

EXPLORING THE NATURE

PLANTS



A resource handbook for nature facilitators

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**RUPA RAHUL BAJAJ CENTRE FOR ENVIRONMENT AND ART
(RRBCEA)**



Majestic trees of Empress Botanical Garden, Pune

About this booklet

We are fortunate to be located on the premises of the historical Empress Botanical Garden in Pune which has over 2000 species of plants from different parts of India and the world. The unique collection of plants is a valuable educational resource which can provide experiential learning opportunities for school aged children (as well as adults). One of the objective of **Rupa Rahul Bajaj Centre for Environment and Art (RRBCEA)** is to connect people with nature and nurture the naturalistic intelligence of individuals (see sidebar) through hands-on activities and first-hand experiences of natural environment.

Towards this end, we are developing interactive educational modules based on various themes related to nature.

We are happy to bring to you an educational module which will help participants of our **Empress Wild Explorer Program (EWEP)** to explore the fascinating world of plants through many informative and fun activities.

This is our first module in the series based on the theme- **plants.**

Naturalistic

Intelligence

Howard Gardner (1999) in his book “*Intelligence Reframed*” listed many types of intelligence such as linguistic, logical-mathematical, interpersonal, intra personal, naturalistic and so on. Naturalistic intelligence (NI) is the cognitive potential to process information about nature and ability of certain individuals to detect patterns in nature. Individuals with high naturalistic intelligence are likely to do well in nature related careers and can contribute towards sustainable management and conservation of nature (Watve and Watve, 2018).



Children making creative patterns with plant material

Watve S. and Watve A. (2018). Naturalistic Intelligence (NI): nature and nurture. Journal of Ecological Society Vol. 30-31(1): 25-34.

Outline of a typical EWEP session

A typical module of 2.5-3hrs can have four sections:

Section 1: Introductory/ information sharing

Section 2: Outdoor session (observation/ Hand-on activity/ measurements/ collection from surroundings/ game)

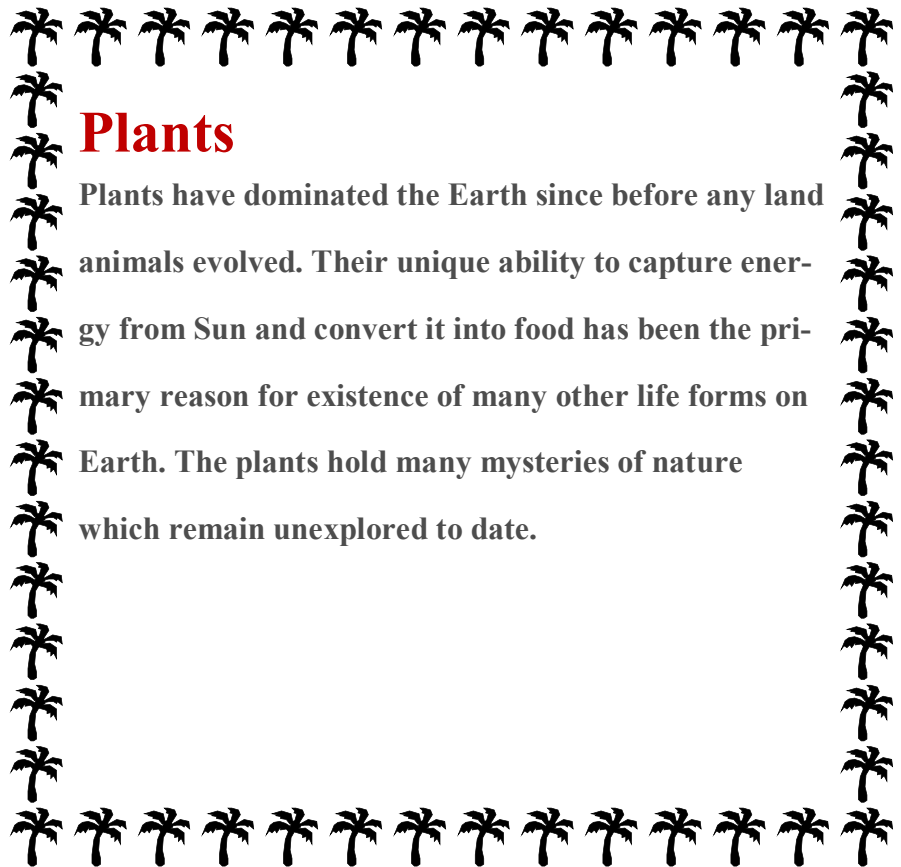
Section 3: Fun/ creativity session

Section 4: Indoor art based session (story/ song/ puzzle/ game/ make art from natural objects, etc.)

In this booklet we have shared some resources which are appropriate for different age groups and suggested few activities based on the theme. The facilitator can choose appropriate combination of activities based on age group of participants and time available.

Empress Wild Explorer Program (EWEP)

This program is designed for school aged children to connect them with their natural surroundings through experience based activities. This booklet will be useful for nature facilitators and educators to conduct outdoor and indoor sessions related to plants for school aged children. Although, some of the activities refer to plants seen specifically on the premises of Empress Botanical Garden, the activities can be modified easily to include flora elsewhere and customised to the educational requirements of target student group.



Plants

Plants have dominated the Earth since before any land animals evolved. Their unique ability to capture energy from Sun and convert it into food has been the primary reason for existence of many other life forms on Earth. The plants hold many mysteries of nature which remain unexplored to date.



Bonding with trees

Typical time lines for the module on plants:

* For 1st -4th std:

Session	Activity	Time needed
1	Introductory/ information sharing: Types of plants	20 min
2	Outdoor walk: Observations about plant adaptations, experiencing colours, textures, shapes of plants and plant parts, collection of Natural material	45 min
Break		15 min
3	Game: fact or fiction	30 min
4	Indoor session: making rangoli/ art on paper from natural objects collected during the walk (leaves, flowers, seeds, twigs, pods, etc.)	40 min
	Total time	150 min

Look at a tree, a flower, a plant.

Let your awareness rest upon it.

How still they are; how deep rooted in being.

Eckhart Tolle

Typical timeline for the module on plants :

* For 5th-7th std:

Session	Activity	Time needed
1	Introductory/ information sharing: Types of plants, native and non-native plants	20 min
2	Outdoor walk: getting to know more about 1-2 plants (observation, measurement session) followed by discussion	45 min
Break		15 min
3	Creative writing: Experience in outdoor sessions or any other natural surroundings they have visited in the past (national park, beach, trek in the mountains, ride on the river, etc.)	30 min
4	Indoor session: Design your own garden	40 min
	Total time	150 min

* For 8th-10th std:

Session	Activity	Time needed
1	Introductory/ information sharing: Phenology of plants, interactions of other species with plants	20 min
2	Outdoor walk: Measuring phenological states of 1-2 plants followed by discussion	45 min
Break		15 min
3	Creative writing: write a story/ poem/ short essay or Sketch on any one of the themes below: The Jungle inside me Grow like a tree Seeds of hope	30 min
4	Indoor session: Design your own garden	40 min
	Total time	150 min

Trees can be contorted, bent in weird ways, and they are still beautiful.

Alice Walker



Session 1: Introductory session (1st-4th std)



Bulrush



Arrowhead

Aquatic plants

Types of plants:

For 1st-4th std.

Time needed: Approx. 20 min

Aquatic plants :

Aqua = water. Plants that grow well in water. Some of the aquatic plants grow completely under water, some of them float on water but have roots underwater, while still others have roots completely attached to the bottom of water.

Water lilies float on water while their roots are anchored to the bottom. Their leaves are flat so as to float on water.

Hydrilla grows completely underwater. It can directly absorb water through surface of the plants. It is an excellent hiding place for fish and can also be eaten by fish.

Equisetum or Common Horsetail can grow partially or totally submerged in water.

Note for facilitators: Please show specimens of the highlighted plants on the outdoor walk, let the participants observe different adaptations for life underwater.

Morning Glory



Bougainvillea



Creepers/ climbers

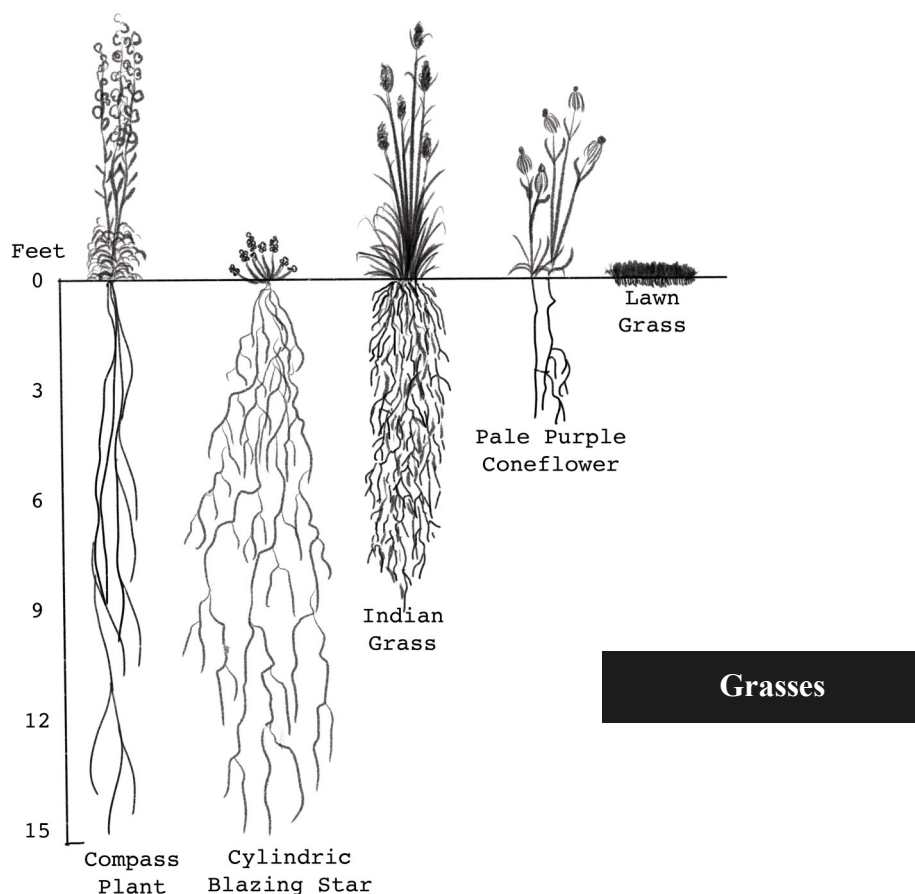
Types of plants:

Creepers/ climbers/ lianas :

Some plants need support to grow. They are creepers and climbers. Their stems are soft, and can bend easily. Many of them send out 'tendrils' = small spring like growths that can grow in different directions and hold on to some support.

Clitoria, Betel nut, madhumalati, and money plants are some of the climbers seen in the Empress Garden premises. Lianas are big woody climbers typically found in jungles. They can grow very fast and need the support of other plants to grow. They can form an aerial mesh of 'highways' which arboreal species can use to go from one place to another without coming down on the ground. Some of the lianas found in the Empress garden are- *Entada* and *Combretum* sp.

Note for facilitators: Please show specimens of the highlighted plants on the outdoor walk, let the participants observe different adaptations for climbing with support.



Grasses :

Grasses are tough plants that can grow in very difficult conditions. They are very important for the ecosystem because they hold onto soil and prevent it from getting washed off with rainwater. They can grow in degraded habitats. Humans have cultivated many grasses for their seeds (rice, wheat, oat, barley, corn, etc.).

More than 50% of calories in our food come from seeds/ grains of grasses! Not all grasses are weeds. The **lemon-grass** growing outdoors as well as in our kitchen gardens has nice fragrance and medicinal properties. We use it to make kadha or put it in the tea for nice flavour. The big **bamboo** growing in Empress garden is also a type of grass!

Note for facilitators: Please show specimens of the highlighted plants on the outdoor walk, let the participants observe how different grasses hold onto the soil.

Types of plants:

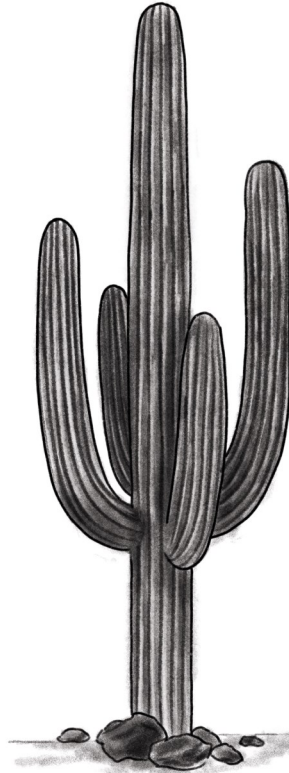
Succulents:

Succulents typically grow well in areas with less water. They store water in their leaves, stem, and roots. They can survive for many days without being watered.

Are succulents same as cactus?

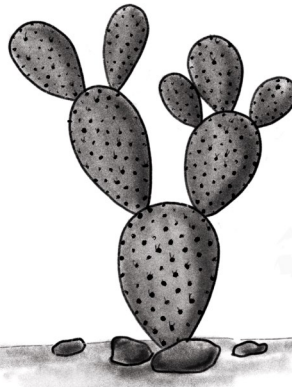
Well, all cacti are succulents but not all **succulents** are cacti. The **cacti** also have thick green stems and lots of spines. The leaves are converted into thorns to reduce surface area so that water loss is reduced.

Saguaro



Succulents

Indian Fig



Aloe Vera



Note for facilitators: Please show specimens of the highlighted plants on the outdoor walk, let the participants observe different adaptations for drier habitat.

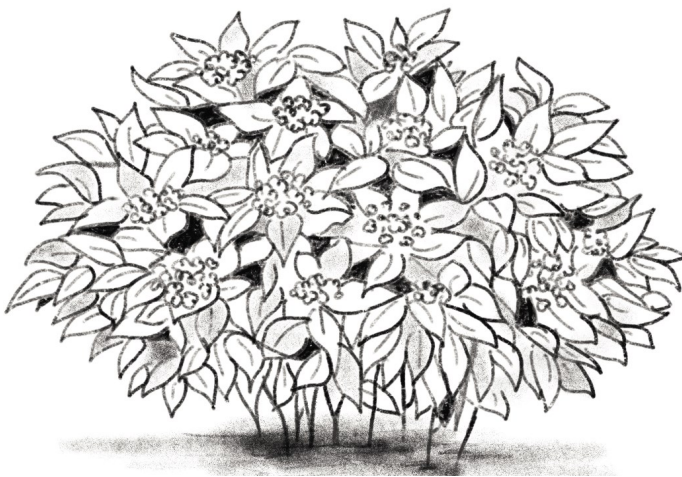
Types of plants:

Shrubs :

Shrubs are small or medium-sized plants with bushy or woody stems. The branches start emerging close to the ground. The plants do not grow very tall. There are many familiar species of shrubs which are ornamental plants, medicinal plants, or even weeds. **Mogra** (ornamental), **Tulsi** (medicinal), and **Lantana** (an invasive weed) can be seen at Empress Garden premises along with many other ornamental shrubs. **Snakeweed** (although it has 'weed' in its name) is a good nectar plant for butterflies. ***Nerium oleander*** is a shrub that is used as a hedge plant (to make boundaries for gardens, and roads). It is also a host plant for many butterflies and oleander hawk moth- which means these insects lay eggs on the plant and the caterpillars of many butterflies grow well by eating the leaves of *Nerium*.

Shrubs

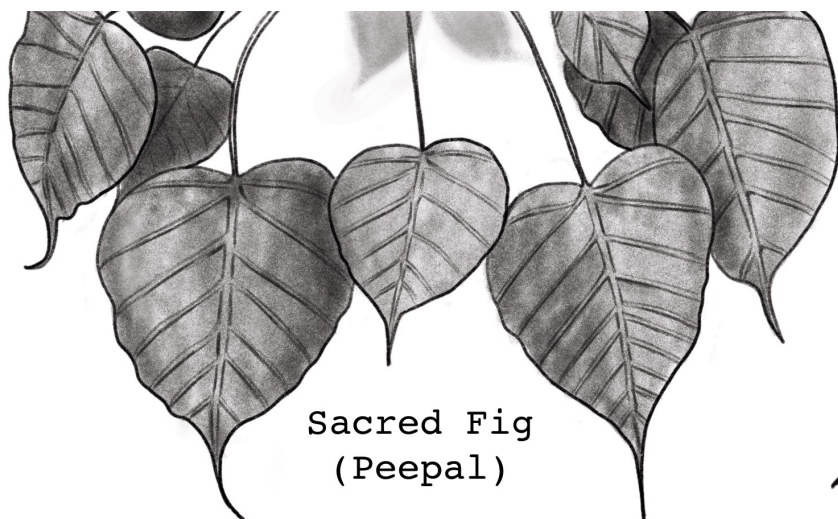
Hydrangea



Hummingbird
Summersweet



Note for facilitators: Please show specimens of the highlighted plants on the outdoor walk, let the participants compare the height of shrubs with themselves and big trees.



Sacred Fig
(Peepal)



Flowers of Flame
of the forest

Flowering trees

Types of plants:

Trees : Flowering and non-flowering

Trees are plants that grow quite tall and can live for many years. Empress Botanical garden is a treasure of many such old trees. Some of the trees in the garden like **white Shirish**, **rain tree**, and **Banyan tree** have lived more than 100 years.

Many trees found in the Empress garden are generally rarely found in India. E. g. The **calabash tree** with huge fruits also known as beggar's bowl typically grows in South America. The **sausage tree** typically grows in mid-west Africa. The **baobab tree** is native to Africa, Madagascar, and Australia. There are many non-flowering trees as well in the garden such as **fishtail palms** and **Cycas**.

Note for facilitators: Please show specimens of the highlighted plants on the outdoor walk, let the participants guess height and age of the trees, observe their leaves, flowers and fruits.

Session 1: Introductory session (5th-7th std)

Guidelines for 5th-7th standard session

The general information sharing session about types of plants for the age group 5th-7th standard can be very brief (about 10 min) just to refresh their memory about the types of plants they have learned in previous classes. In addition, 10 min can be spent on sharing information about native and non-native plants.

Native plants:

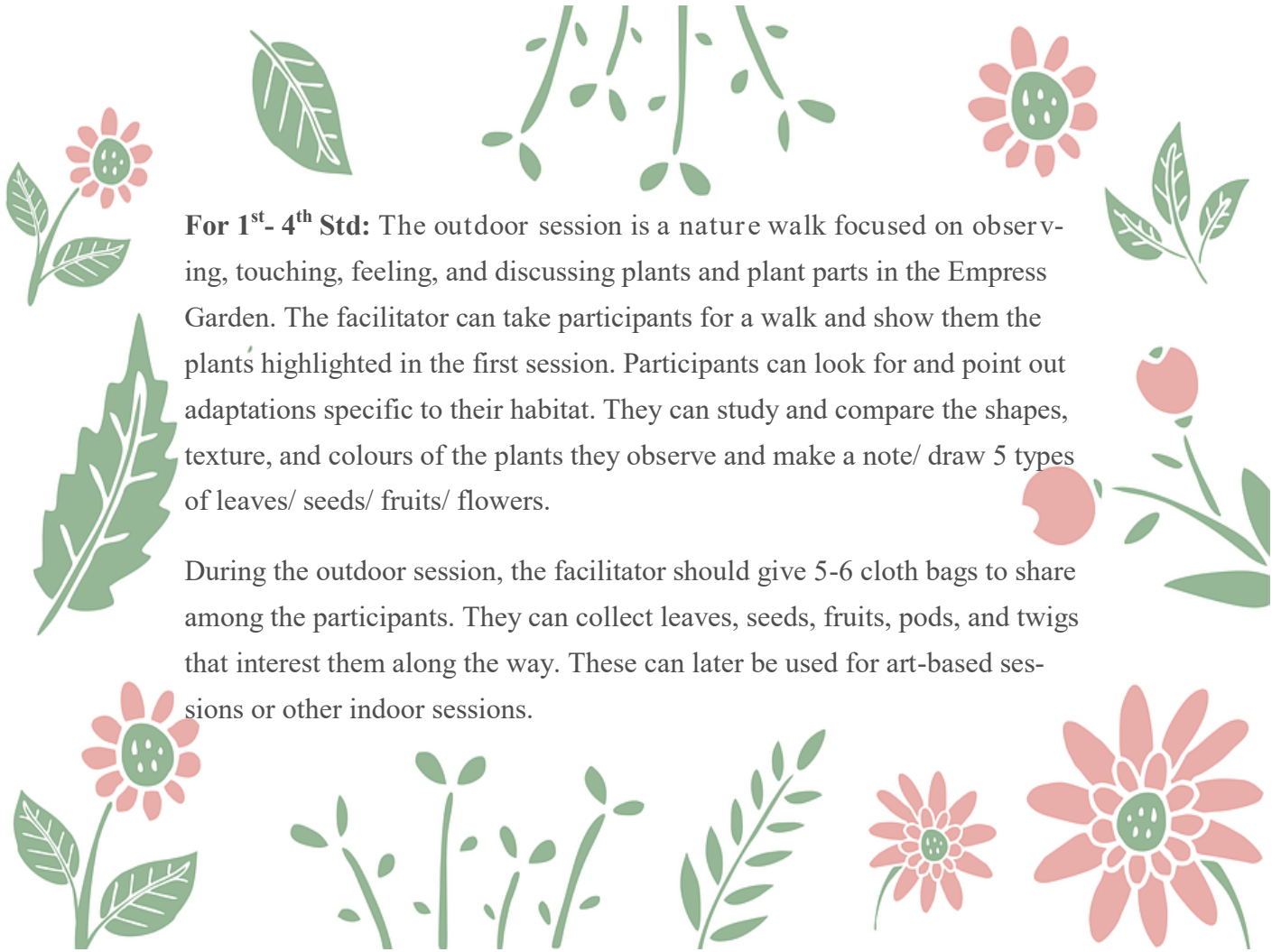
A native tree is one that has not been introduced by humans to that landscape and occurs naturally. Native trees are good for providing food and shelter for other species because local animals are familiar with them. The interactions between local flora and fauna have evolved over millions of years, while species that are recently introduced by human beings may not have any associations with the local fauna.

Native plant species are well adjusted to local environmental conditions, parasites, and other animals that 'interact' with them, while non-native species can be highly vulnerable to even slight changes in weather, attack by parasites, herbivores, etc.

Native species of plants	Non-native species of plants
Banyan	Tamarind
Peepal	Gulmohar
Mango	Jacaranda
Silk cotton tree	Calabash
Ficus (Umbar)	Baobab

Isn't it surprising that a very familiar tree such as tamarind is non-native? It probably came hundreds of years ago from tropical Africa and has now established itself in India. The name "tamarind" is Arabic (*tamar-e-hind*) and it means "Indian date".

Session 2: Outdoor session



For 1st- 4th Std: The outdoor session is a nature walk focused on observing, touching, feeling, and discussing plants and plant parts in the Empress Garden. The facilitator can take participants for a walk and show them the plants highlighted in the first session. Participants can look for and point out adaptations specific to their habitat. They can study and compare the shapes, texture, and colours of the plants they observe and make a note/ draw 5 types of leaves/ seeds/ fruits/ flowers.

During the outdoor session, the facilitator should give 5-6 cloth bags to share among the participants. They can collect leaves, seeds, fruits, pods, and twigs that interest them along the way. These can later be used for art-based sessions or other indoor sessions.



For 5th-7th Std:

The outdoor session will focus on getting to know more about some of the trees and collecting systematic data about the trees. This session can be conducted in small groups of a maximum of 7-8 participants.

Material needed for each group:

Printed data sheet (data sheet provided below)

Pen/ pencil, eraser, small ruler

Measuring tape (10m)

A pair of binoculars (optional)

Each group will collect data on 1-2 pre-selected trees. From Empress garden premises trees can be selected for measurements from the following list:

Wild almond tree

Rain tree

Calabash Tree (Beggar's bowl)

Tamarind

Mahogany

Gliricidia

Mango

Gulmohar

Fishtail Palm

Wood Apple/ Elephant apple (कवठ)

Printable observation sheets can be found on the following pages

Estimating height of the plant:

It is slightly difficult to measure the exact height of the plant without any equipment. Therefore, a standard method used for estimating tree height is as follows: A person stands at the base of the tree for which height is to be estimated. Another person stands away from the tree at a distance where he/ she can clearly see the top of the tree (albeit from below) and the person standing below. The person standing away from the tree takes an estimate visually- how many times the person near the tree has to stand on his/ her own head to reach the top of the tree? The height of the person standing near the tree x no. of times the person has to stand on his/her own head to reach the top = total height of the tree. As one can see this is a rough estimate of the tree height.

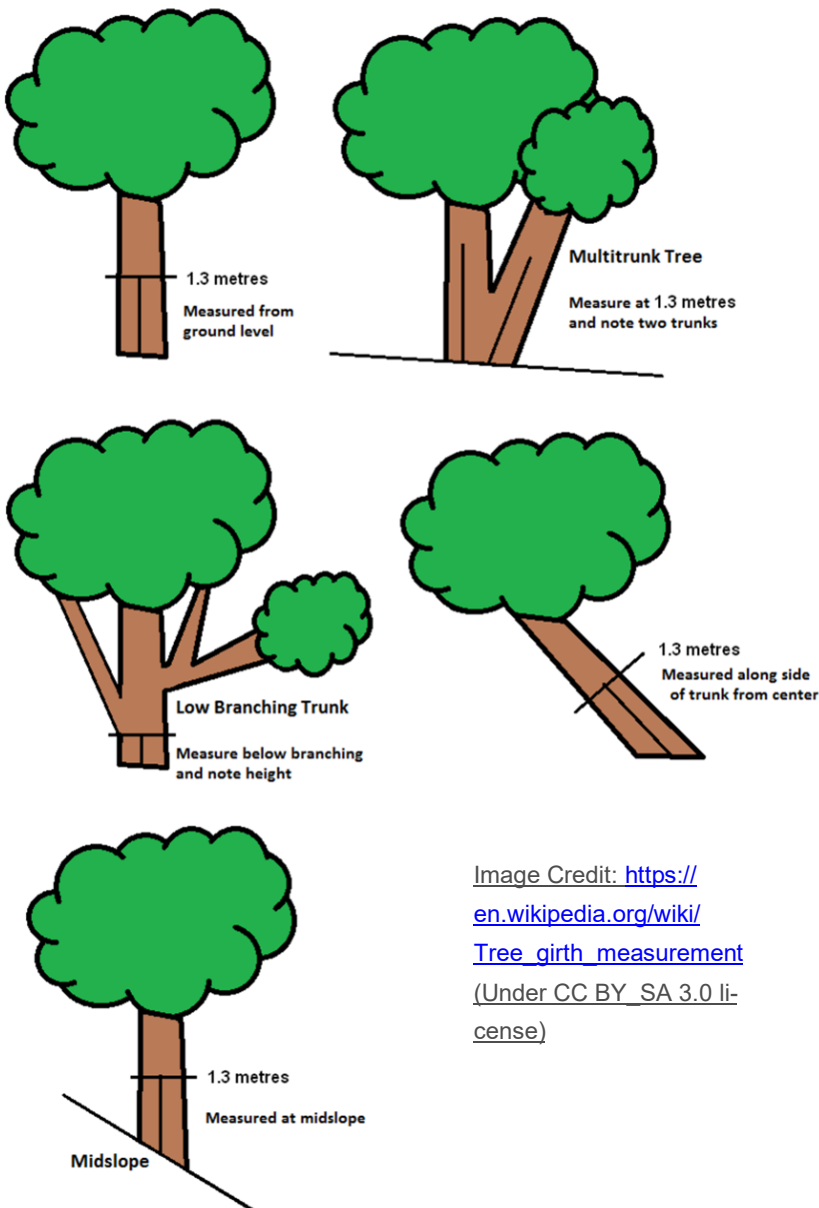


Image Credit: https://en.wikipedia.org/wiki/Tree_girth_measurement
(Under CC BY SA 3.0 license)

Measuring GBH for a tree:

Girth at breast height (GBH) is measured for plants to get an idea about how old the tree might be, whether it is growing well, and so on. Typically girth of a tree is not uniform across its trunk. Therefore, it is typically measured at 1.4m (4.5 feet) height above the ground in the plane perpendicular to the ground. One person can hold one end of the measuring tape on the tree trunk about 1.4m above the ground, while another person can go around the tree with the extended end of the measuring tape to complete one circle around the trunk. GBH is generally expressed in meters.

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Plant Observation sheet (For 5th-7th std)

Date:

Time:

Name of observer:

(If in a group, write group name/ number)

Plant 1:

Name of plant:

What does the stem look like? (colour, rough/ smooth, straight/twisted)

What do the leaves look like? Colour, shape, simple/compound

(You can draw a picture here)

Are there buds/ flowers on the plant? (colour, are they single or in pairs/ bunches?) If observed, draw a picture here.

Are there fruits on the plant? (raw/ ripened/ open) If observed, draw a picture here.

Can you guess the height of the plant? (In feet/ meters)

Girth at the breast (GBH): (in meters)

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Plant Observation sheet (For 5th-7th std)

Date:

Time:

Name of observer:

(If in a group, write group name/ number)

Plant 2:

Name of plant:

What does the stem look like? (colour, rough/ smooth, straight/twisted)

What do the leaves look like? Colour, shape, simple/compound

(You can draw a picture here)

Are there buds/ flowers on the plant? (colour, are they single or in pairs/ bunches?) If observed, draw a picture here.

Are there fruits on the plant? (raw/ ripened/ open) If observed, draw a picture here.

Can you guess the height of the plant? (In feet/ meters)

Girth at the breast (GBH): (in meters)

For 8th– 10th std:

Interactions of plants with other species:

Plants are primary producers in any ecosystem. But apart from providing energy input (food) in any food chain, plants interact with many other life forms in different ways.

Plants or plant parts are used by many other species for shade, safety, shelter, nesting material, source of food (or as a specific ingredient of diet), medicine, and so on. In turn, plants may be benefitted in terms of pollination, protection, seed dispersal, getting additional nutrition from these organisms. To understand/ observe some of these interactions, participants will make groups of 2-3. Each group will choose a plant outdoors and observe/ investigate for 15 min. any interactions they see with arachnids (spiders), insects, birds, mammals (including humans), fungi, or any other plants. The group will note down data in the datasheet provided. Some guiding questions and clues about what to observe and note down are given in the datasheet.

After 15 min. of observations and collecting data, the groups will come together and present their observations.

A printable “phenology and interactions observation sheet” can be found in the following pages of this booklet.

Note to facilitators:

Use of SeasonWatch app can be introduced for 8th-10th std. participants for the phenology recording.

Visit www.seasonwatch.in for more information about tree phenology monitoring across India.



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Phenology and interactions Observation sheet (For 8th-10th std)

Date:

Time:

Name of observer:

(If in a group, write group name/ number)

Plant 1:

Name of plant:

Estimated height (meters):

Girth at Breast Height (GBH in cm):

Phenology status

Leaves:

Fresh leaves: None Few Many Don't know

Mature leaves: None Few Many Don't know

Dying leaves: None Few Many Don't know

Flowers:

Flower buds: None Few Many Don't know

Open flowers: None Few Many Don't know

Fruits:

Unripe fruits/pods: None Few Many Don't know

Ripe fruits/pods: None Few Many Don't know

Open fruits/pods: None Few Many Don't know

Connect the dots and see what you get!

You can colour the finished picture with colours of your own choice.



Word search for Indian native trees



Mango



Mahua



Neem



Palash



Babool



Coconut



Ashoka



Kadamba



Peepal



Banyan

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

Match the fruit-flower-leaves

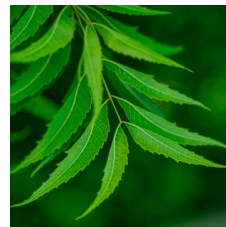
The first column in following pictures has fruits of some familiar plants. Try to match the fruit with its flower (from column 2) and leaves (from column 3). Answer key can be found on the following page.



1



6



11



2



7



12



3



8



13



4



9



14



5



10



15

Session 3: Indoor/ fun session

A few ideas for the indoor session are listed below. Facilitators can choose any one idea from the following list as the final activity of the module.

Leaf threading activity:

For 1st-4th std.,

The time needed: 30 min.

Divided into groups of 4-5, students will use twine and needle to make garlands using different leaves

- a. Thread and order the leaves according to size, from largest to smallest etc.
- b. Give the children some 2 step patterns to follow according to the leaf color, shape, or size e.g. big, small, big, small or as per the leaf shapes, etc.



Sample leaf garlands

Make a rangoli/ design on the floor/ A4 sheet:

For 1st-4th std.,

Time needed: 30 min.

(Material needed: natural material collected during the outdoor walk, A4 size papers, glue, or just floor space assigned to participants)

Using leaves, twigs, seeds, and fruits collected in the previous session participants can make rangoli / designs.

Treasure hunt game:

For age groups above 4th standard.







This can be played as an individual or group game. The time needed; is 20 -25 min. (10 min. for making groups, explaining the game and rules, 10-15 min. for the game). If played as a group, a maximum of 4 people per group is recommended. Each individual/ group gets one printout of the sheet. In 10 min-time each person/ group has to visit/ observe and find at least 12 things on the treasure hunt sheet. The individuals/ groups who find all treasures in a given time win.

Please see the treasure hunt sheet below.

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Treasure hunt sheet

Name: _____

A non-flowering plant	Tree with nest cavity 	A weed	Leaf eaten by an insect
Grass 	Creepers/ climber	Tree with rough bark 	Tree with bright flowers
Plant with green stem	Sticky fruits 	Nectar plant	Seed pods 
Compound leaves 	Tree in flowering/ budding	Plant with colourful leaves	A non-native plant

Fact/ fiction game about plants:

For 1st- 4th std

Approx. the time needed: 30 min.

For facilitators: The facilitator can write the following statements on small flash cards/ paper chits and invite one participant at a time to pick any card/ chit. The child has to read out/the facilitator can read out the statement for all participants. The child picking the card/ chit has to guess whether the statement is a fact or fiction. The facilitator can ask "why do you think so?" for any answer given so that children think and formulate their reasons for why they think the statement is true/ false. Other participants can also be invited to give their answers if they have a different answer to the statement. A small 'discussion' can happen on each statement with many students sharing their guesses, and related information. This can lead to independent thinking, formulating their reasons, and developing the habit of discussion at an early age.

Statements to write on flashcards/ chits are given in bold. The explanation in brackets is for the educators/ facilitators.

- 1. Plants are the same as trees.** (Half fact! All trees are plants but not all plants are trees. There are shrubs, grasses, creepers, etc. which are not trees but are still plants).
- 2. Plants can keep growing but animals can't.** (Fact! Most plants keep growing either in height and/or girth throughout their lives, while animals reach a definite shape/ size which does not increase further. In other words, many animals have separate growth phases at the beginning of life, while plants keep growing throughout their lives).

3. **Many of our medicines/ pills come from plants.** (Fact! Chemicals extracted from various parts of many plants have medicinal properties. These chemicals are used to develop new medicines.)
4. **Plants don't have emotions/ they cannot 'feel'.** (Fiction! Plants can feel danger and possibly other emotions as well. Dr. Jagadish Chandra Bose demonstrated this a century ago).
5. **Plants can't live underwater.** (Fiction! There are aquatic plants that can live underwater.)
6. **Plants were on earth even before humans or other big animals.** (Fact! Some of the first living things on earth were plants. Plants came on earth much before human beings)
7. **One should not go near a tree when it is lightning.** (Fact! Lightning is a result of electrical charges. Lightning is attracted to the tallest tip of a conductor. Trees are often the tallest objects within an environment. Therefore, trees make great targets for lightning. If we are close to or under the tree, there are more chances of getting hit by lightning.
8. **Plants breathe through their leaves.** (Fact! Plants have tiny openings called stomata on the underside of their leaves through which plants 'breathe')
9. **Plants can communicate/ 'talk' to each other.** (Fact! Plants can communicate with each other through the chemicals they produce. Sometimes these chemicals are released in the air or sometimes they can pass these chemicals through an underground network of fungus).



fact or
fiction?

Spot the differences: Aquatic habitat



(A)



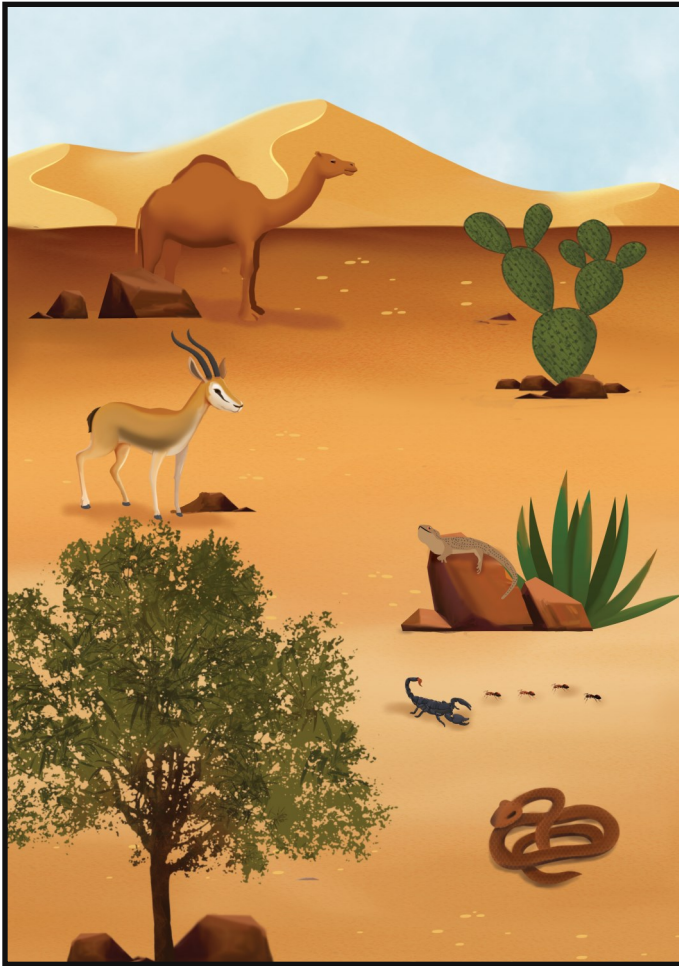
(B)

Above pictures show scenes from a river habitat. See if you can spot 5 differences in these pictures!

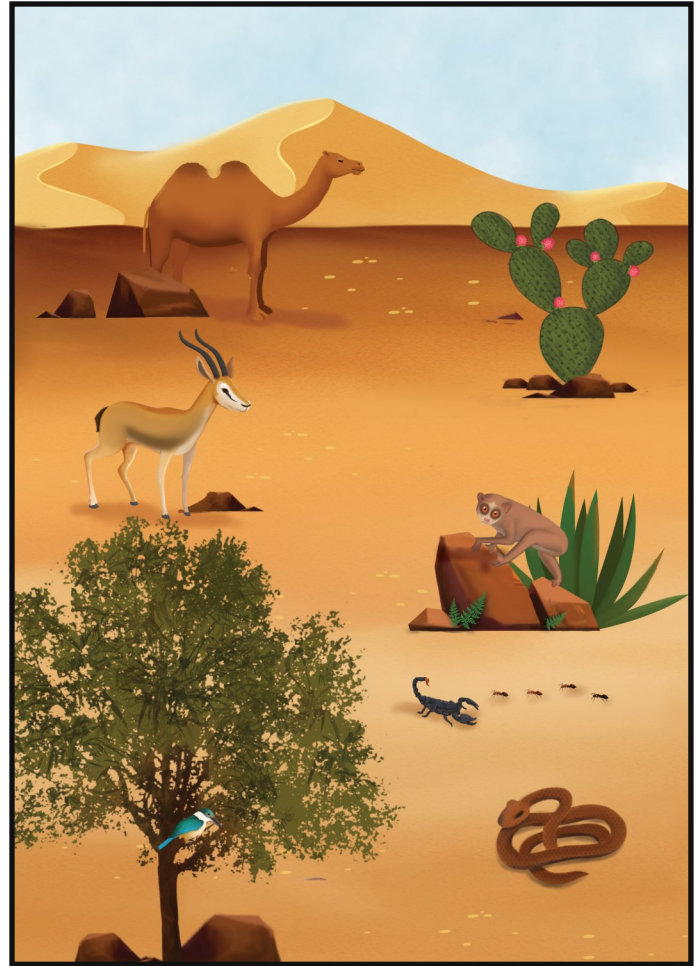
(Answer key below)

1. The crab in picture B is in deep water while it is on rocks in picture A. Crabs are typically found in shallow water not deep water!
2. Picture B has a dragon fly sitting on rocks at left lower corner. Dragon flies love to be near water because their life stages depend on water. Their larvae and nymphs are born in river habitat and feed on water insects like water beetles, mosquito larvae, worms, tadpoles, etc.
3. Green coloured moss found on rocks near water (present in picture B absent in picture A). Moss is a type of plant that only grows in very moist places.
4. The beak of White breasted water hen is green in picture A and yellow in picture B. In reality the water hen's beak is yellow coloured.
5. Small purple flowers on the plant near upper right edge in picture B but not in picture A. The actual plant does not have purple flowers.

Spot the differences: desert habitat



(A)



(B)

Above pictures show scenes from a desert habitat. See if you can spot 5 differences in these pictures!

(Answer key below)

1. Picture B has two humped camel and Picture A has one humped camel. Two humped camels (Bactrian camels) are found only in Leh in India while in desert of Rajasthan we find only one humped camels.
2. Picture B has a slender loris on the rocks at the centre of the picture. Slender lorises are found in tropical rain forests and semi-deciduous forests but never in desert habitat! Picture A has a spiny tailed lizard on the rock which is typically found in Indian deserts.
3. Fern growing on rocks near at the centre (present in picture B absent in picture A). Fern is a type of plant that grows only in very moist places.
4. A white throated kingfisher sitting on Khejadi tree in picture B is not found in desert habitat. It is absent in picture A.
5. Small red fruits on the cactus in picture B but not in picture A.

What does not fit into the story?

For 1st- 4th std

Approx. the time needed: 30 min.

For facilitators: The facilitator can read out the following passage slowly for the participants. Participants have to guess which ideas/ statements that do not fit into the story. When the participants make guesses/ give answers, the facilitator can ask them 'why do you think this does not fit into the story?' The following description can be used to introduce different habitats/ requirements of different types of plants. For E.g. cacti typically do not grow close to rivers. So where do they grow? Which is a more suitable habitat/ weather for a certain type of plant to grow? The facilitator can write other similar descriptions of various habitats. In the end, children can draw/color on a piece of paper what they imagine from the following description. This activity is useful for increasing listening skills, processing and analysing the information they have heard, and spotting the oddities based on prior knowledge.

Passage for reading out:

As Monu was walking along the river, he was looking at the flowing water, buzzing insects, and many creepers and trees on the shore. Leaves of trees on the shore fell into the water and were flowing fast with the water. Small insects looking like spiders were skating on the water. Many types of grass and weeds were growing along the shore. A big red flower on one of the huge cacti caught his attention. There were bees trying to get into the red flower in a hurry. Were they searching for nectar?

Can you draw a picture of the scene described above?

Act out: The human being as a plant

For 1st- 4th std

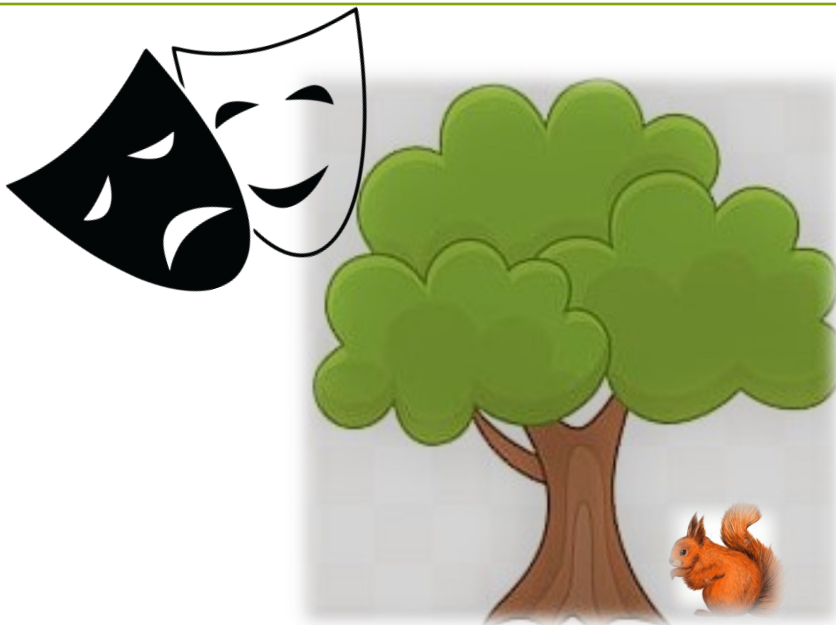
Approx. the time needed: 30 min.

Make pairs of students. One student will identify himself/ herself with a tree and express its response through acting. The second student can tell the partner about any 4 of the following situations:

What happens to a tree when there is a

1. Gentle breeze
2. Violent storm
3. Forest fire
4. Squirrel running up its trunk
5. Person plucking leaves and fruits
6. Person carving on its bark
7. Shower of rain
8. Child climbing it
9. A gardener watering it

Children in pairs can take turns in telling the situation and acting it out.



Creative writing

For 5th- 8th std

Time needed: 30 min. approximately

For facilitators: Participants can write about their experience in the outdoor session or any other natural surroundings they have visited in the past (national park, beach, trek in the mountains, ride on the river, etc.). They can include small sketches/ drawing in this. Write up of a maximum of two A4 size pages is enough.

Alternatively, they can draw/ sketch/ create patterns using leaves, flowers, seeds, and twigs from the Empress Garden.

For 8th -10th std:

Time needed: 30 min.

Participants can write a story/ poem/ short essay or Sketch on any one of the themes below:

The Jungle inside me

Grow like a tree

Seeds of hope

The earth laughs in flowers.

—Ralph Waldo Emerson



Parade

Design your own garden

For 5th- 10th std

Approx. time needed: 45 min.

Material needed: A4 size sheets, writing/ drawing material

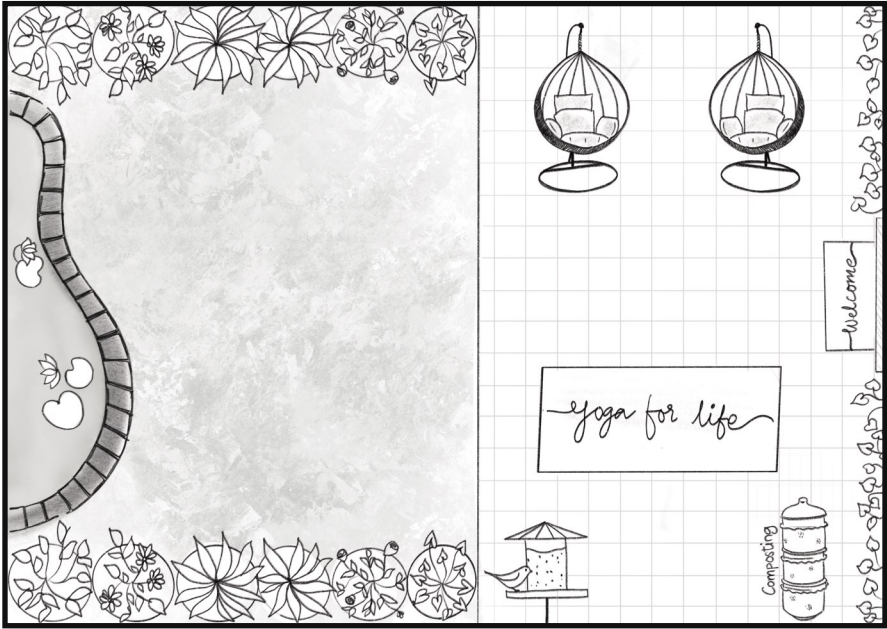
This activity can be done individually or in groups. If done in groups, each group can have up to 5 individuals. Participants get a choice to design any one of the following:

1. Terrace garden: Imagine you have a space approximately the same size as your classroom for building a terrace garden. Using any combination of features listed below, design your terrace garden.
2. Small garden for your society/ community
3. Big public garden

Participants can use any of the following elements to include in their garden:

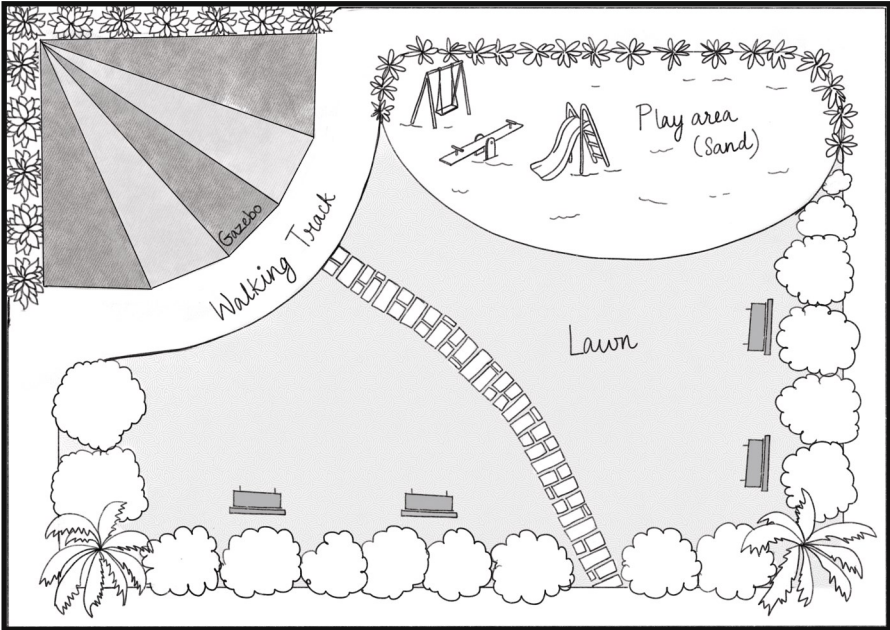
Plant patch, open patch, small pond, greenhouse for indoor plants, fountain, statues, play area, composting unit, medicinal plants, plants for butterflies, cacti and succulents, big trees, flowering plants, vegetable patch, ornamental plants, indoor/ shade loving plants, sitting place, meditation place, a place for creative art, wind chime, gazebo, hedge, beehive, small stream, bird feeder, bird bath, nest box(s), bridge, stone structures, plant nursery, walking/ jogging path.

For facilitators: This activity can bring out creativity, imagination in children and develop their sense of spatial orientation, skills of designing and planning. To help them visualize how garden plans look like, we have given some sample garden plans on following pages. But children should use their own imagination for coming up with a design of the garden.

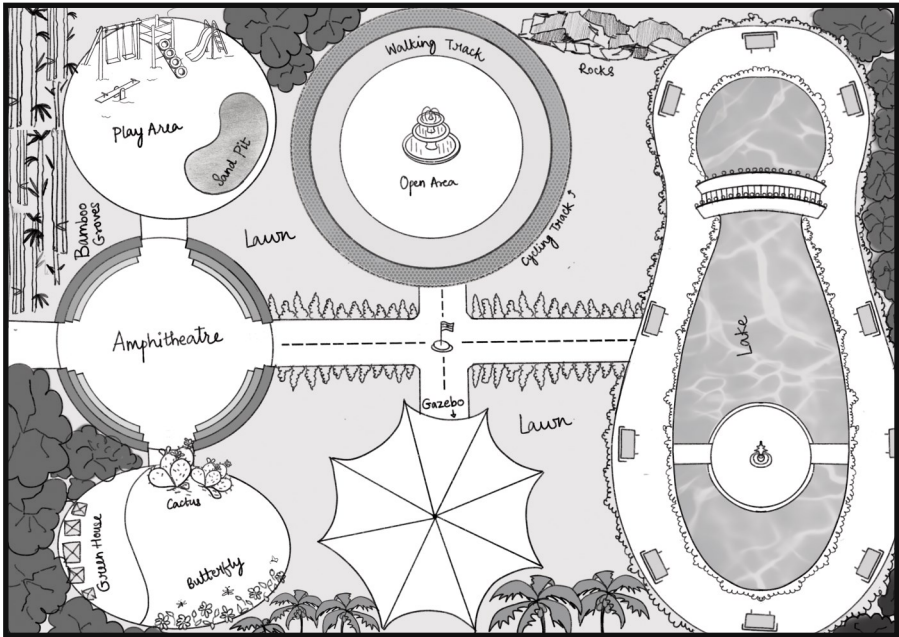


A sample terrace garden design

A sample society/ community garden design



A sample public garden design



Answer keys

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

 * The correct matches for fruits-flower-leaves are *
 * as following: *
 *
 * Banana: 1- 8- 15 *
 *
 * Neem: 2- 9- 11 *
 *
 * Okra: 3- 6- 14 *
 *
 * Sandalwood: 4- 10- 12 *
 *
 * Tamarind: 5- 7- 13 *
 *

Exploring the Nature: Plants

We are happy to bring to you an educational module which will help educators and participants to explore the fascinating world of plants through many informative and fun activities.

This is our first module in the series based on the theme- **plants**.

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The illustrations in this module were done by Ms. Nidhi Shah (Visual Root)



Contact Us

Write to us for more information about our programs and educational resources.

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