

A photograph of a man with dark hair, seen from behind, wearing a bright yellow t-shirt. He is carrying two young girls on his shoulders. The girl on the left has blonde hair and is wearing a light blue long-sleeved shirt and pink leggings. The girl on the right has blonde hair and is wearing a pink and white striped long-sleeved shirt and purple leggings. They are standing in a field of tall green grass with many red flowers. The background is a soft-focus landscape with trees and a blue sky.

PME Cultural Subjects

6



Cultural Subjects

Botany

The Science of the Plant Kingdom

An Introduction

In a world of sky crappers, apartment flats and interlocking stones that replace the garden it becomes more difficult to lay a foundation for a lifetime of interest in nature.

The Montessori curriculum helps to bring the child's attention back to nature, building a healthy attitude towards vegetables, flowers, gardens, house plants, weeds and trees.

There are several ways the Montessori method reinforces and creates interest in Botany for the 3-6 year olds, these include

1. The Nature Table
2. Nature Walks
3. Leaf cabinets and
4. Botany cards

The Nature Table

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This is a little table or shelf put in the classroom on which a changing array of beautiful objects from nature is displayed. Children are intrigued by this and find it delightful. The objects on the table may include a vase of flower, some leaves, shells, a plant experiment, stones, different types of soil etc.

Keep the area beautiful, constantly changing and clean. Also place a magnifying glass on a small tray on the nature table for closer observation. This will help to kindle scientific interest of the child.

One of the activities to teach for the Nature table is how to keep it clean. For this you will need: a plastic mat, bucket, sponge and a small drying towel which can be kept underneath or near the nature table.

Presentation:

1. Lay out a plastic mat
2. Carefully remove everything from the shelf unto the mat.
3. If there are dry leaves or soil on the table, wipe them off the edge of the table and into the hand. Then dispose of this into the class wastebasket.
4. Dip and wring out the sponge and wipe the top of the table and the legs.
5. Dry everything with the drying cloth and replace it with a fresh one.
6. Replace the items on the table
7. You can let the child decide on their new arrangement
8. Put back all the materials used and let the child know that they can help to care for the beautiful objects on the table at any time.

The Nature Walk

It is very important to let the child experience nature every day through spending time in the out doors. In all kinds of weather and during all seasons (just be conscious of not exposing the child during the cold and rainy weather)

Through exposures to nature, children begin to recognise the trees, flowers, insects and animals around them.

Collect different flowers, leaves etc for rubbing or pressing these also provide great art material for other activities.

The Stages of Introducing plants to the child

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1. Point out the object
2. Invite the child to touch
3. Give the vocabulary for experiences and concepts such as "orange, red, small, long, rough, smooth, bumpy, hard and soft". This helps the child to eventually classify and bring to order all that he is experiencing, and is very useful for the budding botanist inside of the child.
4. Later you can give more detailed names of the object, e.g., "rose instead of just flower"
5. Then after exposure has stimulated an interest in plants you can now introduce the botanical names and further classifications such as plant petals, leaf apex and the flower corollas.

Exposing the child to plants can initiate many important discussions, which encourage a wide use of vocabulary, thus enriching the child's use of language and knowledge

NATURE TABLE

Material:

- A table.
- A magnifying glass/hand lens kept permanently on the table.
- Objects that are or have been a part of our living world, i.e., plants, seeds, fruits, flowers, etc.

Objectives:

- To stimulate an interest in nature in the children.
- To provide for and promote exploration of specimens found in our living world.

Presentation:

- Invite a small group of children to the nature table.
- Introduce the objects to the children one at a time.
- Show the children how to hold the objects carefully when they are examining them.
- Provide simple and interesting information about each item. We have a magnifying glass to assist us.
- Only a few items are displayed on the nature table at any one time. They should be changed frequently to maintain the children's interest.

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Age: 2+ years

IMPORTANCE OF THE SUN (small group presentation)

Tell the group this Story: Without energy from the Sun, our Earth would be a cold and lifeless planet. Planet Earth receives only a tiny portion of the Sun's energy. But it is enough to give our planet light and warmth and life. All the energy we use on Earth comes from the Sun even such sources of energy as oil, coal and waterpower.

Activity 1: Take two ordinary plants that are of the same type. Keeping them in identical pots with the same kind of soil, give each the same amount of water.

Keep one in sunlight and one in shade.

Compare the growth and appearance of the plants over the course of several months.

Activity 2: Make a sundial. Push a stick into modelling clay and stand it on a sheet of paper in a sunny place. Use a ruler and a pencil to mark on the paper the places where the shadow falls at different times of the day.

Did you know? From Earth the sun appears to travel across the sky between sunrise and sunset. But it is really earth that is moving, not the sun! We have night when our part of the Earth is turned away from the sun's light. We have day when our part of the Earth is turned towards the sun's light. A layer of air called the atmosphere surrounds the earth, this shields us from the sun's burning rays.

We should never sit in the sun without protecting our skin. Sunburn is very dangerous. The sun is a star. Stars are like people they are born, live for a while and when they are very old they die. We should never look directly at the sun not even when wearing sunglasses.

The rays of the sun are very strong and could damage your eyes or even cause blindness.

Age: 2+ years

BOTANY CABINET also known as The Leaf Cabinet (small group presentation)



Material:

- A cabinet that consists of 3 drawers containing green knobbed inserts representing 14 leaf shapes on yellow background
- Three sets of leaf cards for each insert, with heavy, medium and thin outlines
- A floor mat

Objectives:

- To introduce the child to the classification of leafs by shape.
- To give the child a muscular impression of the leaf shapes.
- To increase the child's powers of observation.
- To extend the child's knowledge of trees.
- To provide new vocabulary for the child (name of leaf and name of leaf shapes)

Presentation:

- It is important that the child should have had a good deal of sensorial experience with trees/plants and a variety of real leaf shapes.
- Show the child where the cabinet is kept and how to carry one drawer at a time to the workstation.
- Now remove the inserts from the leaf cabinet.
- Place them randomly on the floor mat.
- Feel around the inserts with your right hand
- Return the inserts to the appropriate frame
- Return the drawer to the cabinet and continue the same process with the rest of the drawers.

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Exercise 1: Show how to trace the shapes and colour them. An alternative would be to use coloured paper. Encourage the child to make a booklet of their shapes and label them, if appropriate.

Exercise 2: Collect a variety of leaves with the children. Help the children sort the leaves according to their shapes using the botany cabinet as a guide.



Exercise 4: Make leaf presses from leaves collected

Exercise 5: Make leaf rubs from collected leaves

Exercise 6: Work with the leaf cards. Starting from the set with a thick outline, place the inserts on top of the cards to match them. Once the child is able to match the shapes you can teach the names of the leaf shapes.

Age: 4+ years

CARD STORY LESSONS



Material:

- Plants in the classroom.
- Card story/care cards.

Objectives:

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To further explore the life cycle of a plant and its needs.

Presentation:

- Begin with the plant itself. Provide the children with a great deal of sensorial experience with plants.
- After the children have been introduced to plants at different stages, propagation and the care of individual plant you may introduce the card stories.
- These card stories concern the plant's life cycle or deal with the care of a particular plant. They may include information regarding the use of the plant and, if applicable, which part is edible.

Exercise 1: Encourage children to write and/or draw card stories of their own.

Age: 3+ years

CLASSIFIED CARDS (small group presentation)

Material:

Sets of cards of trees/wild flowers of Africa with loose labels and the control on the back of the card.

Objectives:

To classify the plants and trees that are present in the child's environment.

Presentation:

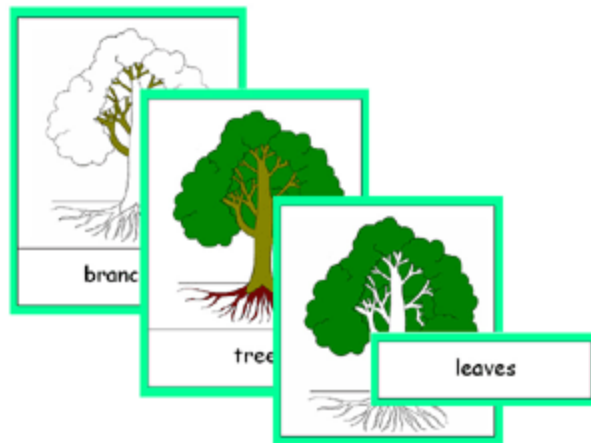
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- First take the children outside and find as many trees and plants as possible in their natural habitat.
- After the children have been introduced to the real examples, invite a small group of children to a mat.
- Introduce the cards to the children. Invite them to discover the ones they know.
- Present the ones they need to learn, three at a time, in the form of a three period lesson.

Exercise 1: Introduce books on trees and flowers to the children. When the children are reading, introduce the printed labels.

Age: 4+ years

PARTS OF THE TREE (small group presentation)



Material:

Nomenclature cards.

Objectives:

To introduce the parts of the plant/tree.

Presentation:

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- Invite a small group of children to join you outside. Look at different trees and informally talk about trees.
- Compare the tree to the child's body, the child's skin is like the bark, the arms are like the branches, the trunk is the body, etc.
- After the children have experienced trees, give the lesson of the parts of the tree using the nomenclature cards.
- Present the cards in the same manner as other classified cards. Establish the language which is known, and give a three period lesson for the language to be learned.

Exercise 1: In the same manner as the presentation above, present parts of a plant. Encourage the children to draw their own diagrams.

Exercise 2: Show the children how to do bark and leaf rubbings.

Age: 4+ years

DEFINITIONS OF THE PARTS OF THE TREE (individual and small group presentation)

Material:

- Classified cards of the parts of the tree and printed labels.
- Control booklet.
- One set of cards with whole definitions and the key word outlined in red.
- One set of cards with the key word cut out.

Presentation:

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- Bring the classified cards, booklet and printed labels to a mat or table with a small group of children who are able to read and have learned the parts of the tree.
- Read the booklet to the children and put it aside.
- Have the children set out the cards in an orderly fashion.
- Isolate a printed label and invite a child to read and place it underneath the corresponding card.
- Continue until all labels are matched, children can check their work with the booklet.

Exercise 1: In the same manner, introduce the paragraph definitions that the children can match to the cards.

Exercise 2: In the same manner, introduce the second set of definitions that have the key word missing. Here the children will match the definition to the cards and replace the key word.

Age: 4+

PARTS OF THE LEAF, FLOWER, ROOT, KINDS OF ROOTS, LEAF MARGINS AND VENATION AND THEIR DEFINITIONS (small group presentation)



Material:

- Nomenclature cards.
- A leaf
- A flower
- A root

Objectives:

To further expand the child's knowledge of the parts of the plant.

Presentation:

- Start with the whole, the plant, and worked down into the parts. Each time we give greater detail. As always, at this stage you would begin with a real specimen.
- After identifying the parts using a real specimen, you may follow through with classified cards.
- Introduce the cards to the children.
- Establish the language which is known and give a three period lesson for the language to be learned.
- At the reading stage, you may introduce the printed labels, definition booklets and definition cards (if available) in the same manner as the Land and Water Definitions.

Exercise 1: Encourage the children to make their own diagrams and label them, if appropriate. Leaf rubbings are an enjoyable and informative activity for the children.

Age: 4+ years

GATHERING SEEDS (small group presentation)



Material:

- Assorted seed and nuts with loose labels.
- One set of classified cards.

Objectives:

To give the child the experience of various seeds.

Presentation:

- Gather seeds and seedpods and bring them into the classroom. If possible, have the children assist you in this. Invite a small group of children to a mat.
- Show them how to explore the seeds one at a time. Discuss each kind of seed, including its name, where it comes from on the plant, how it falls or travels, etc.
- With the children, determine the seeds' shape, size and texture.

Exercise 1: Encourage the children to sort the seeds according to shape, size, how they travel, etc. When the children are reading, introduce the printed labels.

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Exercise 2: After the children have experienced a variety of seeds you may wish to introduce a set of classified cards of seeds.

Age: 4 - 5 years