



LEAVES AND SUN TWO CONSTANT COMPANIONS

MAIN THEME: Life of the plant

SHORT DESCRIPTION OF THE ACTIVITY:

Using a bean plant grown in a box we show children how plants grow by following the sunlight, a basic resource for their life. With the help of the memory game, we find out that plants have many different shapes and with our creativity we can make plants by printing out leaves using stamps of different shapes.





TARGET AUDIENCE:

30 children aged 3-5 years

TEACHERS INVOLVED:

No. 2

WORKSHOP DURATION:

2 hours for preparing the activity

50 minutes for the activity with the pupils

OBJECTIVES:

Develop the ability to make assumptions and verify them by direct observation, stimulate observation of leaf shapes and the association with common and familiar shapes, stimulate manual skills and creativity while using stamps to create plants.





METHODS:

Play and creative activity bring children closer to Nature, to the discovery of natural phenomena and observation of leaf shapes and structures. Subjects are dealt with in shared contexts, teamwork, games and artistic expression.

Cooperation and teamwork will lead children to create an artwork as a team, a final work which will then be shared by the whole class. Children have their own roles, but they must respect their companions' space in order for the final work to be successful.

PREREQUISITES:

A vegetable garden of any type (ground, raised bed, vertical, etc.) will be needed in the final phase. Otherwise, this phase cannot be carried out.



Quantities	Materials	Notes
1	A small photovoltaic panel	Needed for a motor-driven plant. A photovoltaic panel capable of generating enough voltage to move the motor will be needed.
1	A small motor capable of turning and moving.	Needed for a motor drive plant. Make sure the voltage is correct for the motor to work.
2	Cables	Needed to connect the solar panel and the motor-driven plant.
1	Paper leaf	Needed to decorate the solar panel.
1	Flower	Needed to decorate the motor.
1	Lamp	
1	Bean plant being grown in a box	Take a box and drive a hole on one side to let oxygen and light in. Place a bowl into the box's dark side with a bean seed planted in soil or some cotton wool. The box is closed and opened only when watering the bean seed.
1	Bean plant being grown in direct sunlight	
	Memory cards with plants of different shapes	See attachment



Quantities	Materials	Notes
4	Paper or cardboard sheets	
24	Wood tiles	Stamp base
8	Foamy hearts	
8	Foamy triangles	
8	Long foamy rectangles	
	Tempera paint, green	
	Finger colour, green	
4	Saucers	

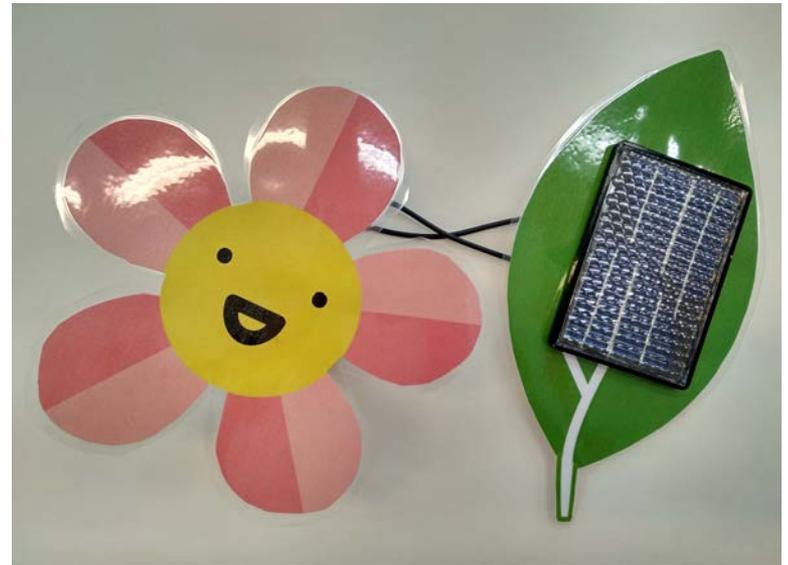


HOW TO PROCEED

PHASE 1 - GETTING STARTED: (Time: 10 minutes)

Introduce the subject showing children a slightly special plant, a motor-driven plant. Observe this strange object and review all its components together with children. There's a leaf that has a peculiarity: it's surmounted by a solar panel, i.e., an instrument that captures sunlight to drive objects; this solar panel has a wire connecting it to a flower that represents the plant, but under the flower there's something, a motor that can move. In addition, we have a light representing the sun.

Let's try now to make the motor-driven plant work. Let's place the lamp over the solar panel that captures light and turns the motor: the motor-driven plant works. Ask children: "Do you think that this plant has something in common with a real plant?" Well, yes, even plants in Nature have leaves that capture sunlight and turn it into energy that the plant uses to work, or rather to live! Light is therefore extremely important for a plant.



PHASE 2 - EXECUTION: (Time: 30 minutes)

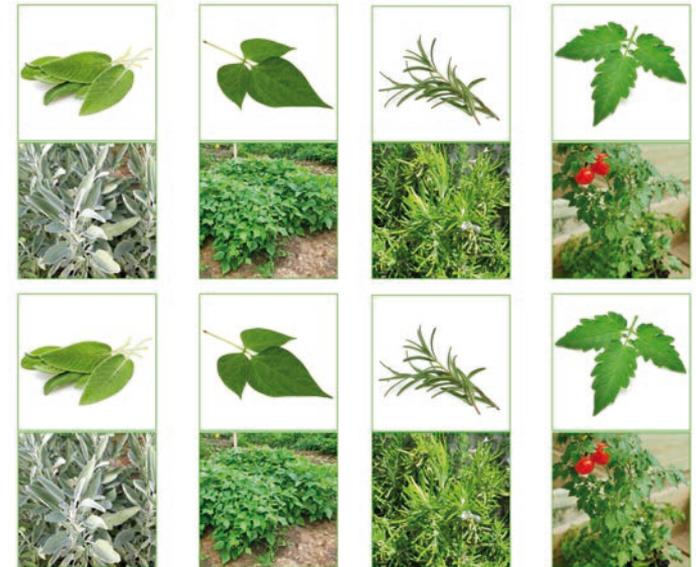
A. *Box of beans*

If we put a bean seed in the dark in a box having only one hole on a side from which light can enter, this bean seed will germinate, but the plant will grow in a weird way. In fact, as the plant grows it will not go upwards, but the stem will grow crooked as it tends to bend towards the light. You can choose to show children an already grown-up plant or plant the bean seed out together with children and watch it grow in the following days. You can also compare a plant grown up in the box with a plant grown up in the sun.



B. Memory

All leaves perform the same task (capture sunlight and take energy out of it to create the nutrients the plant needs to live); however, leaves exist in many different shapes. Let's find out some of them by playing memory. Cards contain 8 pairs made up of pairs of images with the leaf detail of bean, sage, rosemary and tomato and pairs of images of the same plants in full. Children in groups of five play memory. All cards are placed face down in the centre of the table. Each child turns two cards over at a time, on their turns: if they turn two identical cards they win and remove them from the centre, till all pairs of cards are matched and the table is left empty. At that point, when all groups have ended playing, the teacher can take the cards and have children watch them to detect differences between plants. One of the differences that strike the eye is that the leaves of the memory plants have different shapes.





C. *How many shapes these leaves have!*

Each shape of a leaf can be matched to a common and familiar shape. Observe memory leaves together with children and ask them to describe the different shapes. Specifically, reaching the conclusion that a bean leaf looks like a heart, a rosemary leaf resembles a stick, a tomato leaf is shaped like a triangle and a sage leaf is tapered. Matching leaves to basic shapes is the key to reproduce them in a drawing using a specific technique: stamping.

D. *Stamp a leaf*

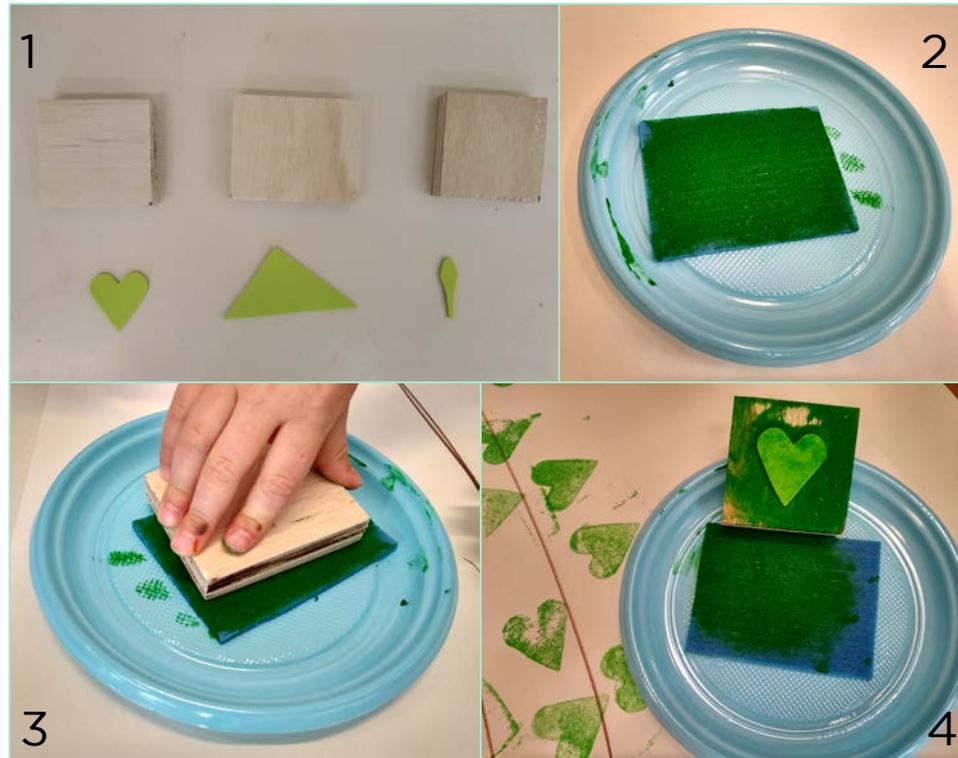
Get four tables ready with a paper or cardboard sheet bearing the drawing of a stalk and branches of a plant and get the kids into groups around the tables: each group will make a different plant as an artwork.

Each group has a sheet in the centre of the table and digital or tempera paints available with a stamp for a type of leaf for each kid. Group 1 will use fingertips (and therefore digital painting) to make a sage plant; group 2 will use heart-shaped stamps to make a bean plant, group 3 a triangle for a tomato plant and the group 4 will use shapes of sticks to make a rosemary plant. Stamps will be created by children who will use this technique by glueing foamy shapes on wood tiles.



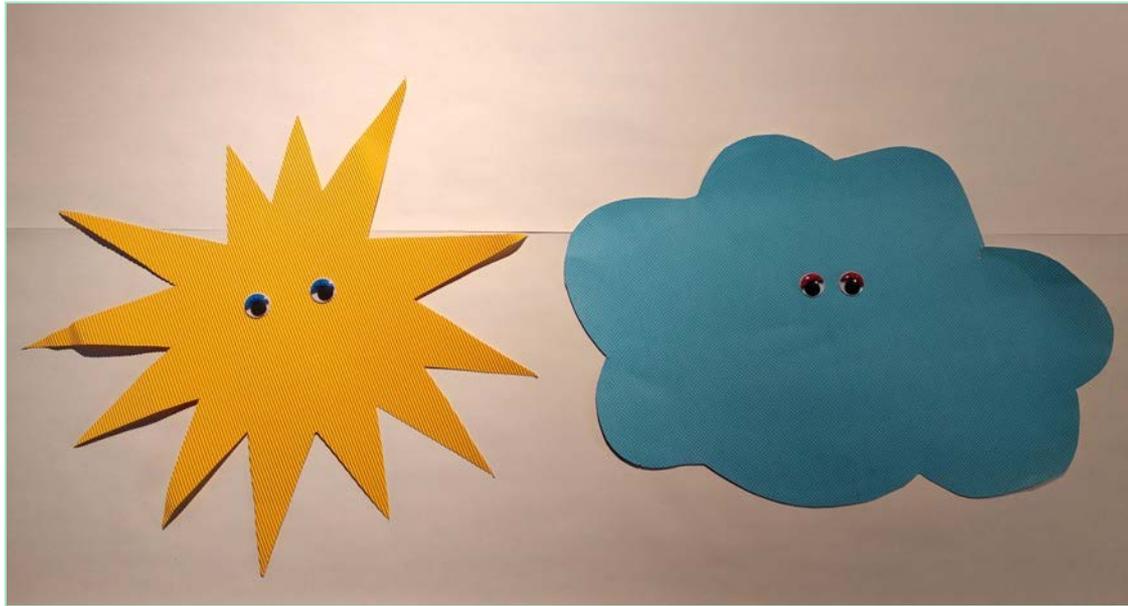
To use stamps, dip a piece of sponge cloth into a plate containing tempera paint: by applying pressure to the sponge, children will take up the right amount of paint to stamp their leaf.

Give directions to children about how to make their own plant, but leave them free in their creative stage. In the end, all groups will show their companions their artworks which can be hung to the classroom walls for decoration.



E. *Game: Sun Merry-go-round*

"Now that we have found out that many different shapes of leaves exist, how about turning yourselves into a plant?" Children get into a circle around their teacher who holds a cardboard sun and a cardboard cloud. Children turn into plants and when the teacher shows the sun giving energy and light plants are happy so children can wave like leaves of a plant. When the cloud covers the sun plants have no more energy and leaves (and therefore, children's hands) stops waving.





PHASE 3- CONCLUSION AND EVALUATION (time: 10 minutes)

Is there a better way to become aware of the variety of plants and their leaves than watching them in a vegetable garden? Here we can find really a lot of them!

It can also be a chance to transplant a bean plant used for the experiment in a box which can finally grow with the right amount of light.

EVALUATION

Attached exercises-to-do sheets to check that children have learned:

- which part of the plant is called roots





TEACHING TOOLS AND AIDS

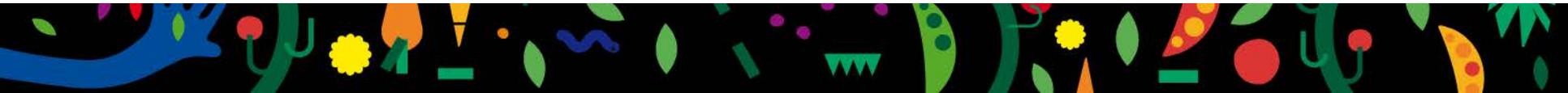
The use of technological instruments helps us deal with the subject with a new and original approach; please find below some suggestions about how to find the materials to create a motor-driven plant:

- motor

<https://it.opitec.com/opitec-web/articleNumber/209644/kmanmo;jsessionid=5C57D9D3B933A8D39DD4C10FA937C5FC.web12>

- A small photovoltaic panel

<https://it.opitec.com/opitec-web/articleNumber/209644/kmanmo;jsessionid=5C57D9D3B933A8D39DD4C10FA937C5FC.web12>





NOTES

- Observation of a leaf can be more detailed and be focused not only on its shape but also on its structure. Children will notice that a leaf has many veins on its surface, i.e., the roads along which its nutrients travel till they reach all parts of the plant.
 - leaves are very much suitable to develop sensory skills: leaves can be rough, hairy, smooth, soft, hard, odourless and scented. Discovering all these features by using the five senses can help better realise how vast plant variety is.
- 