

Not All Plants are Created Equal

Nº. 2

PRIMARY/JUNIOR

Science | English/Language Arts | Fine Arts



LESSON SUMMARY

To give students the opportunity to discover that trees are specialized plants by observing and comparing different trees and familiarizing students with the characteristics of trees in order to assist with tree identification.

Activity Information

Estimated Duration: 2-3 hours if all sections are covered

Materials: Materials will vary for each activity, paper, pencil, activity sheets, tree identification books, 2 –m long pieces of yarn in 10 different colours, black crayons, modeling clay, construction paper, clear candle wax, poster paint.

Setting: Indoors/Outdoors

Key Vocabulary: Woody, and non-woody plants, bark, knot, crown, roots.

Teacher Background

Plants are living things with no means of locomotion and usually no means of digestion. They live by using organic and inorganic materials from their environment to make food. They may be woody or non-woody, perennial or annual. Examples of non-woody plants are ferns, bunchberry and dandelions. Trees are largely woody perennial plants anchored by roots. They manufacture their own food.

ACTIVITY

Activity #1

Step 1 Choose two distinct outdoor areas containing a variety of trees and small, non-woody plants. Divide the class into pairs. Separate the partners, and send one to the first designated area, the other to the second area.

Step 2 Have each student choose one tree and one non-woody plant on the forest floor. Observe both closely. Ask them to show how the tree and plant are similar and how they are different. If done in springtime, take special note of any tree flowers that are in bloom. Compare any wild flowers found on the forest floor to the tree flowers. Do they have similar parts? Record observations on the activity sheet through sketches and/or detailed written descriptions.

Step 3 Regroup and share observations. Make note of the similarities and differences between non-woody plants and trees. Create a summary chart to show comparisons.

Step 4 Have partners switch areas. Using each other's notes, see if they can locate the plants studied. Were any details missed that could have helped identify the chosen plants?

Step 5 Regroup and discuss the question. Are trees plants?

Activity #2

Step 1 Take your students to a woodlot or forest. Organize them into groups of three to five and give each group a 2m-piece of coloured yarn. Have them search for the tree with the roughest bark. When they've found this tree, have them tie their yarn around it.

Step 2 Have 10 different colours of yarn and repeat this step for each of the following tree characteristics:

- The tallest tree
- Shortest tree
- Tree with the lowest/highest branches
- Most/least branches
- Smoothest bark
- Thickest trunk
- Thinnest trunk
- Biggest bump (burl) on the trunk
- Straightest trunk

Step 3 When finished, regroup and take the whole class to examine the various trees with yarn. Have the class choose one tree out of each category that best represents the chosen characteristic.

Activity #3

Step 1 Take your students on a bark walk. Ask them to find the tree with the most interesting bark. Then have them find the youngest tree and the oldest tree and examine the bark. Do the cracks in the bark run up and down or sideways? Are they long or short ridges? Record as many words as possible to describe the bark of each tree (texture, colour). Build a list of descriptive words and use the vocabulary to write poems (e.g. describing the tree with the most interesting bark or contrasting the old and young trees). Alternatively, try one of these other ways to investigate the characteristics of bark.

Step 2 Bark rubbing quilt: Provide students with paper and crayons. Have them select a tree and make a rubbing of the bark. Either tape the rubbings together to form a paper quilt (use construction paper to form a border), or use them separately to decorate the classroom walls.

Step 3 Bark patterns on modelling clay: Rub bark with colourless candle wax. Press modelling clay into the bark for a few seconds, then carefully remove it. Mould the patterned clay into a small dish and let it dry for one week. Have another group take the bark patterns in clay and try to find the tree it came from. Name the tree species.

Step 4 Wax rubbings: Place heavy paper against the tree bark. Rub the paper with colourless candle wax. Put the paper on a flat surface and brush over the rubbing with poster paint to create a negative picture of the bark pattern.

Step 5 Discuss Nicknames and how they are used: Have each student give a tree a nickname reflecting the characteristics of the bark. Repeat this with several different trees. Some examples of nicknames might be: “elephant tree” (American beech), “cornflake tree” (black cherry) or “shaggy bark” (shagbark hickory).

Notes

Identifying Trees by their Bark

Tree bark can be differentiated according to colour, texture, hardness and bark patterns. Probably the easiest tree to identify by its bark is the white birch. The creamy white bark peels easily into large sheets, revealing the pinkish-orange inner bark underneath. Sugar maples have dark grey bark that forms long, irregular vertical ridges (called fissures).

Beech trees have thin, smooth bluish-grey bark. White oak bark is pale grey and rather scaly. White ash bark has a distinctive diamond-shaped pattern. Evergreen bark is full of resin, a substance that sticks to hands and clothing. The bark of most evergreens changes colour and thickens as the tree ages. Young eastern white pine has thin smooth bark, often greyish-green in colour. As the tree matures, the bark becomes a dark greyish-brown and develops long fissures.

Identifying Trees by their Twigs and Buds

During the winter, twigs and buds can be used to identify trees. As with the leaves, it is important to notice how the buds are arranged on the twig (opposite, alternate, or whorled). Note also the size, colour, stickiness and hairiness of the buds.

Identifying Trees by their Silhouettes or Shapes

General shape or outline of a tree may also be used to differentiate between the tree species. Pine trees generally have branches at right angles to their trunks. In sheltered areas, their overall shape is oval. This shape can be contorted by the prevailing winds, often giving a bent and sculpted look (this is especially noticeable in the white pine). The shape of a balsam fir tree, however, is almost symmetrical. Firs have branches that tend to bend downward and tapered trunks that give an overall steeple appearance to the silhouette.

The silhouettes of deciduous trees can be equally distinctive in summer or winter. Weeping willows have drooping branches. In direct contrast are the poplars with their tall, slim outline. Oaks tend to have short sturdy trunks with a few large branches. Maples also have few large branches but have larger spreading limbs that support wide, full crowns.

Extensions

Back in the classroom, have students create tree awards (certificates, plaques. Ribbons) for each of the categories (e.g. Honorary Certificate Awarded to the Tree with the Smoothest Bark – The American Beech or Gold Medal Awarded to the Tree with the Softest Needles - The White Pine).

Encourage students to generate their own lists of tree characteristics and use them as outlined in this activity. Notice which characteristics can be used to identify certain species.

Write a story about one of the trees describing how it got its nickname.

The Tree Detective Game:

Advance Preparation: So to the area that you are going to take the students to and do bark rubbings for each of the different types of trees found there. Make photocopies of the rubbings (sufficient to have 1 or 2 per student). (If possible laminate them for further use.)

Discuss how police use fingerprints when searching for clues.

Explain to students that trees too have fingerprints, although not as specifically refined as those of humans.

When in the area, give students a blank piece of paper and a crayon and a clue sheet (rubbing). They then do rubbings and attempt to find the species that their rubbing came from. Once they have found a match, give them a tree identification book or identification sheets so they can identify their tree. If correct, give another clue card and repeat the procedure.

Evaluation – Back in the classroom, put out the various clue cards and number them. Have students match the numbered card with a bark type. For example, #1 – white birch, #2 – balsam fir and #3 – black cherry.