualities / skills possessed by all the members of a family is essential. It helps us to understand them well. How well do you know your family members? Let us find out.

Record a data sheet of each and every members of your family in the following format. (Use a notebook)

Name: _____

Sex (M / F): _____

Age: _____

Height: _____

Weight: _____

Complexion (Fair / Dark / Extreme dark): _____

Length of hair: _____

Voice (Low / Medium / High) : _____

Way of speaking (Soft / Harsh) : _____

Cooking skill (Nil / poor / good): _____

Attitude towards others (mild / divergent): _____

Best skill: _____

Hobby: _____

Education: _____

Languages (can read):_____

Languages (can write):_____

After completing the data sheets of all members, answer the following questions.

Find out and write.

Who is the tallest member in your family?

_____

Who is the shortest member in your family?

_____

Who is the heaviest member in your family?

_____

Who is the lightest member in your family?

_____

Who is the best complexion member in your family?

_____

Who is the darkest member in your family?

_____

Who has the loudest voice among the members in your family?

_____

Who speaks softest?

_____

Whose attitude towards others is best?

_____

Who is most conversant in language?

_____

Among the female members, who has the longest hair?

_____

Among the female members, who can cook best?

_____

Whom do you like most? Why?

_____

_____

_____

Tombi's eldest sister had been married two years back. One day she came to Tombi's house with her 6 month old baby. Her mother came out to see them. When she looked at the baby, she said " Oh! he looks like his father"?

Tell

* Does your face or anything else look like that of someone else in your family? What is it?

_____

* Did someone tell you this or did you find it out ourself?

_____

* How do you feel when people compare you with someone else in your family? Why do you feel so?

_____

* Who laughs the loudest in your family? Laugh like that person?

One day Tombi was playing with her cousin Thoibi. Ahanbi was the elder sister of Tombi's mother Phajabi. Tombi's mother called Ahanbi and said, "See, my Tombi's hair is a lot like Thoibi's – thick, curly and black. It's good she does not have hair like mine – straight, limp and brown!" Our mother also had thick, curly and black hair. Now our generation has similar hair. Tombi was listening to all this. She thought, her special trait of hair comes from her grandmother's side.

Find out and write

Now, look for some special trait in your sister or brother (could also be cousins). Observe the colour of eyes, dimples in cheeks, height, nose-broad or sharp, voice, etc. See if this trait comes from the father's side or the mother's side. Make this table in your notebook and fill it. An example is given.

Special trait	Whom does it resemble?	From whose side?	
		Mother's	Father's
Tombi's curly hair	her grandmother	✓	

ACTIVITY

Observe a young child in your family or any other family. Whom does the child's eyes, nose, hair or fingers look like in the family? Write their names. Tombi's hair was like her aunty's– thick and curly. Her mother had straight, brown and limp hair. What type of hair do you have – black or brown, oily or dry, curly or straight?

LESSON No. 3

OUR LIKES AND DISLIKES

We can see, hear, taste, smell and feel with our sense organs. What are they?

_____ _____ _____

_____

We are all different from each other. All of us have unique character. We have our likes and dislikes.

Let us try to find out your like and dislike.

Encircle the food item you like to eat.

Cooked rice	Wheat bread	Fried bread
Spicy curry	Vegetable curry	Hot vegetable curry
Pulber Curry	Fish curry	Chicken
Sweets	Fruit salad	Fried egg

What is the best dress you want to wear?

Encircle the colour you like.

Blue	Pale blue	Red	Pale red
White	Cream	Green	Light green
Yellow	Pink	Grey	Black

Write the game you like.

_____

What is the smell you like most?

_____

Write the profession you like most.

_____

Name the musical instrument you like to play.

_____

Name the pet you like.

_____

Name the flower you like.

_____

How do you react when you are forced to do the work which you don't like?

_____

You might do the work lazily. You may want to avoid the work. You may cheat. You may become an adamant child. Are these things a good behaviour? How do you react when you are forced to eat the food which you don't like? Sometimes you may even vomit. The food may not give any value to you.

Find out the likes and dislikes of any five children of your class and complete the table.

LIKES

Name of the child	Colour	Flower	Game	Profession

DISLIKES

Name of the child	Colour	Flower	Game	Profession

The likes and dislikes are different from person to person. Some person like spicy food and some other like sweets.

Our taste may change. It depends on the way of life also. When I was a child I wanted plain food but now I want spicy food.

LESSON No. 4

TEAM GAMES - YOUR HEROES

A game is contest with rules to determine a winner. It is also played for amusement or pastime, yet, there has to be a winner. A game starts being a sport when you compete with others humans. And stop being a sport when you do it alone. Then, it becomes practice. Therefore, a sport needs a game to exist. Games and sports not only gives recreation of human mind but also are immensely beneficial for the mental and physical health. In games and sports, one learns to humbly accept defeat and success, which are indeed valuable ingredients of life. Above all, it is a national pride to win the medals in the international games.

Team games are played in groups. You must have certainly played games with your friends dividing yourselves into two sides or groups. Each side/group competing with another group/side is called a team. You must have also noticed that winning is not easy even if an individual is very good in a team. It means that for a team to win few factors are required, such as:

- Every member in a team has to be physically fit
- Every member has to possess an average level of skill-set
- Every member has to play in their specific positions

But the most important factor is that each member has to **support another one, coordinate and play together**. This is called **team**

spirit. Without it, a team cannot win. There are other requirements such as perseverance, will, courage, effort, determination, discipline and training with a good coach. But all these qualities have to be moulded towards forging team spirit. Then only, a team can win. In other words, you always have to watch out for your partner or team members and support them.

Do boys and girls play together?

In childhood or the under-age group, certainly, boys and girls play together. In indoor games such as lawn tennis, badminton and table tennis, there are events known as mixed-doubles in which the pair of a team is co-ed (lady and gentleman). However, we are yet to witness the same in games such as basketball, volleyball, cricket, rugby, football and hockey, etc. Sometimes, in exhibition matches or during training session of such games, we do witness the mixing of gender in the teams. But these are exceptions.

Co-ed (mixed boys and girls) sports teams are beneficial for many children, particularly children under age. Boys and girls who participate in sports together are less likely to form thoughts of gender inequality throughout childhood and adulthood. Interacting with the opposite sex in early age helps children to develop sensitivity towards the other sex. Sports, especially, give children the opportunity to witness the physical and mental capabilities of each sex.

- Which is your favourite team game/sport?

  _____

- Who are your favourite sportspersons/heroes of your favourite game/sport? Name five.

  _____

  _____

  _____

  _____

  _____

- Do you know any National level player from Manipur? Make a list along with the name of the sports and the club which they represent.

ACTIVITY

Give the name of the countries where Indian National Football Team played in the last five years. Find out the Manipuri players in the team.

LESSON No. 5

3T1WI6

LOCAL GAMES AND MARTIAL ARTS

Every community has their own form of local games and martial arts. Some of them are popular and internationally accepted. Some remain to be played by the locals during traditional festivals. These games are known as indigenous or traditional games of the community or the state because the games originated there and continue to be played even today. For example, badminton and hockey are indigenous games of India. Likewise, table tennis or ping pong and Kung-Fu had their origin in China. Sumo wrestling and Judo are from Japan. Tae-Kwon-Do is from Korea and Karate is from India.

Manipur is equally blessed with numerous indigenous games and forms of martial arts. Let us have a brief account of some of the popular traditional games of Manipur.

Sagol Kangjei **(Manipuri Polo)**: *Sagol Kangjei* has been adapted and adopted by the international enthusiasts of the game as Polo and now it is now being played worldwide. Today, the world has accepted that the game of Modern Polo originated from Manipur. *Sagol Kangjei* is played with seven players (in each side) who mount and ride Manipuri Ponies. Each player is fitted with polo-stick made of bamboo. The mounted player gallop after the ball (made of bamboo root) to hit it straight into the goal.

***Yubi Lakpi* (Manipuri Rugby)**:

"Yubi" in Manipur means coconut and "Lakpi" means snatching. The game is played on an open ground. Each side has 7 players in a field that is about 45×18 metres in area one side of which forms the central portion of the goal line. The coconut serves the purpose of a ball and is offered to the king or the judges who sit just beyond the goal line.

Hiyang Tannaba (Boat Race): It is generally held in the month of November at Thangapat (Moat). The boats called Hiyang Hiren are regarded to be invested with spiritual powers and the game is associated with religious rites. The rowers wear traditional dresses and head-gears. The game is also conducted during spells of natural calamity.


Hiyang Tannaba

Mukna (Manipuri Wrestling): The game is the Manipuri style of wrestling played between two male rivals for trial of strength by sheer physical strength and skill. Athletes of the same or approximately the same physical built, weight or ages are made to fight with each other.

Almost every community in Manipur their own variant of Mukna, which can be witnessed during traditional festivals.

Kang: It is an indoor game played on the mud floor of a big out house. Fixed targets are hit with "Kang" which is a flat and oblong instrument made of either tortoise shell or lac. Normally each team has 7 male partners. The game is also played as a mixed doubles contest during the period between Cheiraoba (New Year's Day of Manipur) and the Rath Yatra festival.

Thang-Ta & Sarit Sarat: These are the forms of Manipuri Martial Arts, the traditions of which had been passed down over the centuries. The indigenous martial art-forms were meant to hone one's battle-craft during peace times in the olden days when Manipuri wasa warrior required to serve his country duringwar-times.

ACTIVITY

1. Make a list traditional games which your parents played during their childhood for amusement and fun (for example, Marum Konbi). Request them to show you how to play.

2. Learn to play a local game under the supervision of a teacher.

LESSSON No. 6

3TASJT

DIGNITY OF LABOUR

There are different types of people in our society. They have their own families like that of ours. All the members of a family can never be of the same profession. Each member of a family has different duty to be done For example,generally children go to the school for their study,the brothers and sisters may also go to the school or to the office, the parents go to the work places for earning, etc. However,all adults do not have the same professions.

Some of them work as farmers, drivers, teachers,doctors, engineers, businessmans, labourers, barbers, etc. We may not require to do all the works of all the different people of various profession, however, we require in one way or the other.

*** Can you list ten different types of work that the people do for you?**

_____

_____

* **Can you identify the clean and the dirty works?**

_____

_____

_____

_____

'Work is worship' is one of the common proverbs. The idea contained in the saying is that all labour, manual or otherwise, is full of dignity and nobility. It equals work with prayer. It emphasizes the point that empty verbal prayers are not as valuable as real achievement in any fields.In the western countries and the U.S.A., people do recognise the dignity of labour. There is no servant class in the West. The people of the higher classes, ladies and gentlemen, have to do their household work themselves. They do not feel any insult in this. It is only in backward countries that this theory has to be continually preached. There are too many people in our country yet who consider it beneath their dignity to do their own purchases from the market or brush their own shoes or wash their own clothes.

We should recognise the fact that all labours are same. The labour in the field and the artisan in the workshop may have a nobler mission in life than the most learned statesman who makes the laws of the land. He has nothing to be ashamed of, if only he be true to himself and performs his duties rightly put upon him by God.

No profession by itself is high or low, dignified and undignified. It is the way in which we pursue it, that makes it sacred or otherwise. Even since the beginning of history man has been struggling hard to improve his lot. He has fought against the forces of nature all these centuries

He cannot solve his problems. So the new religion that he follows is that of worshipping through work. All labour is regarded as dignified in the present age in every progressive country of the world.

* **The picture above shows the slum dwellers who work for the society.What kind of work do you expect from them ?**

_____

_____

_____

_____

LESSON No. 7

3TJNLG

ANIMALS AND THEIR SENSES

Have you seen ants carrying eatables ? You may experience it by doing this activity.

Keep some sugar grains or a piece of bread on floor in an open place. Wait until the ants come there. What do you find ? Write it.

* Did it take long for the ants to come?

_____

* Did one ant came first or a group of ants? What do they do with the food?

_____

* Where do they go from there?

_____

* Do they move in a line.

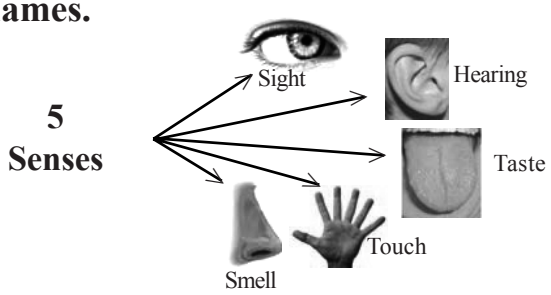
Now carefully, without harming the ants, block their path for a while with a pencil.

* Now observe, how do the ants move?

_____

Many years ago scientists have done many experiments like this. They have found out that as the ants move they leave a smell on the ground. The other ants follow the smell to find the way.

How do you sense the world around you? Through our sense organs we feel the world around us. Sense organs are the windows through which we can feel the world. How many sense organs do you have? Write their names.



_____

_____

How do animals know about the world around them?

Animals also know about the world through their sense organs.
Have you seen dog sniffing here and there? Why do you think it is trying to smell?

Most animals move around in search of food. With the help of their sense organs, animals find their food.

Keep a piece of meat on the ground where animals such as dogs or cats are there. Watch the animals approaching towards the meat. How do they sense the food?

Dogs mark out their own area on the road. They can make out if another dog has come into their area by the smell of its urine or potty.

Feed your dog for some days regularly at fixed time say after coming back from school. After 4 to 5 days observe what do you find?

You will find that your dog will come to you when you came back from school. Think ! What helps the dog to come to you when came back from school?

_____

_____

_____

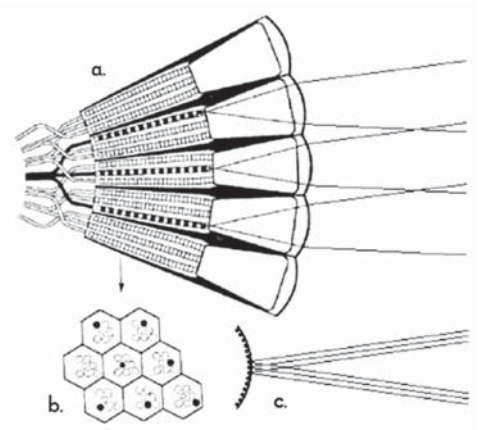
_____

Feeding the animals is a great rewarding experience.

Different animals have different strong senses.

How do insects know about the things happening around them ?

Insects have two types of eyes - Simple and Compound eyes.



Simple eyes detect change of day and night. Compound eyes are made of thousands of small eyes and are able to sense movements and judge distance accurately.

Some birds like kites, eagles, vultures can see four times as far as we can. These birds can see things from a distance of eight metres what we can see from a distance of two metres.

They spot their prey from several kilometers away. Owls have large eyes but they cannot move their eyes. In order to see they can turn their neck at large angles to have a wider view.

* Now can you guess from what distance can an eagle in the sky see a snake on the ground?

Spiders have good sense of hearing. They have poor eyesight.

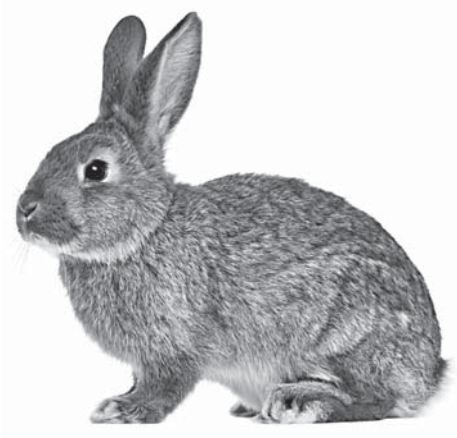
Sharks have good sense of smell. They can even detect a single drop of blood in a huge volume of water.

All fishes have eyes on either side of their head which give them a wider field of vision.

Animals such as mice, squirrels, rats have great sense of smell and hearing. They use their sensitive whiskers to find out about their food.

Rabbits have large ears to sense danger.

Animals such as lion, tigers, cat, dogs use smell to communicate with others.



Why does Police take help of dog to detect criminal? Dogs have a very good sense of smell about 50 times more than the human beings. That is why Police take help of dogs to catch thieves and criminal.

ACTIVITY

1. Collect some eatable such as cooked and uncooked rice, cooked vegetables, raw vegetables, bread, and meats. Keep all these things in an open place. Observe the animals approaching the food. Write your observation.

LESSON No. 8

45XX31

WHAT WE TAKE FROM ANIMALS

Observe the things given below. From where do we get these things?

How do animals help us ?

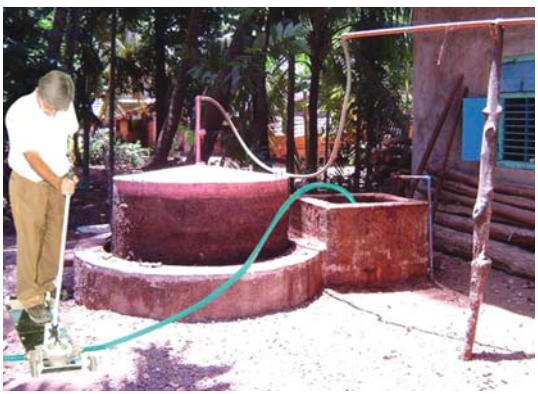
As you know, animals are very useful to us. They provide us food and are also used as a means of transport. Animals such as bullock, horses, camels and elephants provide their services to us. They help us in farms and to carry loads.

Earthworms help farmers by making the soil fertile. Dogs guard our homes. Snakes eat rats. Rats eat grains. They also spread the diseases.

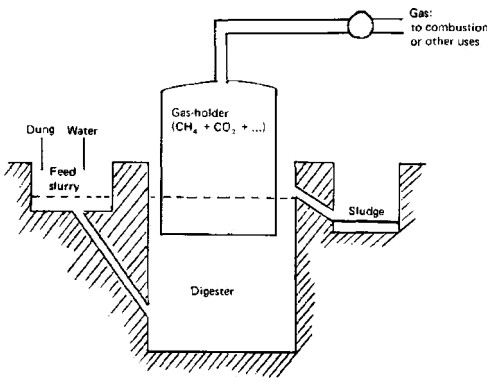
Cattle dung is used as a source of fuel.

Have you seen a gobar gas plant in your locality ?

The cattle dung and agricultural waste are utilized for making biogas to solve the problem of energy in rural areas. The remains, residue after removal of biogas is a good source of manure for plants. Gobar gas is used as fuel for cooking and lighting purposes.



A Gobar Gas Plant



Schematic diagram of gobar gas plant

Silk thread is obtained from the cocoon of the pupa of silkworm. Silkworms grow on mulberry plants. The silk threads are woven into beautiful clothes. Our silk is famous in the world.

Leather is obtained from the skin of dead animals. Leather is used for making items such as jackets, belts, shoes, bag, etc. The process of treating skins of dead animals to make them strong, waterproof and

flexible is called **Tanning.** Before tanning skins are soaked in salt water after removing of hairs and flesh. The skin is treated with a chemical called tannins, which is extracted from the bark of trees. Lastly, the leather is oiled to soften and dyed in different colours. It is now ready to make things such as jackets, belts and shoes.

Have you ever seen a necklace made of pearls or toys made up of lac?

Pearls are obtained from the sea animals called oyster.

Lac is obtained from a insect called lac insect.

People who depend on animals

What do these above pictures tell ?

Many people depend on animals for livelihood. They trap the animals and train them to entertain other people. Snake charmers, circus people use animals as a means of their livelihood. What do you think? Are these people cruel to animals?

Is it wrong to use animals to earn a living?

One should not be cruel to animals. Animals need to be looked after them well by giving them enough food, drinking water and shelters. Animals are providing services to mankind for a long period of time.

Write :

* List five useful things we get from animals.

_____

_____

* Earthworms are called farmers' friend. Why are they so called?

_____

_____

* Which animals can be kept as pets?

_____

_____

LESSON No. 9

467T4N

WHY SOME ANIMALS ARE IN DANGER

Early man used to hunt animals for food. Later on he started practising agriculture and gradually stopped hunting animals. He started to domesticate animals like cows, buffaloes, dogs, horses, etc. He began to care for them as they were very useful to him. However, some people hunt animals and make their living.

Have you seen people kill animals ? What do you feel ?

_____

_____

_____

_____

Why do people kill wild animals ?

People hunt wild animals for getting skin, tusks, horns, bones, etc. Hunting wild animals is against law.

People who illegally hunt birds or animals are called **poachers.** This act of killing is called **poaching.** Wild animals are part of our environment. They help in maintaining balance in nature.

What will happen in the environment if we kill all wild animals indiscriminately?

_____

_____

Poachers hunt wild animals for pleasure, sport and greed. Do you think such people should be severely punished ?

Conservation of wild life :

The proper use of natural resources for long lasting welfare is known as conservation. In the past few years people are showing concern about the decline in number of wild animals. Many sanctuaries and natural parks have been set up by our government to conserve wildlife. To protect the wild animals in their habitats many projects have been started.

Let us try to know what National park and Sanctuaries are.

Sanctuary is an area protected generally for conservation of species of wild life.

National Park is an area protected generally for conservation of endangered species and their habitat.

Name two national parks and two sanctuaries.

_____

_____

Do you know ?

The **Sangai** and the **Nongin** are the state Animal and Bird of Manipur.

In the past few years the number of Sangai and Nongin are declined due to improper habitat and killing by the people.

Where is the Sangai (Brow antlered deer) found in our state ?

The only natural home of Sangai is Keibul Lamjao National Park. It is a unique and famous park in the sense that it is a floating park. No other floating park is found in other parts of the world.

The State bird Nongin is mainly found in the Siroi-Kashom range in Ukhrul district of Manipur.

Tiger, Elephant and Crocodile projects have been set up to increase the number of these animals in national level. There are many Tiger reserves in our country. Some of them are Jim Corbett National Park, Sunderbans National Park and Kanha National Park.

As many as 25 reserves were identified as Elephant reserves.

ACTIVITY

1. Have you seen animal figures on ancient coins ? What does it tell about? Search and write the names of the animals you have found on the coins.

LESSON No. 10

GROWING PLANTS

One day Luikim visited her uncle's house in the village to enjoy her holidays. She was thinking about all the fun and nice home- made food that she would have with her cousins. On reaching her uncles's house, she could see different kinds of plants, some with flowers and seeds, some without flowers, potato, onion, gingers, etc. in her uncle's kitchen garden and surrounding.

Just after lunch, she asked her uncle why some plants have so beautiful flowers?

Her uncle explains.

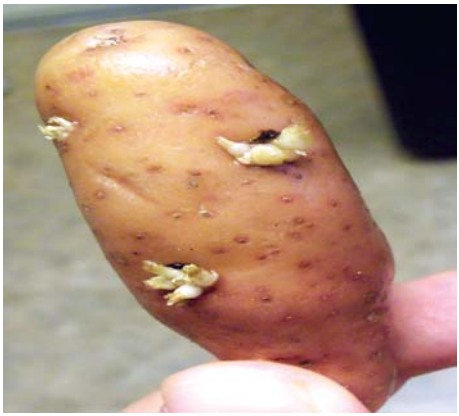
Flowering plants produce seeds. The process by which all the living beings reproduce their own kind is called **reproduction.** Plants produce flowers in order to reproduce. The central part of a flower produces the fruit. Fruit is the seed bearing mature portion of a flower. New plants grow from the seeds.

Luikim went on asking her uncle, " Do plants always reproduce from their seeds"?

Different plants have different modes of reproduction. Plants like ferns, mushrooms and moulds reproduce from tiny seed like structure called **spores**. We see many plants reproduced, from the vegetative parts of the parent plant. The mode of reproduction of plants in which new plants grow from any part of the parent is called **vegetative propagation.** Examples are onion ginger, potato, rose, bryophyllum, strawberry, etc.

Luikim wanted to know more and more about the reproduction in plants. She asked, " Is there any other methods of reproduction in plants"?

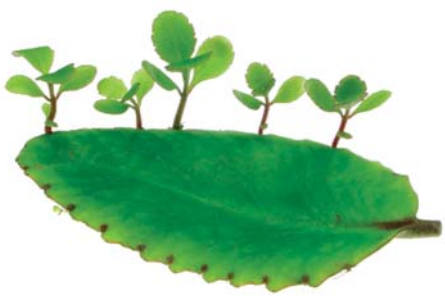
We can grow some plants by stem-cutting. Rose, bougainvillea and sugarcane are some of the examples. Onion, ginger and potato are the underground stems. Take a potato and observe it. It has "eyes" from where new buds develop. New plants grow from them. Ginger is an underground rhizome. It also grows from buds. Onion is an underground bulb. New plants grow from these bulbs too.



Potatoes with eyes

Do some plants multiply and grow without seeds?

Plant can multiply by using roots. Root of some plants such as sweet potato produce new plants . Others are radish and carrot roots. You see that bryophyllum leaf has buds along its edges. New plants can arise from these buds.



Bryophyllum leaf

Plants having weak stems trail on the ground are called **runners.** Buds which are present on such stem grow into new plants e.g. oxalis, strawberry, etc.

Runner in Strawberry.

GERMINATION OF A SEED

Straight from your heart

* What is inside the seed?

* How does a big plant grow from a tiny seed?

Seeds are usually found in fruits. These are the main means by which flowering plants reproduce and spread. A new plant can develop from a seed.

The seed contain an embryo from which the new plant will grow. It also contains stored food to nourish the embryo until it has developed roots and leaves.

When seeds get enough water, air and sunlight, they grow into new plants. The growth of a baby plant from a seed is called **germination.**

The outer hard covering of a seed is called the **seed coat**. For weeks, months even years, a seed may remain dormant. The seed coat protects it till the conditions are favourable for germination.

The food that keeps the embryo alive is stored in special seed leaves called **cotyledons**. Some seeds like grams, peas, beans, etc. have two cotyledons and others like rice, wheat, maize, etc. have one cotyledon.

For germination, the seed has to get enough air, water and temperature. During the process, the seeds absorb water, the cells of the embryo increases in size as it divides. The seed coat then bursts open. Firstly, the root system or radicle sprouts and grows downwards followed by plumule or the shoot. The plumule will produce the stem and leaves.

Germination of seed.

Now the new seedlings grow producing green leaves. It grows further to become an adult plant.

Let your seeds germinate:

To know the conditions necessary for germination.

Take three bowls, Mark them 1, 2, 3, take some pea seeds.

Place some pea seeds on Bowl 1 and fill it up with water.

Place a damp piece of cloth or some moist cotton in the bowl 2, keep some pea seeds in it.

Place some pea seeds in bowl 3 on moist cotton and keep the bowl in refrigerator.

Observe the seeds for a few days. What do you observe ? Note your observation.

Bowl	Did the plant grow	Give reason
1	No	
2	Yes	
3	No	

Now, you can conclude that the essential conditions necessary for germination are 1. Air 2. Water 3. Temperature

DISPERSAL OF SEEDS

Plants cannot move around. Once they grow, they remain in the same place. But their seeds need to be spread far and wide.

* Think what would happen, if seeds did not spread and remain at one place only.

* Have you ever seen any seed that can fly?

The process of spreading seeds to different places is called **dispersal of seeds.** Seeds are needed to disperse so that they do not compete for the limited supplies of water, light, minerals and space.

Dispersal takes place with the help of the following agents.

Wind

Many seeds can be carried by the wind. Seeds which are dispersed by wind have wings or tufts of hair on them e.g. seed of Terapaibi.

Dandelion seed head have a fluffy umbrella like structure which enables them to be carried for very long distances.

Dispersal by wind.

Water

Some seeds are dispersed by water. Seeds of Thangjing, is the example you see in common. Coconut has a fibrous outer coat, hence it is also easily carried away by water.

Animals

Some seeds have hooks or spines that attach to an animals body. Man and animals eat certain fruits and throw away their seeds. e.g. mango seeds. Such seeds can grow into new plants.

Explosion

Some fruits on maturity and drying, explode. The force of explosion disperses them. Pea seeds are dispersed by explosion.

Dispersal of seeds by explosion.

* Make a list of the different ways by which seeds are spread.

LESSON No. 11

46QK7Y

FORESTS AND FOREST PEOPLE

What do you think is a forest?

If someone grew lots of trees close to each other, would this become a forest?

Look at the picture.

Forests are formed by a community of plants including trees, shrubs, climbers and ground covers. There are tall trees, many kinds of small bushes and grasses all over. Forests provide shelter to many wild animals. There are many kinds of birds and animals flying past or hiding in the bushes. Some animals live in the holes of the trees, like insects, snakes and squirrels. Monkeys live on the trees. Elephants, tiger, wild bear and deer take shelter in or under the trees. Forest thus provide a home and shelter to many animals.

One day a forest conservator said, " If the forests are not there, we too will not remain". Why so?

Forests play a major role in keeping our environment clean. Plants make their own food out of water and carbon dioxide in the presence of sunlight. Carbon dioxide is a gas exhaled by animals during respiration. Plants give oxygen to animals, while animals give carbon dioxide to plants.

Besides this, forests also help in the water cycle. They help in precipitation. They prevent soil erosion as the root of trees binds the soil particles together.

Do you know anyone who loves the forest or live in the forest?

A small population of people live in the forest of India. This population mainly consist of tribals and adivasis. Their lives are totally linked to the forests. In Manipur, different tribal communities are settled in major hilly areas of the state. Can you name them?

Hillside with forest and houses.

Natural forest provides local people with a variety of products. Forests provide all the materials to survive. People depend on fuel wood to cook food, collect fodder for domestic animals and cut building materials for housing. They collect medicinal plants to treat several diseases. They practice shifting agriculture (Jhum Cultivation) and gather things like honey, fruit, roots, vegetables, herbs, gum, lac, resins etc.

Shifting or Jhum cultivation

Tribal women selling products in the market

Not only livelihood, people earn their income by selling the different forest products. They use wood as a fuel and also sell it. They make different handicrafts from bamboo plants and sell it. They collect varieties of medicinal herbs, orchids, honey, leaves, fruits and sell to earn money. Banana fruits, plantain leaves and flowers are good resources to generate income. Other wild edibles are also collected and marketed by the tribal women. They collect the bamboo shoots in seasons and sell either raw or in fermented form.

Do you have a friend with whom you can share the lives of forest people?

When forest trees are cut, tribal people who depend directly on them for food, fuel wood and other products, find it very difficult to survive.

The cutting of trees on a large scale is called **deforestation.** This deforestation has seriously affected the tribals. Earlier the tribals gathered food from the wild, did hunting and practiced agriculture. Nowadays, man has taken more land from the forest to cultivate and to produce main crop to feed the ever increasing population. Thus the forest cover has reduced considerably.

With the forest disappearing, it threats in the very survival of man and wild animals. Deforestation, not only leads to the loss of trees and wild lives but also of herbs, honey bees, birds and insects. Deforestation has left the land bare, reduced the rainfall and increased soil erosion.

Right to Forest Act 2007. People who have been living in the forest for at least 25 years have a right over the forest land and what is grown on it. They should not be removed from the forest. The work of protecting the forest should be done by their Gram Sabha.

Think :

Do you know of any who works to save forests?

Collect reports about forests from newspapers. Did you find any news about cutting down of forests affects the climate? How?

Ask your parents :

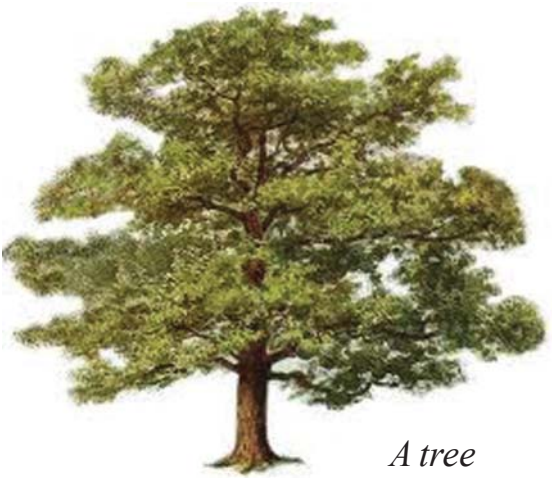
Ask your parents whether they remember places with trees/ forests where there are none today. Find and note, what is there today ?

LESSON No . 12

46ZG9L

PROTECTED TREES

We see many trees around us. These trees are needed to be protected. They are the dominant plants in the forest. They are very useful to us. They give back a lot of oxygen to the air. They release water into the air through the leaves which form rain clouds. We get timber, rubber, wood pulp and cotton from valuable trees. So, trees should be protected.



A tree

Some people set up plantation sites of rubber, sandlewood, coconut, eucalyptus, betel nut, etc. The plantations of such trees are mainly for commercial purposes. In such plantation sites, trees are well looked after by the caretaker. If a tree is cut, another one is planted in its place. In some states of India, people have orchards and produce nutritional fruits like apple, litchi etc. Marketing of fruits is done far and wide. People earn good income. In big cities, the municipal corporations set up zones of trees called **green belts.** No one cut the trees from these belts.

The Government has now set up many National Parks and Wild Life Sanctuaries in order to protect the forest areas and wild life. Cutting of trees and hunting of animals are not allowed in these sites. We have heard about Keibul Lamjao National Park and Siroy Park of Manipur.

Kajiranga National Park in Assam is also known for its animals like Hippos, Rhinoceros and Elephants.

Sangai at Keibul Lamjao National Park of Manipur

Sacred Groves

Sacred groves

Sacred Groves are the traditional conservation sites specially dedicated to the local deities. All the vegetations are preserved in such locations. This tradition is seen almost in all the parts of India. Particularly in Manipur one can observe many locations such as site of **Umang Lai**. Some other states also have richest groves like that in the hills of Meghalaya, Kerala, Maharastra and Bihar.

India has a long tradition of conservation of forest resources. The original flora of a locality are preserved without any outside disturbance. Nobody is permitted to cut any plant, kill animals or do any harm to these areas. People strictly followed the traditional norms. Such practices helped in biodiversity conservation. Inspite of large scale deforestation in the country, still the sacred groves remain unharmed. Everybody should encourage any type of natural conservation practice to save the forest and its vegetation.

CHIPKO MOVEMENT

Chipko is a movement raised by local Bishnoi woman against the felling of Khejri trees in Rajasthan about 300 years ago. That time the king had sent his people to cut trees for wood. The wood was needed for building the king's palace. Local women led by Amrita Devi clung to the trees to prevent the felling of the trees. Many people including Amrita and her daughters died to save the trees. Later on, the king realized his mistake. The story has been remembered and was revived in the 1970s when severe tree felling for timber in the Himalayas shocked the local women. It led to a people's movement to prevent deforestation by timber contractors.

People have made long padyatras across the Himalayas. The movement has been highly successful and supported by empowering local women's group. That movement could convey a message to the world that forests should be protected to make peaceful human survival. To conserve soil and to maintain natural water cycle, forest should be made flourished with trees. All of us should agree that forests should be protected. We should celebrate special programmes to encourage and give awareness about the need to protect the trees.

The United Nation (UN) organizes " World Environment Day" on the 5 th June every year. The Van Mahotsav is celebrated all over India in the monsoon months of July and August.

We should make poster campaign with slogan **"Save Trees"** and **"Go Green"** to protect the trees.

Think and write

* I am a Bishnoi woman. I sacrifice my life to save the tree. What is my name ? _____

* I grew in a village in Rajasthan. The king's man came to cut me to extract timber. Can you identify me ?

_____

* Name any two National Parks of Manipur.

_____

* Which trees are planted for commercial purposes?

_____

* Name one movement which was primarily begun and supported by local woman. Give the name of one woman who sacrificed her life to save the tree.

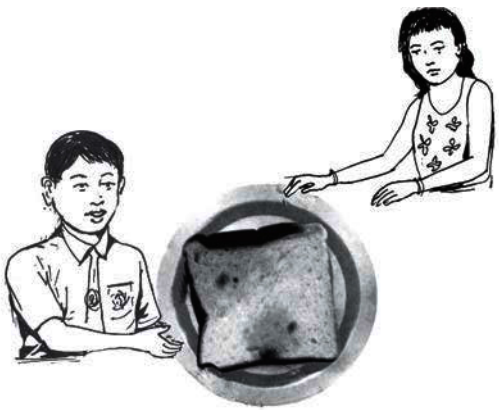
_____

ACTIVITY

1. Suppose that the World Environment Day is going to celebrate in your school. What are the activities you and your friends can do on that day?

LESSON No. 13

WHEN FOOD GETS SPOILT



Look at the picture. One day James found a bread with some unusual spots/patches in his tiffin box. It was not same as the fresh one. He thought it might be bad to eat. He asked his teacher "Is the bread fit to eat"? His teacher said,– "The bread has gone bad. Don't eat that. You may fall sick."

Sometimes food, raw or cooked, goes bad like this. **How does food get spoilt ?**

The students of class V of his school wanted to know how bread got spoilt. They took a slice of bread. They sprinkled a few drops of water on it and put it in a box. Everyday they looked at the bread to find some changes on it. After three days or so they could see **black** and **bluegreen** patches on the bread. Such patches are due to the growth of fungus. The bread also had foul smell.

Your class also can do the same experiment together. Take a piece of bread or roti. Perform the experiment as Jame's class did.

Make the following table on a chart paper and put it up in the classroom. Fill in the chart everyday after discussing the changes seen.

Day	Changes in the bread(roti)			
	By touch	By smell	By colour	By looking through magnifying glass
1				
2				
3				
4				
5				
6				

The bread/roti becomes _____ _____ _____ _____

* Find out the reason for these changes. From where did the dark patches come on the bread ?

_____

_____

_____

* Different kinds of food items get spoilt due to different reasons. Some foods decay soon, some stay good for long. List some seasons and conditions in which food decays quickly.

_____

_____

_____

* Look in your kitchen and write down names of food items that

– can get spoilt in 2-3 days _____

_____

– can stay fresh _____ _____

_____

– would not rot till one month _____

_____

* When food gets spoilt in your house, what do you do with it ?

_____

_____

_____

One day James went to a shop to buy some bread and squash with his mother. The shopkeeper picked up a packet of bread and a bottle of squash and gave them to James. He looked at the labels and returned the bread immediately. He said that the bread had got spoilt. How did he find that the bread had gone bad ?

Look at the picture of a bread packet here and guess why James returned it ? How did he find that the bread had got spoilt?

* Look carefully at two three packets of food items.

* What can we know from what is written on the packet ?

_____

_____

* What are the manufacturing and expiry dates written on the packets ?

_____

_____

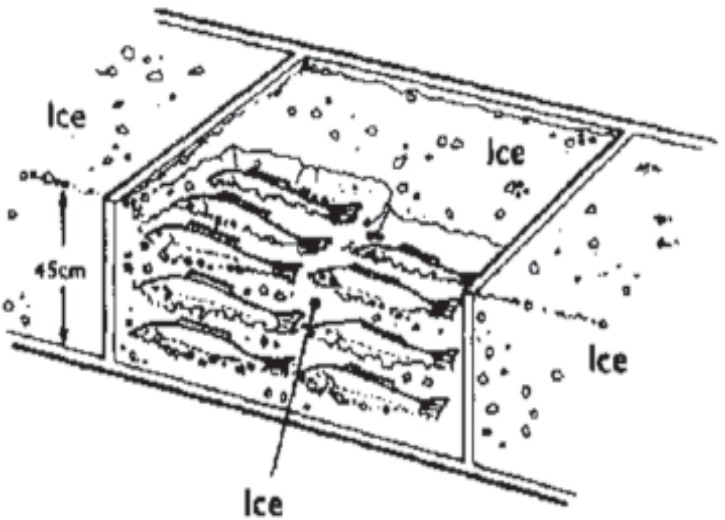
* When you buy something from the shop or market, what will you look for on the packet ?

_____

_____

Fish Packed with ice

Luikim went to a fish centre to buy some fresh fish. "Choose the fish of your choice" said the shopkeeper. Luikim could see big fishes kept in the box packed with ice. They had been transported a long distance as such. Why are fishes kept in ice in the special containers ?



We keep fruits and vegetables in refrigerators to keep them fresh.

Food kept in airtight containers also lasts longer. Do you know the reason ? Germs present in the surroundings will not be able to spoil the food.

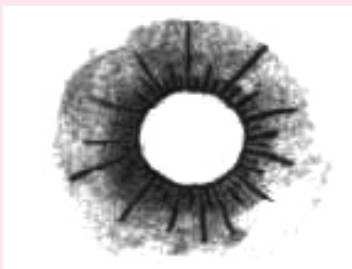
Heating kills germs. We heat milk to prevent it from being spoilt.

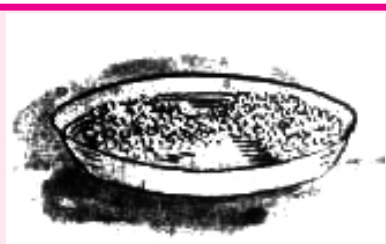
Many food items can be preserved simply by drying them in the sun and fire.

List a few food items preserved by drying in the sun.

_____ _____ _____

_____ _____ _____





Drying food in the sun and wind to prevent food spoilage has been known since ancient times. Water is removed by evaporation in the process. This prevents the growth of micro-organisms and decay. Fruits that have a high water content such as prunes, raisins, dates, coconut, figs, amla (Indian gooseberry) are preserved by drying.

Fruits and vegetables can be made into jams, jellies and pickles. The salt and spices in the pickles or the sugar in the jam prevents germs from spoiling the food items. Potatoes and bananas are prepared in the form of chips.

Let us now talk

* Make a list of preserved foods you eat.

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

* Why do we need to preserve food ?

_____

_____

* Is there any kind of pickle made in your house ? What kind of pickle is it ? Who makes it ? From whom did they learn to make the pickle ?

_____

_____

* What things are needed to make any type of pickle in your house? How is the pickle made ? Find out the recipe and write.

_____

_____

_____

* It is one and a half day journey by bus from Imphal to Guwahati. If you are to go on this trip, what food items would you carry with you ? How would you pack them? Make a list of all the packed food. What food would you eat first and why ?

_____

_____

_____

LESSON No. 14

WHO PRODUCES THE FOOD WE EAT



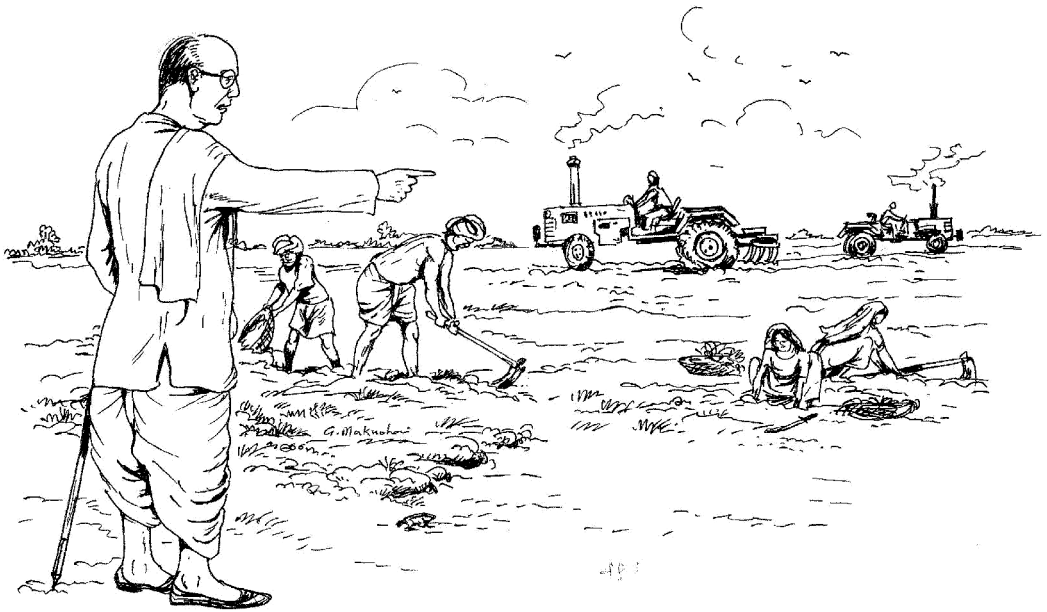







Look at the pictures above. Can you recognise them? They are grown by farmers. Sixty percent of the people in our country are engaged in farming.

There are three kinds of farmers in our country. They are Big farmers, Marginal or Subsistence farmers and Tenant farmers.



Big farmers have large plots of lands. Farming is done by workers employed by them. They are very prosperous. They sell their crops and produces in the market. There are farmers who own small plots of land or farm. They produce only that much, which is sufficient for their family. They are called **marginal (or subsistence) farmers.** They cannot produce much to sell in the market. Farmers in our state are mostly marginal farmers.

Tenant farmers cultivate the land owned by other people. They do not have land or farm of their own. They share the produce with the owner.

In the hills, jhoom cultivation is done by farmers. Jhoom cultivation is a system of farming under which areas of forest are burned and cleared. Cultivation is done there and then usually abandoned after two or three years. They migrate from one place to another for cultivation. They are also **subsistence farmers**. Because of migration of the family, there may be children who miss school.

Tell the story of a boy or girl who missed school due to such migration.

From where do farmers get seeds?

Let us hear the story of a farmer as told by a paddy seed. I am a **rice seed**. My name is **Phouren,** which means superb rice. I have been staying in a small sack at the corner of a family deity. I want to tell you my story. This is a long story-but not mine alone. It is also the story of my farmer Chaoba.

I was born at Kakching in Manipur in the year 1940. That year there was good crop of rice. Our area was famous for its crop and vegetables. Each year Chaoba kept aside some grains of rice from a good crop in a sack. This way our rice family went on from generation to another. He also kept different selected seeds in different boxes for next season.

In those days Chaoba and his family lived together. It was a large family. Everyone in the family helped each other, even in farming. When the crop was ready and harvested, everyone celebrated together with big feasts and lots to eat.

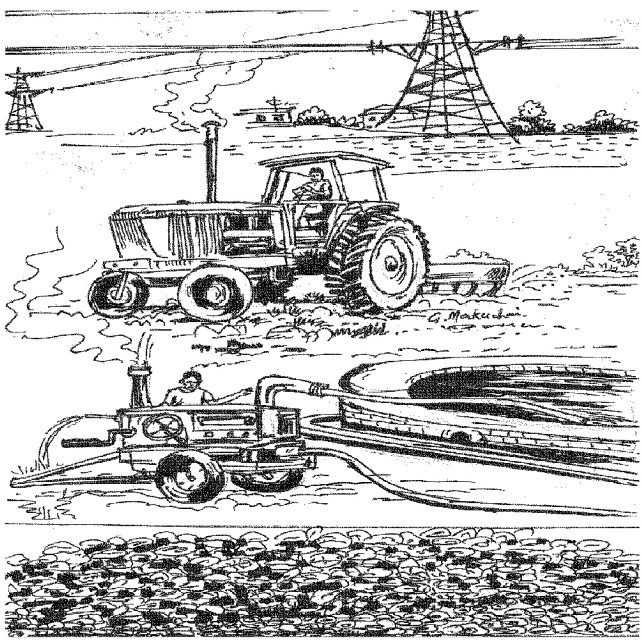
Farmers would grow many different kinds of crops - grains and vegetables - according to the season. The farmers kept enough for their needs and sold the rest to market and shopkeepers from the city. Some farmers also grew cotton and mulberry. At home family members spun cotton and silk on spinning wheel to make cloth.

Over the years, many changes took place in the village. Some places could get water from the canal. A dam was built on the river. Then electricity came. Switch on the button and there was light ! People found that only a few crops like rice and potato, got better prices in the market. So most farmers began to grow more on these. But alas ! We were forgotten and dismissed

even from chaoba's fields. Farmers began to buy seeds from the market. People said they were new kinds of seeds and were high yielding. So farmers did not need to store seeds from the old crop.

On special days people in the village cooked and ate together. As they ate, they could remember how tasty the rice of my variety used to be in the past. When the variety of seeds changed, how could food ever taste the same?

Chaoba was getting old. His son Thoiba looked after the fields and family. He brought new machines for farming. He used an electric generator to pump water and also a tractor to plough the field. The tractor could do in a day what the bullocks would take many days to do.



Thoiba would say, "Now we are farming wisely. We are using high yielding variety. With profits from our fields we can improve our life. We can make progress".

Lying forgotten in the small sack, I and other seeds had our doubts. Is all this really progress? There is no longer any need for seeds like us, and animals like the bullocks. After the new machines have come, people are not willing to work in the field.

The next twenty years saw even more changes. Without cows and buffaloes, there was no cow dung, to be used in the fields as manures. Thoiba had to buy expensive fertilizer. The new kinds of seeds were such that the crops were easily affected by harmful insects. Insecticides had to be sprayed on the crops to keep away the insects. Oh, what a bad smell these had and how expensive and poisonous they were !

The canal water and the rainfall were not abundant enough for the new crops. The price of seeds and fertilizers became higher and higher. Farmers had to use water pumps to feed the plants in time. To meet all these expenses, loans had to be taken from the bank. Whatever little profit was made, was used to repay the loan.

The soil itself was no longer the same. Growing the same crop over and over, and using so many chemicals had affected the soil. Plants could not grow well there. Farming becames more difficult year after year.

Thoiba too changed with the times. He was tense and angry most of the time. His educated son Khunjao did not want to do farming. He now started work as truck driver. After all, the bank loans still had to be repaid. Often Khunjao did not come home for days. At times he was away for a week. A few days back he came home. During a luncheon, Khunjao asked his mother , “How could we ever have the taste of phouren rice”?

Now do you understand why I told you my story ?

Let us now talk

* The Phouren seed saw differences in the way Chaoba and Thoiba did farming, for example in ploughing, irrigation, etc. What were those differences.

_____

_____

* What happened to Thoiba's farm after some years?

_____

_____

_____

* Chaoba's son, Thoiba, choose to become a farmer like his father. Thoiba's son Khunjao was not a farmer, but a truck driver. What made him do so?

_____

_____

_____

* Have there been any changes near your area in farming ? Ask your mother or an elderly person of your locality. What changes are those?

_____

_____

_____

LESSON No. 15

FOOD HABITS AND FOOD SCARCITY

Food habits of peoples across the globe are different from one another. This is understandable because we live under different climatic zones and topographies as well as follow different belief systems and hold on to specific cultures. Take for instance, we cannot expect Europeans to eatbamboo shoot. Although the climatic condition of Europe is cold, bamboo does not grow in this continent. Whereas peoples in many parts of Asia consume the tender shoots of bamboo, in its natural state or after fermentation, because the plant is abundantly available there.

Even if certain food items are abundantly available in a particular place, the inhabitants do not consume them on account of its religious beliefs and culture. Here we may mention about believers of religions such as Hinduism, Christianity and Islam. Certain items are considered either to be "sacred" or "taboo" to be eaten. Cow is considered to be sacred by Hindus. Whereas for Christians and Muslims, beef is a food item. At the same time, pork is a taboo for the Muslims and Seven Day Adventists. Jains refrain from eating onions and garlics.

Prohibition of food items are also on the grounds of humanity, compassion and love. For example, recently, the United States of America passed a bill banning the slaughter, transportation, sale and possession of dogs and cats for consumption. It urged all countries in the world including China, South Korea and India to end the dog and cat meat trade. A Congresswoman of the Senate stated, "Dogs and cats are meant for companionship and recreation".

Finally, food habits are also highly personal based on one's aesthetic sense such as colour, taste, smell and sight. This is beyond one's religious and cultural affiliation as well as humanism.

Therefore, it is very important to respect the sentiments of people when it comes to food habits. Never force a food item against one's will!

Based on food habits people can be categorised into two broad groups such vegetarians and non-vegetarians. Vegetarians usually refrain from meat products. Non-vegetarians consume both vegetables and meat products. However, as we have seen above, there can be individual variation within each group.

Ö Collect pictures of food items from different places/culture. Discuss about it in your classroom.

Ö Identify vegetarians and non-vegetarians in your classroom.

Ö Make a chart of your favourite food items and food items you dislike the most

When do people not get food?

In Mizoram, in the year 1958–59 many people went hungry on account of "Mautam". "Mautam" in Mizo means "bamboo death". During "Mautam", a species of bamboo flowers at one time across a wide area. This event is followed invariably by a plague of black rats in what is called a "rat flood". This occurs as the rats multiply in response to the temporary windfall of seeds, and leave the forests to forage on stored grain when the bamboo seeds are exhausted, which in turn causes devastating famine.

Famine can be described as a severe shortage of food resulting in violent hunger and starvation and death. As we have seen above, famines can be caused by pest menace as well as by natural disaster throughcrop failure.

Famine caused by nature such as less rainfall or no rainfall is called a natural disaster. But sometimes famine is caused not account of natural causes but

due to man-made causes. This happens when people hoard foodgrains so that there is a scarcity of food in the market. The scarcity of food leads to a rise in the price of foodgrains. This results in man-made famine. Such as man-made famine took place in Manipur in August 1965 due to scarcity of rice in the market. The Bengal famine occurred in 1943 in Bengal. It was estimated that over 5 million people died from starvation, malnutrition and related illness during the famine.

Floods, which we frequently witness in Manipur, and wild-fire also destroy crops leading to food shortage.

· Find out from your grand-parents and elders about the World War II in Manipur and people went hungry.

Do you know where grains are stored?

Foodgrains are stored in granaries and godowns. However, foodgrains may also be spoiled on storage. Rats, insects and micro-organisms can destroy stored foodgrains. Foodgrains can also be spoiled due to careless, handling in transportation, leaky bags, etc.

For protecting our foodgrains, we should use proper storage cabins and godowns.

· **Where is paddy stored in your house (local name)? Describe in 4 lines.**

_____

_____

_____

_____

Do you know that people gets ill because they do not have enough to eat due to poverty.

They are malnourished. Malnutrition can lead to various diseases. Dr. Tombi has two patients— Mariah and Wilson. Dr. Tombi talked to them to find out more about them. Let us read what the Doctor found.

Mariah, 5 years.

She looks about 3 years old and weak. She has very thin arms and legs and a pot-belly.She always feel tired and cannot go to school regularly. She do not like to play as she feels weak. She gets a little rice or one or two roti with a little sugar or dal in a day.

Wilson, 7 years

He looks older than his age. He is not very active. His body is fat and flabby. He goes to school by bus and spend many hours watching T.V.

He does not like home cooked foods. Junk food such as chips, burgers, pizzas and soft drinks from the market are his favourites.

Dr. Tombi measured the height and weight of both the children. Then she told them, there is only one treatment of both of your problems-proper food!

Proper food: Every Child's Right

We have read about the two children. One is Wilson who do not like home-made food but finds tasty to junk foods. Do you think Wilson would like games and sports? The other one is Mariah who does not even get enough meal to eat a day. There are many children in our country like Mariah.

They do not get enough foodto grow and develop properly. These children are weak and often ill. They are in poor health. But it is the right of every child to get proper food.

Doctor Tombi Explains:

No food is complete in itself. In order to have all the nutrients in adequate proportion, we must include different type of foods in our diet. Such a food is called a balanced diet. A balanced diet is one which contain different types offoods in adequate quantities and right proportion so as to meet the nutritional requirements of our body.

ACTIVITY

1. Talk to your grandparents or elderly people and find out what they ate and what work they did when they were of your age. Now think of your daily diet and daily activities. Are these similar or different from what your grandparents ate and did?

LESSON No. 16

481ZG7

FROM TASTING TO DIGESTING

Amina and Shelma are two sisters. They were playing with their mother. Amina said to Shelma, "I have something in my hand. You close your eyes and open your mouth, I shall put something to eat in your mouth, you have to tell what it is". Amina took a piece of lemon and pressed it between fingers so that a few drops fell in shelma's mouth. "Oh! it is sour lemon," Shelma replied quickly. Amina then picked up a piece of cream biscuit. She crushed it and put it again in Shelma's mouth, but Shelma easily guessed it.

It was then Amina's turn to taste. Their mother gave them different food items. They tasted all. Some of them, sweet, some a bit bitter, some a little salty, and some - a bit sour.

Have you tasted tamarind ? I bet your mouth is watering just by hearing the word **tamarind**. Sure, you love the sour tamarind on hot summer days.

Discuss and Write

* Why did Amina's and Shelmas's mouths start watering when they heard the word tamarind ? When does you mouth water?

_____

List five things you like to eat and describe their tastes.

_____

_____

_____

_____

_____

* Do you like only one kind of taste or different ones ? Why?

_____

_____

* Can you tell it is fried fish even before tasting it ?

Can you guess the names of certain things only by their smell, without seeing or tasting them ? What are those things.

_____

_____

☐ **What happens in the mouth to the food we eat ? Chew it, chew it well: What is the difference ?**

Try this together in class.

- ☐ Each of you take a piece of bread or roti or some cooked rice.
- ☐ Put it in your mouth, chew five to six times and swallow it.
- ☐ Did the taste change as you chewed it?
- ☐ Now take another piece or some rice and chew it twenty to thirty times.
- ☐ Was there any change in the taste after chewing so many times?

Discuss

* Has anyone told you to eat slowly and to chew well so that the food digests properly. What do you think why they say this?

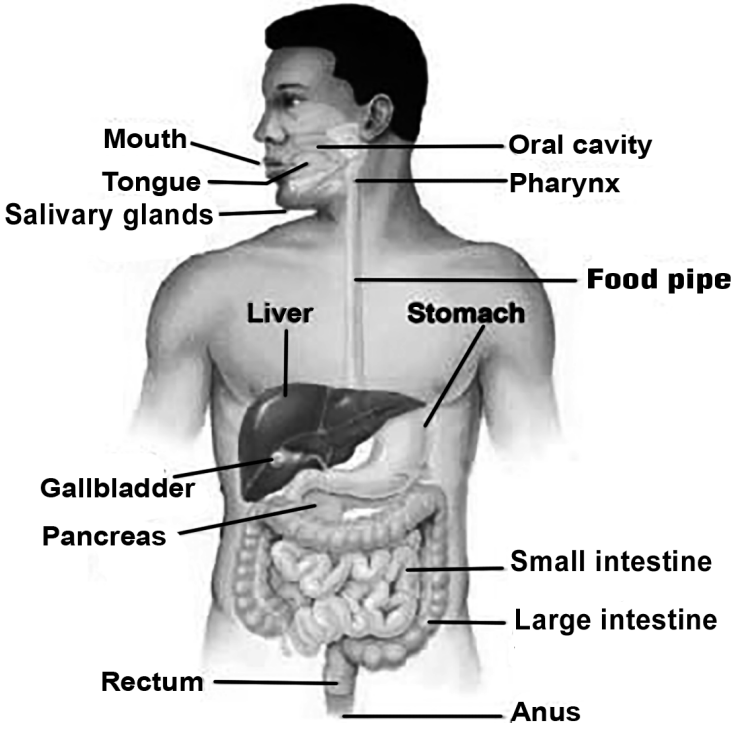
_____

_____

* Imagine you are eating something hard like a groundnut or an unripe guava. What kinds of change take place in it from the time you put it in your mouth and bite a piece of it to the moment you swallow it ? Think what does the saliva in your mouth do.

Saliva helps in the digestion of food you eat. Saliva changes starch into glucose.

Where does the food go after you put it in your mouth, chew and swallow it ? Look at the picture given here and find the path of food through your body.



KHURSID ON A GLUCOSE DRIP

One day Khursid was very sick. He was vomiting and also had loose motions. In the morning his father gave him sugar and salt solution. However, he had still loose motions. By evening he was feeling very weak and dizzy. His father had to call a doctor. He was given glucose drip. Khursid now remembered that during games and sports meet of the school, the teacher sometimes gave them glucose to drink. But what was a glucose drip ? Doctor uncle explained, "Your stomach is upset. Your body is not keeping any food and water. So you have become very weak. Glucose gets readily absorbed by blood. It will give you some strength quickly, even without eating".

* Have you ever tasted glucose ? How does it taste ?

  _____

* Have you or anyone in your family been given a glucose drip ? When and why ?

  _____

* Look at Khursid's picture and describe how is the glucose drip being given ?

  _____

  _____

  _____

LESSON No. 17

DIFFERENT TYPES OF HOUSES

You have seen different types of houses on your way to school. In what ways are they different ? Look at the pictures of two houses given below. In what way are they different?

Type -I

Type -II

Fill in the boxes :

Particulars	Type -I	Type- II
Materials used		
Type of roof [sloped/flat/etc.]		
Estimated cost of construction		
Economic status of the owner		

Economic condition of the people leads to the difference in the type of their houses. Is economic condition the only condition to have different types of houses ?

These are different types of houses in different parts of the country.

A house in hilly region of Meghalaya.

A stilt house in flooded area of Assam.

In flood prone area, during rainy season the rivers are flooded. In such area the foundation of the houses are raised up very much or the houses are built on wooden platform. These are the houses on stilts.

A house in dry region of Rajasthan.

In hot regions of Rajasthan the houses are made of thick earth wall. It can keep the house cool inside.

People living in Himalaya's mountain regions experience snowfall every year. They make their houses with sloping roofs. Do you know the reason ? When snow falls on the roofs, it slides down easily and does not collect at the top.

House in Darjeeling.

Fishermen living in the coastal area do not make permanent houses. They build only temporary houses. They mainly use reeds, wood, coconut leaves, etc. to built their houses. Can you imagine the reason?

Houses in coastal region of Kerala.

In coastal areas big waves of the sea often damage houses near the sea. So, they build only temporary houses. When damaged it does not cost much to rebuild the houses with reeds, wood or coconut leaves.

House boat in Dal lake.

Some people have to live on lakes for a long period. They make their houses on boats. We can see house boats in Dal lake in Kashmir and in Kerala also.

In Loktak lake the fishermen build their houses on floating phumdi. In rainy season when the water level rises it does not affect the houses as it is still raised up.

In big cities people can get the building materials like bricks, iron, stone, marbles etc. easily. So, people make big strong and beautiful houses. They are known as pucca houses. It can be raised up to multi-storey. It can accommodate a large number of people.

In some area like Japan there are frequent earthquake. Earthquakes cause damage to concrete houses. They like to use light materials to construct their houses. Wooden houses are built mostly in these areas.

In cold Arctic regions the land is completely covered with ice. There, houses are made of ice bergs. These houses are known as **igloos**. It can protect the inhabitants from cold wind.

Now, you can conclude : The types of houses are different mainly because of the environmental conditions, availability of materials and economic status of the people.

* Describe how these houses suit the needs of the people who live there.
* How are these different from the house you live in?

LESSON No. 18

48JRJH

A SHELTER FOR EVERYONE

All of us have houses or shelters to live in. Our houses are located in a village, hamlet, colony or a neighbourhood. We live together as we are dependent on one another and help each other during difficult times. By living together, we share the resources available there. Living together provides us security, too. We celebrate our joys together and share our sorrows. This is how we lead a social life.

We are dependent on so many people for our needs in the locality. Find out the following:

1. We depend on them for food _____
2. They make/mend our clothes _____
3. They make our furniture _____
4. They deliver our letters _____

5.They protect us from thieves and robbers _____

6.They treat us when we are sick _____

Since man cannot lead a solitary life and live in isolation, he is called a social animal.

Activity:

1.Find out who are living next to your house and what they do

2.Have you ever taken help from them? What are they?

Do you know that there are also other creatures which lead a social life?

Some insects live together and work together.

Name three insects which live in a colony.

_____

_____

Have you seen insects living and working together?
Some varieties of ants, bees and termites live in colonies.

These insects are known as social insects.
They form social organization.

A team of ants can carry comparatively bigger food item for their colony.

Who are the members of an ant colony? In an ant colony do all the ants do the same type of duty? Observe it minutely. In a colony there are several thousands of ants.

The members of the colony are divided into three classes. They are:

(a) **Worker ants or soldiers**

(b) **Queen Ant**

(c) **Drones** (males)

All worker ants are females. What is the duty of the worker ant? The worker ants collect food, look after the eggs and clean their nest. They do not have wings.

Queen ants lay eggs. To lay eggs is the duty of the queen ant. It has wings.

Male ants are only a few in number in a colony. They have wings.

Like ants bees also live in organised groups. A bee colony has one queen, some drones and many workers.

Drones are male bees. They do not work or sting. Worker bees are female. They do all the works of the colony. They collect nectar from flowers. They chew it and turn into honey. Worker bees produce wax. They make their hive. Have you seen a bee hive? What is the shape of bee hive? Their hives are shaped into hexagonal shapes. It has six angles. The cells are called combs. The cells are used to keep the eggs. And the eggs are nursed up to larvae. Some cells are used to store honey. It is the food of the members of the colony. During rainy season and other time when the bees can not work they use the stored food.

ACTIVITY

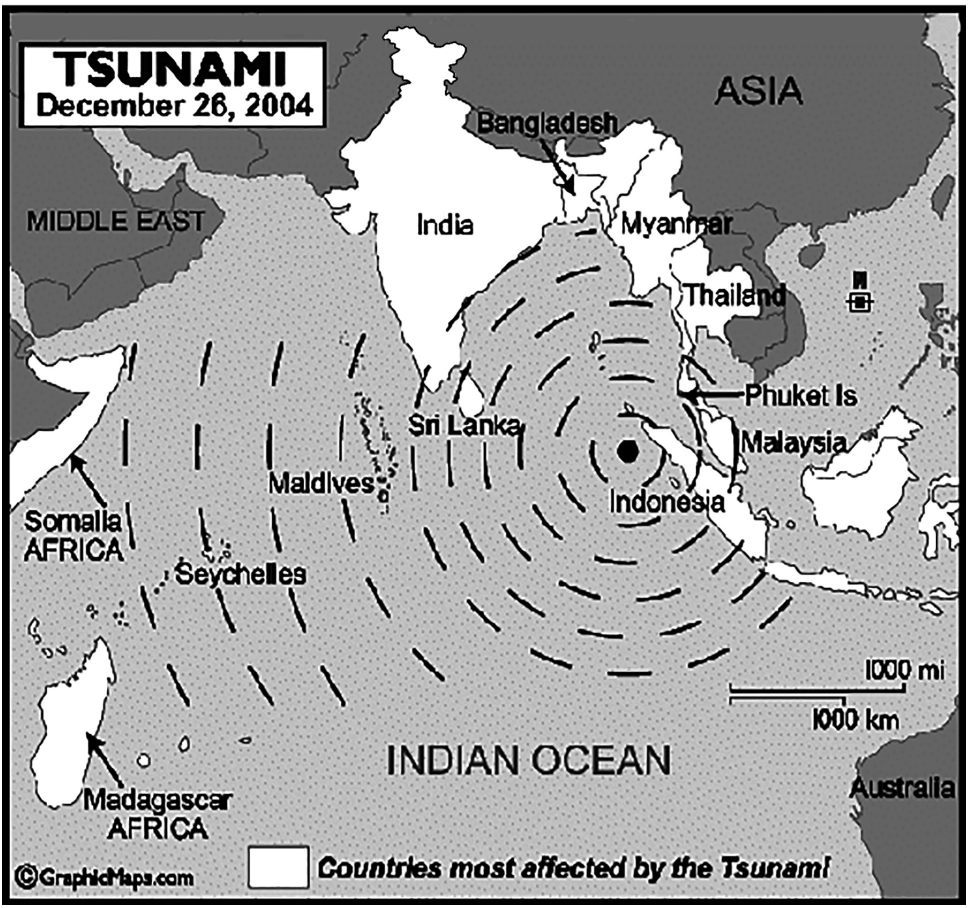
1. Watch a movie like, "A Bug's Life" or "More Than Honey". Learn how duties are distributed among the ants and bees in the respective movies. Share your learnings in the classroom.

LESSON No. 19

48TML5

TIMES OF EMERGENCY

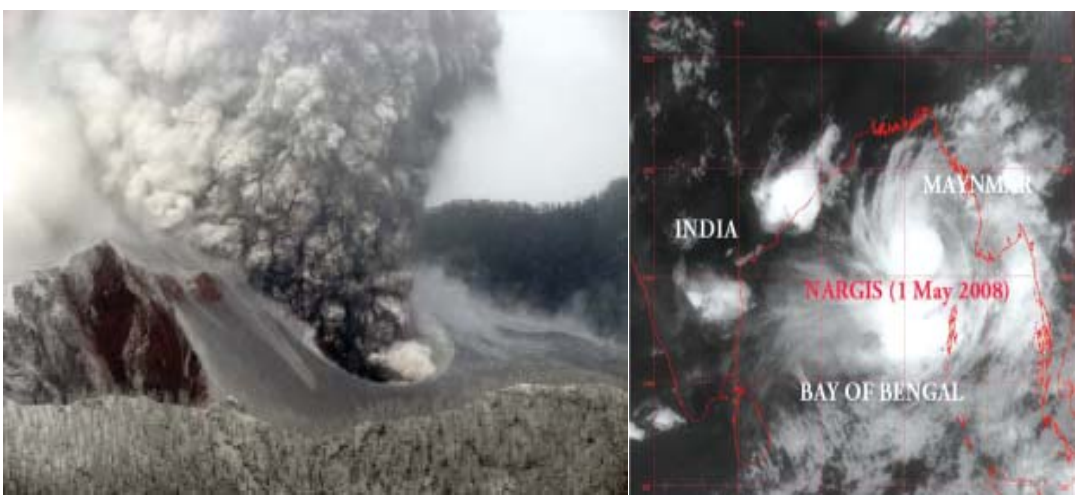
On December 26, 2004 a tsunami caused catastrophic floods. It killed more than 2,83,000 people in Indonesia, Sri Lanka, Myanmar, Maldives, Malaysia, India and parts of Africa. It is one of the worst natural disasters.



Tsunami wave

Nargis is the name of a cyclone occured in 2008. It killed more than 1,40,000 people in Myanmar. It is also claimed as one of the worst natural disaster in the decade.

What is desaster ?



Nargis Photograph

A major incident which causes a great loss of life and property at a particular place is called a **disaster.**

Disaster can be of two types : Natural and man made.

Disasters like flood, earthquake, cyclone and drought are natural disasters.

Flood

Drought

Earthquake.

Cyclone

Fire, war, famine are man made disasters.

War

Famine

Starving victims

Fire

Have you encountered flood ? Naturally flood takes place after a long heavy rain. Many commodities are submerged under water. Road and bridges are destroyed. During flood drinking water is a problem. ‘ Water water everywhere but no water to drink’ is the situation.

Water bottles

After flood generally epidemic is spread. Do you know the reason? Vaccination of some common diseases that may occur after flood should be done.

Name a family affected by flood.

_____

Where do they take shelter ?

_____

What are their properties damaged by flood ?

_____

Disaster of any kind is a very traumatic experience. Often people who lost property and their relative go in a state of shock. They need moral and emotional support. At such time community help is very useful. The community can arrange for food, shelter, clothing and medicine for the affected person.

Flood Camp

Appeal in Newspaper of Japan Tsunami

If a disaster happens in any country, people from all over the world contribute generously to help the sufferers.

The police help to maintain law and order during a disaster. They help in the rescue works also. Armed forces play a great role during disaster. Air force people drop food, water bottles, clothing to the affected area.

Many organizations work to provide relief and support to the people during disaster. Some of these organisations are national and some are international.

Some organizations are -

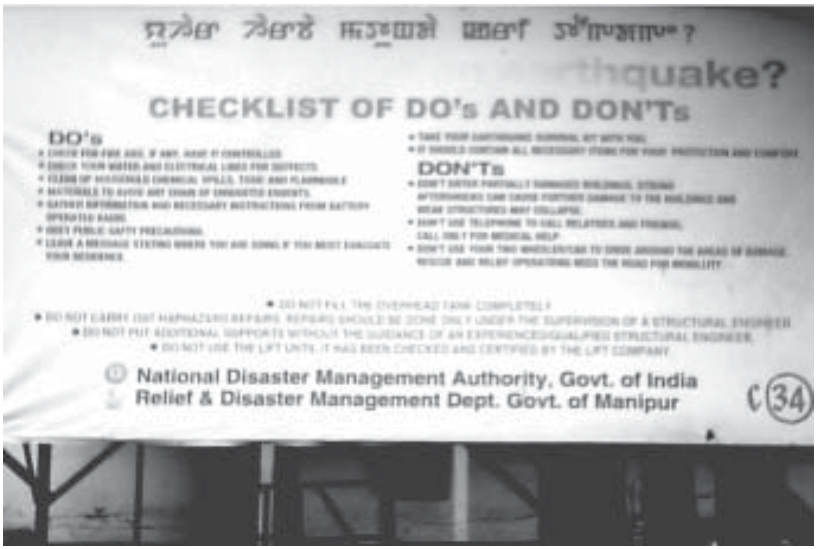
United Nations Children's Emergency Fund (UNICEF),

Red Cross Society,

First Hand Foundation

Earthquake can damage structures on the earth without giving any hint. Till now earthquake can not be predicted. The causes of earthquake are beyond the control of human being. Awareness of the safety measures is a must for all of us.

See the display shown here.



Do you understand the meaning of the display ? Write do's and don't during earthquake.

Do 's	Don't

NSS

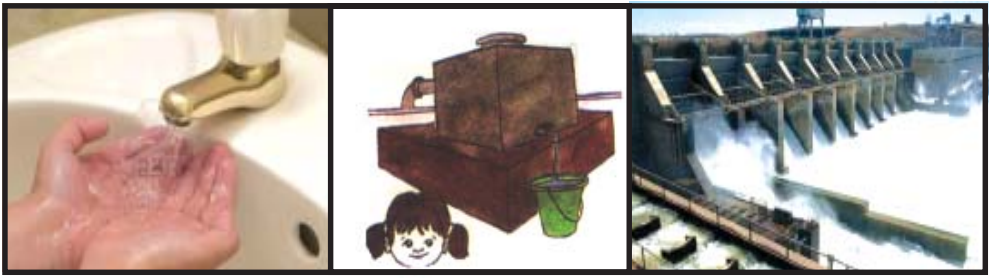
Disaster Management Scene

Don't forget we are in an earthquake prone region. Take up safety measure. Train yourself for rapid response. Don't panic.

LESSON No. 20

493IMS

WATER FLOW



You must have seen paddyfields in a countryside. Do you know that cultivation of paddy requires a large amount of water ? So farmers have to supply adequate water to the fields where paddy is grown. Supplying water to the fields where crops are grown is known as **irrigation.**

Pay a visit to a paddyfield and find out —

* From where do farmers get water to grow paddies ?

After the paddy is harvested, farmers grow crops like pulses, maize, tobacco, etc. Do you think that these crops need a large amount of water as paddies do ?

SOURCES OF IRRIGATION

Canals, wells, tubewells and tanks are the important sources of irrigation. You have seen that water is stored in an artificial lake by constructing a dam across a river. Water from the lake is diverted to the fields through small channels called **canals.** Sometimes river water is also diverted to the fields through these canals. You will find this type of irrigation in most of the paddyfields in the Imphal valley. Canal irrigation is very useful in the drier parts of Punjab and Rajasthan.

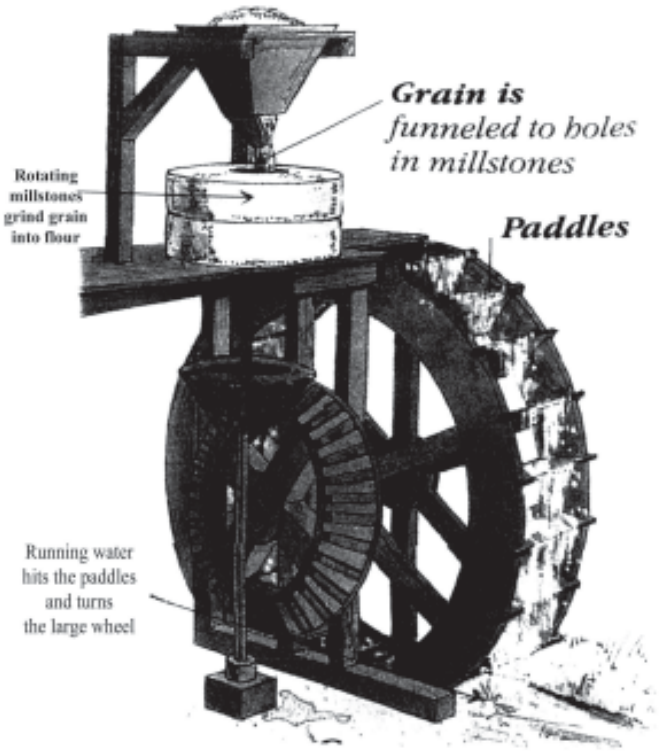
In well irrigation, water is drawn from the well with the help of some device or pumping sets. Moreover, deep bores are dug into the earth with drilling machines. Water is lifted up from these boreholes by sinking tubes. Such very deep wells are called **tubewells.** Wells and tubewells are widespread in the plains of northern India.

In south India where the surface is uneven, rainwater gets collected in natural hollows. Tanks are constructed at these places for storing this water. The water from the tank is used for irrigation in dry seasons.

Can you tell the type of irrigation used mainly in the Imphal valley ? Have you seen water flowing upwards ? Where — at home or somewhere else ? Let us see the different ways in which water is being lifted.

If you get water in your house by any of these ways put a tick (✓) on that. If not, draw a picture in the space below of the way in which you get water.

Teacher's Note : *Discuss the unequal distribution of water with children. It is important to know how people get water from different sources and the problems they face.*



WATERWHEEL

Look at this picture. It is a waterwheel — a machine that uses the power of water. Its large wheel turns as the flow of water hits the paddles. See how flowing water is used to grind grain.

Do it yourself

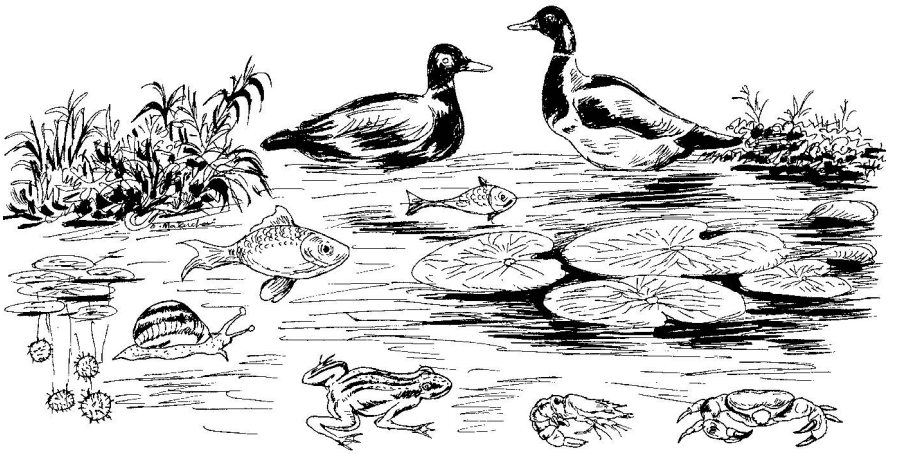
* Pay a visit to a paddyfield and ask the farmer about the quantities of water for different crops.

* Draw a picture of the waterwheel.
* Write the uses of the waterwheel in your notebook.

LESSON No. 21

4KGS4C

PLANTS AND ANIMALS IN WATER



Look at the picture and note the animals and plants that live in water. Can you name the animals and the plants in this picture ? Write their names in the appropriate column.

Animals		Plants
1.	1.	
2.	2.	
3.	3.	
4.	4	
5.	5.	

Some of these animals live both on land and in water and some live only in water. Can you classify the animals that live both on land and in water and those that live only in water ? Write their names.

Animals that live both on land and in water	Animals that live only in water
1. _____	1. _____
2._____	2. _____
3. _____	3. _____
4. _____	4. _____
5. _____	5. _____
6. _____	6. _____
7. _____	7. _____
8. _____	8. _____

Find out

If there is a pond or lake or river in your neighbourhood, then find out —

* Are there weeds that form a green floating mass on the water ?
* Whether the entire pond or lake is covered with weeds ?
* Is it possible to walk on the floating mass of weed or not?
* What are the types of plants that form the mass of floating weeds ?

This picture shows a portion of the Loktak Lake. Do you know that most of the lake is covered with floating phumdi or weeds ? Look at the floating phumdi and write the names of three plants that grow there.

_____ _____ _____

* **Do you find any difference or similarity between the plants of the floating weeds in your pond and those of the Loktak ? Write two differences or two similarities.**

_____

_____

` Now look at the pictures below and name the region (e.g. cold, hot and temperate) where these animals and plants are found. Write the name of the region in the given box.

Do it yourself

* List the name of animals and plants found in the pond or lake or river in your neighbourhood.

_____

_____

* Classify the animals you see around to show which one live in water and which one live on land.

_____

_____

* **Draw a picture of a lake or river.**

LESSON No. 22

4KQN5Z

WHAT FLOATS, WHAT SINKS AND MIXES

In the morning Chaoba went for a bath. He was in a hurry and the soap case fell out of his hands. He saw the soap case floating on water and the soap sinking to the bottom of the bucket. Chaoba thought — why did the soap case float and the soap sink ?

* Have you ever seen anything float on water ? _____

* Was it a paper boat or a piece of wood or anything else ?_____

Think what would happen if —

* You put a steel plate on water ? Would it sink or float ? What would happen to a steel spoon ?

* You put the cap of a plastic bottle on water ? Would it sink or float ?

Why, oh why ?
A wooden boat or an iron ship
floats on water.
But a needle or nail sinks in water.
Why does this happen ?

Think.

Do it yourself and find out : Do this experiment yourself. You will need a big tub filled with water and the things listed in the table. Put each thing one-by-one in water and complete the columns.

Things to be put in water		Sinks	Floats
(a) (b)	Soap Soap on a steel plate		
	An ice cube		
(a) (b)	Empty Steel bowl After putting in 7-8 small pebbles, one by one		
	Iron nail or screw		
	Matchstick		
(a) (b)	Empty plastic bottle Plastic bottle full of water		
(a) (b) (c)	Aluminium foil (from medicine packing) open and spread out in a cup-like shape pressed tightly into a ball		

After doing the experiment, fill in the blanks below :

1. The empty plastic bottle _____

   on water because it was _____

2. The plastic bottle filled with water _____

   because it was _____

3. The aluminium foil _____ when it was spread out. When pressed tightly into a ball it _____ because _____

4. The iron nail _____ in water because _____

5. The matchstick _____ on water because _____

Did you know ?

A liquid does not have its own shape. It takes the shape of the container that holds it. Thus a liquid poured into a bottle or glass will take the shape of the bottle or glass. You must have seen water bottle of different sizes e.g, 1/2 litre, 1 litre, 2 litres etc. We use litre as a unit for measuring volume of liquids such as water, oil, milk etc.

Which is faster ?

Do you know that water and milk flow more easily than oil ? For example, oil, milk and water will drip from a spoon at different speeds. Look at the picture. Oil flows off the spoon more slowly than milk or water. Why is it so ?

water

Oil

Teacher's Note : *At such a tender age, children should not be told about density, gravity, etc. We should accept answers that children may give, such as heavy, light etc.*

Do it yourself : *Put 2 drops of oil on the lid of your tiffin box or clip board. Next to that put two drops of water and two drops of milk or sugar solution. Tilt the lid or clip board. Which drops slid down quickly.*

Is it magic ?

Take some water in a glass. Put a lemon in it. Now keep putting salt in the water, a spoon at a time. Can you see the lemon floating in water ?

* What do you think, the lemon floated in salty water because

_____

DEAD SEA

You have learned that seas have salty water. The saltiest of all is the Dead Sea.**It is a sea between Jordan and Israel**. Imagine 300 grams of salt in one litre of water ! Even if you do not know how to swim, you will float in this sea, as if lying down on it !

Remember, how the lemon floated in salty water.

What dissolved, what did not ?

* Do this experiment

Make groups of three friends. For this experiment you will need 5 glasses, spoons, water and the things listed in the table. Take some water in each glass and try to dissolve one thing in one glass. See what happens and write in the table below.

Things	Did it dissolve or not ?	What happened after keeping for 3 minutes?
1. Sugar		
2. Sand		
3. Salt		
4. Oil		
5. Stone		

Now answer the following questions.

* Could you see the sugar after it dissolved in water ? _____
* Does that mean that the water does not contain sugar ? _____
* If the water contains sugar, then where is the sugar ? _____
* Did you see any difference between the water with sugar and the water with sand ? _____
* Which of the two would you be able to separate from the water by straining with a cloth— sand or sugar ? _____
* Does the oil mix with water ? _____

Find out

* What are the things that we put in water to make tea ? Which of those things dissolves in water ?
* You have been given some mishri pieces (lumps of sugar). Find some ways to dissolve them quickly.

LESSON No. 23

4KZJ7M

MOSQUITOES AND DISEASES THEY SPREAD

You must have been bitten by mosquitoes. When you have a mosquito bite, you feel a sharp pain. It is because the mosquito sucks blood from your body. Do you know the place where mosquitoes breed ?

Look at the area around your house and find out —

* Is there any stagnant water in the neighbourhood ?
* Are there mosquitoes in the stagnant water ?
* Is there any river or flowing water nearby ?
* Can you see mosquitoes in the flowing water ?
* Where do you find more mosquitoes — in the stagnant water or in the flowing water ?

Have you heard of a disease called malaria ? It is spread by a female mosquito known as **anopheles.** Through bloodsucking, malaria is spread by this mosquito. It is a serious disease and can be fatal. Therefore, we must be careful not to have mosquito bites.

* In what season do you find more people getting ill with malaria ?

_____

Do you know any other disease spread by mosquitoes? Have you heard of **dengue fever** and **encephalitis** ? If you read newspapers, you will find articles on malaria, dengue fever and encephalitis. Every year, during the rainy season, dengue fever kills thousands of people in Delhi. In Gorakhpur, many children also die of encephalitis. See, how dangerous these diseases are ! They are all spread by mosquitoes.

* Is there any means to reduce the mosquitoes in water ?

We can reduce the mosquitoes in stagnant water by applying surface films of oil and larvicides. Application of surface films of oil will clog the larvae's breathing tubes.

ACTIVITY

1. Pay a visit to a health worker or a doctor and try to know more about malaria, dengue fever and encephalitis.

2. If you find breeding sites of mosquitoes in your neighbourhood, destroy them immediately.

LESSON No. 24

4L9F9A

FUELS FOR VEHICLES

Do you know what is fuel ? It is a source of energy. It is something that is burned to provide power or heat.

Today, we see many vehicles on the road. A vehicle needs fuel to run on. Normally, most of the vehicles need petrol or diesel to run on. Today, some vehicles use natural gas to run on. In Delhi, almost all the public transport vehicles use CNG (Compressed Natural Gas). Such fuels are called non- renewable sources of energy or conventional sources of energy. Because, once these fuels have been used, they are lost forever. They cannot be re-used or recycled or renewed.

A CNG USED BUS

WHAT IS FUEL ?

What is the full form of CNG ?

Nowadays, some vehicles use fuels, like - natural gas, biogas, solar energy, hydrogen, ethanol and electricity, etc. apart from petrol and diesel. Such fuels are regarded pollution- free.

What fuels are pollution - free ?

Today, most of the trains use electricity or diesel to run on. In the past, trains used steam engine and coal to run on.

In the past, what types of fuel were used in running of a train?

An Electric Train

Do you know, from where do we get petroleum products ?

The word petroleum comes from the Latin words **Petra**, meaning rock and **Oleum**, means oil. In short, it means oil from rock. It took a long time in the formation of petroleum. It is formed from the decomposed remains of marine animals and plants which were there millions of years ago. Petroleum is a dark and grey liquid. After refining the crude Petroleum we get various petroleum products, such as - petrol, kerosene, diesel, etc.

Where from do we get petroleum ?

What is the meaning of petroleum ?

Name three petroleum products.

Petrol is costly. It is costlier than diesel oil. Go to a nearby oil pump and find out the cost of petrol, diesel and kerosene.

What is the price of a litre of petrol in your locality?

An Oil Pump

Have you seen a tractor ?

A tractor is a vehicle which is mainly used in ploughing and pulling loads. It is also known as a farm vehicle. The word tractor comes from the Latin word— **Trahere**. A tractor normally uses diesel as its fuel to run on.

What is a tractor?

A Tractor

Petrol and diesel are used in other purposes also. They are used in running water pumps, generators, etc. Petroleum products are precious. We must save it.

In what purposes other than vehicles, petrol and diesel are used ?

All vehicles do not consume fuel equally in running equal distances. Some vehicles may run 10 kms. only with a litre of fuel and some other vehicles may run even 30 kms. with a litre of fuel.

A water pump

ACTIVITY

Write a slogan for saving oil.

LESSON NO. 25

RIDE ON A SPACE CRAFT

During the day time, if we look at the sky with just our eyes, we can see the sun and the clouds. Sometimes a faint moon, aeroplane, birds, kites, etc. are also seen. During a clear night we can see usually the moon and the stars, etc. If you look at the clear nights frequently, you might recognise even a planet by its motion. Stars and planets are different things. All the planets circle the sun like the Earth. The stars are farther away from the planets. Most of the stars are large, hot, bright and shine like the sun.

Do you know what is Earth's atmosphere ?

In simple words, Earth's atmosphere is the mixture of gases that surrounds the Earth. It is difficult to say where the Earth's atmosphere begins. The Earth's atmosphere simply becomes thinner and thinner with the increasing of distance from the Earth's surface. Generally, the conditions of space begin at about 13,700 metre (45, 000 feet) above the Earth's surface. Above this level, human beings need scaled, pressurized suits or cabin for breathing. Everything becomes weightlessness.

Human beings explore the space for knowing more about the Earth, the solar system, the universe beyond and more and more. One of the most important reasons for space travel or mission is our own curiosity. They have always wanted to travel to distant planets and space. With the advancement of science and technology mankind has succeeded in doing so.

A number of space missions have been made for different purposes by different countries.

What things can you see at the sky with just your eyes during day time?

What is space ?

Why do men explore the space ?

On the 29th of July, 1969, the American Astronaut, Neil Armstrong stepped onto the surface of the moon. A few minutes later he was joined by astronaut Edwin E. Aldrin Jr. A third astronaut, Michael Collins, remained in the orbit above them in the command module "**Columbia**" of Apollo- 11 spacecraft.

Armstrong

Aldrin

He was the first person to set foot on the moon.

Name the astronaut who first landed on the moon?

Who is Michael Collins?

Since the Apollo 11 mission, human beings have performed a number of space missions. Unmanned spacecrafts have landed on the moon, Venus, Mars and Eros. Such missions have benefitted a lot to human kind.

Squadron Leader Rakesh Sharma of the Indian Air Force was the first Indian to fly into the space. He was born on the 13th January, 1949 in Patiala in Punjab. He flew into the space in 1984 as a part of a joint programme between the Indian Space Research Organization (ISRO) and the Soviet Intercosmos Space Programme. He spent 8 days in the space.

Rakesh Sharma in his space suit

While he was in the space, the then Indian Prime Minister, Indira Gandhi asked Rakesh Sharma how India is seen from the space.

"The reply was Saare Jahan se Achha".

Imagine yourself that you are flying in a spacecraft, away from the Earth's atmosphere. If your Prime Minister asked you about what you see from there, what would be your answer ?

Briefly relate the story of Rakesh Sharma's space mission.

Who said " Saare Jahan Se Achha" to whom from the space ?

Rakesh Sharma was awarded " Hero of Soviet union" on his return from the space. And the Government of India honoured him by awarding " Ashok Chakra'. He retired as a wing commander.

What is Ashok Chakra?

Kalpana in her space suit

Kalpana Chawla was the first Indian woman landed in the space. She was an Indian born– American Astronaut. She was also an specialist in space shuttle mission. She was killed along with 5 other crew members of the Columbian space Shuttle STS–107 when it exploded after its re-entry into the Earth's atmosphere on the 1st February, 2003.

Kalpana Chawla was born on the 1st July, 1961 at Karnal in Haryana. She got aeronautical engineering degree from the Punjab Engineering College in 1982. After that Kalpana moved to the United States of America and got a master's degree in Aerospace engineering from the University of Texas in 1984. In 1988, she got her doctorate degree in Aerospace engineering from the University of Colorado. In the same year she joined the NASA (National Aeronautics and Space Administration).

Kalpana Chawla in the

Kalpana Chawla became a naturalized citizen of the United States of America and married Jean-Pierre Harrison, a flying Instructor. Kalpana also got Flying instructor's licence and Commercial Pilot's Licence.

Kalpana entered NASA's astronaut programme in 1994 and she was selected for space flight in 1996. Her first flight mission to space began on the 19th November, 1997 as a part of the 6 - astronaut crew that flew the space shuttle - Columbia Flight STS- 87.

On her first mission, Kalpana Chawla travelled over 6.5 million miles in 252 orbits of the Earth and stayed more than 375 hours in space.

State the achievements of Kalpana Chawla.

What is the full form of the NASA ?

Sunita Williams was born on the 19th September, 1965 in Euclid, Ohio. She was a NASA astronaut. Sunita was assigned to the International Space Station as a member of the Expedition- 14 and then joined the Expedition- 15. She is the second woman of Indian origin to have been selected for a space mission after Kalpana Chawla. Sunita Williams holds some records for female space travellers. Her records are the longest space flight - 195 days, number of space walks - 29 hours and 17 minutes. Sunita Williams returned on the 23 rd June, 2007 after her successful space mission.

Sunita Williams

ACTIVITY

1. Mention briefly the space mission of Sunita Williams.

2. Visit a planetarium. Share your experience in the class room.

LESSON No. 26

4LS7CK

OUR MONUMENTS

There are many monuments across the world.
Then, what is a monument ?

In short, a monument is a famous place or building or structure that is preserved because of its historical and cultural importance.

A monument is a relic of the past. Our monuments tell us about our past glory. We can know our past tradition, culture and life from the monuments.

What is a monument ?
What can be known from monuments ?

Like other places, we have many monuments in Manipur also. Let's now know some of our monuments.

Kangla : The Kangla is situated at the heart of Imphal, the capital of Manipur. It was the capital of the kingdom of Manipur.

Western gate of Kangla

Nongda Lairen Pakhangba who ascended the throne in 33 AD ruled from the Kangla. It is also known as the royal palace. The British called it "**the Kangla Fort**", because it was fortified on all sides by walls. It was surrounded by waters also. There were moats on the north, the west and the south, like the present Kangla moats. They are known as the Thangapats. The Imphal River guards the Kangla on the east. It had four main gates.

The Kangla was the administrative headquaters of the Kingdom of Manipur. It is a sacred place. There are many sacred places inside the Kangla.

Almost all the ruins and relics of Kangla have now been restored to their original forms and structures.

Where is the Kangla ?

Why did the British call the Kangla as a "fort"?

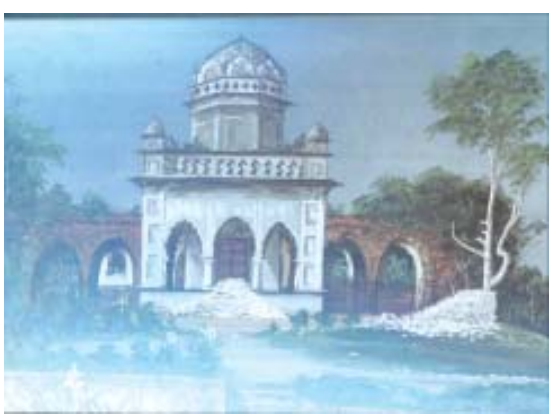
Briefly define the Kangla.

Make a visit to the Kangla and tell what you feel to your parents.

The Langthabal Palace (Konung) :-

Langthabal is about 8 Kms. away from Imphal on the south. The name of Langthabal was changed to Canchipur (Kanchipur) during the reign of Meidingu Khagemba. The place is still known by both the names.

There is a hillock at Canchipur, near Manipur University. You will find some brick structures and dilapidated buildings on the said hillock.



Langthabal Palace

They are the remains of the Langthabal Palace (Konung). It was the administrative headquaters or capital of the Kingdom of Manipur during the reigns of Bhagyachandra and Gambhir Singh. Chandrakirti also ruled from this capital for 4 months before shifting his palace to the Kangla. Maharaja Churachand Singh built his summer palace at the Langthabal Konung in 1907.

The government of Manipur is planning to restore the Langthabal Konung(Palace) to its past glory.

Where is the Langthabal Konung (Palace) ? State its importance in the history of Manipur.

Where was the Ras Leela dance performed for the first time ?

Who built a summer palace at Langthabal?

In India there are many monuments. Let us know some of the important monuments.

The Victoria Memorial :

There is a beautiful museum called the Victoria Memerial at Kolkata, the capital of West Bengal. It is also Known as the Victoria Memorial Hall. It was built by the British and opened as a Museum in 1921.

Victoria Memorial

There are a musical grandfather clock and Queen Victoria's rose wood piano with its desk in the said museum.

There are many books, portraits, statues, etc. in the 25 galleries of the museum.

Briefly discribe the Victoria Memorial Hall or Museum.

Mention the important items which are exhibited in the Victoria Memorial Museum.

The Taj Mahal :

Have you seen the picture of Taj Mahal or have you visited Agra ?

The Taj Mahal

The Taj Mahal is at Agra, a city of Uttar Pradesh. It was built of white marble by the Mughal Emperor, Shah Jahan. He built it in the memory of his queen, Mumtaz.

It is one of the most beautiful buildings of the world. Construction of the Taj Mahal was started in 1632 and it took 22 years in its completion. Everyday, many people from different parts of the world come to Agra to see the famous Taj Mahal.

Where is the Taj Mahal ? Who and why was it built ?

How much time did the construction of the Taj Mahal take?

The Red Fort :

The Red Fort

You might have seen the picture of the Red Fort. It is at Delhi, the capital of India.

It was built by the Mughal Emperor, Shah Jahan as his capital. The construction of Red Fort began on the 9th of April, 1639. It took nine years, two months and some days in its completion. It was the capital of the Mughal Empire till 1857. The Red Fort has six gateways. There are many buildings and gardens inside the Red Fort.

On the 15th August, 1947 Jawaharlal Nehru stood on the bastion of the Red Fort to deliver the historic speech of announcing India's independence. The forecourt of the Red Fort continues to be used on the two most important national events of India, namely the Independence Day Celebrations on the 15th of August and on the 26th January, where the Republic Day Parade ends here.

Where is the Red Fort?

How much time did the construction of the Red Fort take?

Who built the Red Fort ? Why was it built?

Why is the Red Fort so important in the history of India?

We have read about some important monuments in the above pages. Now, let's know about two historical personalities, one who built and lived at the Langthabal Konung (Palace) and the other who built the Taj Mahal.

Rajarshi Bhagyachandra

Meidingu Jai Singh, who is better known as Rajarshi Bhagyachandra ascended the throne of Manipur in 1759. His other names are Karta and Chingthang Khomba . He was born in 1748.

Meidingu Bhagyachandra was a staunch "Vaishnav". He abdicated the throne in 1762 when a Brahmin was killed by his servants. He did so to atone the murder. But he became the king of Manipur again and ruled till 1798.

The reign of Bhagyachandra witnessed many internal and external disturbances. The Burmese invaded Manipur three times during his regime. He established good relations with the Ahoms of Assam and the British.

However, the name of Bhagyachandra is more remembered as a religious, cultural and social reformer. No doubt, he was one of the greatest kings of Manipur.

He introduced the Manipuri era called the " Kangleipak Cheichat" in 1760.

According to the era, a calender which was 971 years in 1760 had been prepared. The era began in 789 A.D. i.e. 1760- 971 = 789. This era is known as the " Chandrabda" or " Manipurabda" also. He also encouraged the Hindu astrology.

Bhagyachandra took keen interest in the propagation of Vaishnavism. In Fact, it was during his regime that the Chaitanya's Vaishnavism became very popular in Manipur Valley.

The idols of Govindajee, Bijoy Govinda, Abdaita and Gopinath were made from a jackfruit acquired from the Kaina Hill on the east of Manipur Valley. The idol of Govindajee was formally installed with rituals at the

Langthabal Konung (Palace) in November, 1779. The installation ceremony is a remarkable epoch in the history of Manipur as the famous " Ras Leela" (Maha Ras Dance) was performed for the first time in this occasion. The Ras Leela was continued for five consecutive nights. Meidingu Jai Singh came to be known as Bhagyachandra after the installation of the Govindajee's idol at its temple at the Langthabal Konung (Palace).

Bhagyachandra and the Ras leela.

Bhagyachandra encouraged Manipuri Literature also. No doubt, all the writings of his time were greatly influenced by the then Bengali literature and its language.

He was a great patron of dance music and various art forms. The "Sankirtana" was also introduced by him. The social, religious and cultural fabrics of Manipur were Sanskritised by Bhagyachandra very extensively.

Rajarshi Bhagyachandra set off for a pilgrimage to Brindaban (Vrindaban) in 1798. He breathed his last at Murshidabad in West Bengal in October, 1798.

What are the other names of Rajarshi Bhagyachandra?

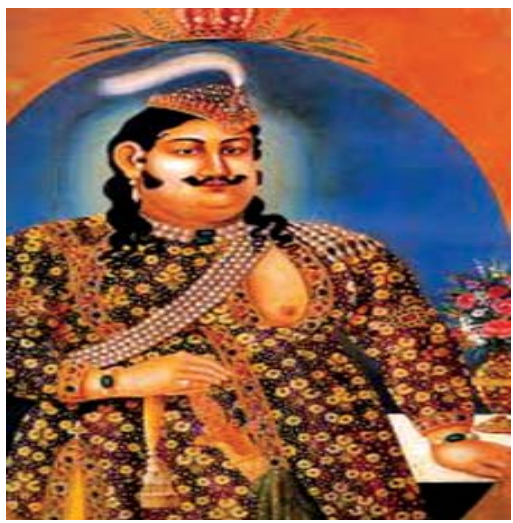
Why did Bhagyachandra abdicate the throne?

Who introduced the "Sankirtana" in Manipur?

Shah Jahan :

Prince Khurram, the original name of Shah Jahan, was born on the 5th of January, 1592 at Lahore (in modern Pakistan). His father was the Mughal Emperor, Jahangir and his mother was Jodha Bai(Jagat Gosain). Shah Jahan studied Persian, Turki and Hindi literatures. He also studied history, politics, theology, geography, physical education, etc. He was an efficient rider, a skilled swordsman and a confident archer. Above all, he was a very capable general.

Shah Jahan ascended the Mughal throne in 1627 and ruled upto 1658. He fought and won many wars and battles. Some modern historians opine that peace and prosperity prevailed during his regime and his period of rule was a golden age of the Mughal Period of Indian history.



Shah Jahan

Shah Jahan had many qualities. He was gentle, benevolent and cultured. He was a lover of arts and literature. He provided patronage to the artists and men of letters. Architecture reached its zenith during his reign. Not only the Taj Mahal, he built many beautiful buildings at Agra.

Explain the contributions of Shah Jahan in the history of India. Mention the qualities of Shah Jahan.

LESSON No. 27

4M23E8

GROW YOUR OWN FOOD

Any nutritional substance that people or animals eat or drink in order to maintain life and growth, is called **food**.

Some of our foods are from plants. We grow food plants. Fresh fruits and vegetables are important parts of our food.

To cultivate food for ourselves now has become a very important activity that is to be taken up to meet the food demands of modern world.

One of the most important aspects of food growing is to select the most proper or appropriate plants to be grown depending on climate, soil and rainfall. There are varieties of crops that are grown throughout the world. However, depending on the climate, soil, rainfall and available space; the variety, quality and quantity of certain crops may be selected.

We are familiar with the different types of food crops. For example, vegetables, fruit, grains are the sources of proteins, carbohydrates, vitamins and minerals. Grains are the primary foodstuffs which contain fibre and carbohydrates that can be stored easily for a long period of time. Some of the most important crops are corn, wheat, oats, rice, barley, etc. Beans, gourds, tomatoes, orchard fruits are the other sources of food energy.

We use various types of tools for the cultivation of crops. Some of the important tools for preparing the field are sickle, hoes, plough, shovel, hammer, spade,animal and machine drawn harrows,axe,machete, mechanized machines, etc

Agricultural hoes

Shovels

Pick axe

Bund maker

Plough is a tool used in farming for initial cultivation of soil in preparation for sowing seed or growing. The primary purpose of ploughing is to turn over the upper layer of the soil, bringing fresh nutrients to the surface, while burying weeds and the remains of previous crops, allowing them to break down. Ploughs were initially drawn by oxen or horses or mules. Now, most of the old methods are superseded by tractors, power tillers and other ploughing machines.

* **What type of crops can we grow in our kitchen garden?**

_____

_____

* **Name some of the important vegetables you find in your locality.**

_____

_____

* **How shall we prepare the paddy field before the cultivation of rice?**

_____

_____

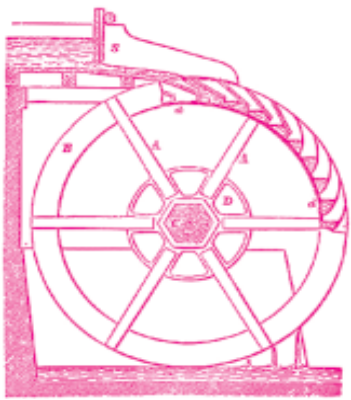
* **What are the important tools for preparing the field to grow crops in the kitchen garden?**

_____

_____

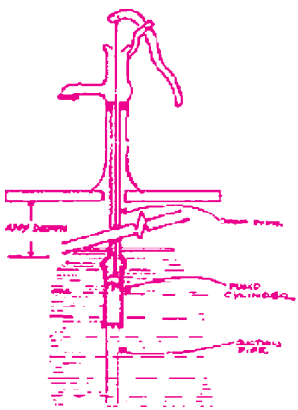
Watering of plants is one of the most important activities to be taken up while growing the crops. However, watering with care and appropriate dose is highly necessary. Establishing the correct water-air relationships in the soil is essential for the best growth of all plants. Watering too much or too often is likely to exclude the necessary oxygen from the soil pore spaces. Without enough oxygen, plants roots suffocate and die. Constant overwatering kills most plants.

We see different types of watering systems of plants starting from our manual hand sprayer can upto modern high pressure water sprinkler. For small area of cultivable land, water cans could be used. However, for those vast cultivable areas, water pumps, electric motors sprinklers are more convenient. Varieties of hand water pumps, sprayer can and other local made devices have been used in rural areas throughout the country including our state.



Water wheel

On the other hand, too little water, does not allow the roots to replace water lost by the plant through transpiration. The roots may dry up and die, and the top growth begins to show abnormal symptoms. In both cases, either too much or too little water, the plants suffers from lack of moisture in its tissues. Filling the entire root zone with water and then allow the soil to dry out partially before the next irrigation is good.



Hand pump

Pipeline irrigation that is a more rational form of water control management and allows for more economic use of water resources.

There are different types of human and animal powered water lift . Some of them are better than others for different purposes. The correct selection of water conveyance and field distribution system can often have a greater influence on the effectiveness of system.The use of a well-optimized and efficient water distribution.

An underground sprinkler system

The amount of drying depends on the plants species and size. Large trees and shrubs can be allowed to several inches down in the soil before re-watering.Water is indispensable for all agricultural crops. The critical role of supplying only the necessary amount of water at the required time is performed by agricultural irrigation systems.

* **Why do we water our crops?**

_____

_____

* **How do we lift water through a pump?**

_____

_____

_____

ACTIVITY

Make your own Water Wheel. Seek help of your parents/elders.