



# BRANCHING OUT WITH TREES

## *Teacher's Pre-Trip Information*

The purpose of the following pre-trip information is to help the teacher prepare and motivate their class for their field trip to the forest preserve and to familiarize the students with vocabulary used during the program.

**GRADE LEVEL:** Grades K – 8

### **OBJECTIVES**

- Students will be able to name at least three reasons why trees are important
- Students will be able to identify at least three common Illinois trees
- Students will use an age-appropriate field guide and/or dichotomous key

### **LEARNING PLAN**

**Topics:** tree identification, shape, structure, growing requirements, fruits, economic importance and use as animal habitat

**Student activities:** introduction to trees with visual aids, leaf-matching game, aging trees with tree rings, hiking to identify trees and utilizing field guides

Learning Area	Goal #	Standard	Level and Benchmark
Science	12	A	1a-b, 2a
	12	B	1a-b, 2a-b, 3a-b
	12	C	1b
	12	E	1c, 2c
	12	F	1b
Language Arts	4	A	1a-d, 2b-c, 3a,c
	4	B	1b, 2b
Social Science	15	C	1a
	16	E	1, 3a (US)
	17	A	2a
	17	C	1a, 1c, 2c
Physical Education	21	A	1a-c, 2a-c, 3a-c
	21	B	1, 2, 3

## **VOCABULARY**

*(Specific vocabulary covered may vary depending on grade level)*

- **Respect** – to honor, to show concern for
- **Preserve** – to keep safe, to save or protect
- **Habitat** – the arrangement of food, water, shelter and space suitable to an animal's needs
- **Conifer** – a plant that bears its seeds in cones; mostly needle-leaved or scale-leaved; mainly evergreen
- **Evergreen** – a plant having foliage that remains green throughout the year
- **Deciduous** – a tree that sheds or loses its foliage at the end of the growing season
- **Abiotic** – a nonliving factor that affects living organisms (e.g. light, water, temperature)
- **Fragmentation** – the conversion of extensive habitats into isolated and small patches
- **Tree** – a woody plant 12 or more feet tall with a single main stem (trunk) and a more or less distinct crown of leaves
- **Bud** – the part of the twig that contains the undeveloped leaf, flower and/or shoot
- **Photosynthesis** – the process by which plants use the sun's energy to convert carbon dioxide and water into food
- **Bark** – the tough exterior covering of a woody root or stem
- **Phloem** – the plant tissue that transports dissolved nutrients from the leaves to other parts of the plant
- **Xylem** – the tissue that transports water
- **Taproot** – a primary root that grows vertically downward
- **Lateral root** – a root that branches off from the taproot (may or may not be present)

### **Supplemental Activities:**

The following activities are suggestions for use in the classroom before and/or after the school program. Not all are appropriate for all age groups. Feel free to adapt them for your students' abilities.

#### **Writing activities:**

- My Tree Book: (<http://www.canteach.ca/elementary/life9.html>)

Students will "adopt" a tree and throughout the year will record and examine its characteristics and the changes that it goes through. Take students out into a forested area and ask them to pick a tree that they like. If this tree will be difficult to find again, tie a piece of yarn (secure it well) onto one of its branches. Make a rubbing of a section of its bark. Use this as an illustration for the title page of the book. On this first day, also make some observations and record. eg: My tree is very tall, it has yellow leaves and it has a big chunk of bark taken off of it. Draw a picture of it. If it is a deciduous tree dry and press one of its leaves to add to a page in the book. If it is a coniferous tree paste some of its needles to a page in the book. Choose other days to make recordings, maybe once a month. Write the date, something about it that's changed and draw another picture. Do some actual research on the tree. Find out its name, other areas it grows in, what animals rely on it, etc.. Include these facts in the book. At the end of the year bind all of the pages together.

#### **Math Activities:**

- Tree Measurement (<http://www.eduref.org/Virtual/Lessons/Mathematics/Measurement/MEA0011.html>)

Trunk:

Measure from the ground to 4 1/2 feet high on the trunk. At that height, measure the trunk's circumference. Use a string around the trunk and measure the length of the string. Round to the nearest inch. Record the number and label as circumference.

Crown:

Find the tree's five longest branches. Put markers on the ground beneath the tip of the longest branch. Find a branch that is opposite it and mark its tip on the ground. Measure along the ground from first marker to the second marker. Record the number and label as crown.

**Height:**

Have your partner stand at the base of the tree. Back away from the tree, holding your ruler in front of you in a vertical position. Keep your arm straight. Stop when the tree and the ruler appear to be the same size. (Close one eye to help you line it up.) Turn your wrist so that the ruler looks level to the ground and is in a horizontal position. Keep your arm straight. Have your partner walk to the spot that you see as the top of the ruler. Be sure the base of the ruler is kept at the base of the tree. Measure how many feet he or she walked. That is the tree's height. Round to the nearest foot and record your answer as the height.

Allow time for groups to compare answers and then re-measure the tree is needed. Usually it takes several measurements. Be sure and allow time for each person to take several measurements since they will be working with partners.

Have students make bar graphs using information gathered outside. Have students locate the biggest tree, smallest tree of the same species.

### **Science Activities:**

- Make A Tree Cookie ([www.stoller-eser.com/NIE/PDFs/Inside%20a%20tree.pdf](http://www.stoller-eser.com/NIE/PDFs/Inside%20a%20tree.pdf))

Tree “cookies” are cross sections of a tree trunk that show the layers of a tree. Scientists use tree cookies to count tree rings and estimate the age of a tree. Materials needed: Playdough or clay in four colors, plastic wrap, and knife.

1. Using red clay, roll a 1-inch diameter, 6-inch long rope, which will represent the heartwood.

2. Roll out white clay in a rectangle big enough to wrap around the heartwood. This represents early wood.

3. Roll out blue clay in a rectangle. This layer should be thinner than the white layer and represents the late wood. Wrap it around your early wood. The early wood and the late wood equal one annual ring of the tree. Continue making annual rings, remembering to vary the thicknesses.

4. After you have completed making your annual rings, wrap one layer of clear wrap around the last tree ring. This is the cambium.

5. Now make the bark. Roll out a layer of brown clay and wrap it around your trunk.

6. After the log is constructed, slice it into 1/2-inch thick pieces. You have made a tree cookie!

Share your tree cookie with others and see if they can guess how old your tree is by counting the annual rings.

### **Suggested Readings:**

- **A Tree For Me**

By Nancy Van Laan\*

Finding the right tree for playing is hard work, but this narrator has plenty of spirit, trying again and again and again. Enthusiasm abounds as he runs from tree to tree, only to find that each one is already inhabited. He enters the world of backyard animals from squirrels to spiders, and hears and sees them playing, too.

- **Why Do Leaves Change Color?**

By Betsy Maestro\*

The illustrations show a girl and a boy playing in a country landscape that changes with weather and light. There are also detailed pictures of leaves in different sizes, shapes, and colors. Maestro includes simple instructions for making a leaf rubbing and for pressing leaves, as well as suggestions for places to visit where fall foliage is special.

- **A Tree Is Nice**

By Janice Udry

Some of the reasons why trees are so good to have around are funny. Some are undisputable facts. But in all of them there is a sense of poetic simplicity and beauty which will be sure to entrance any young child.

**Additional Resources:**

**DNR Education Website:** <http://dnr.state.il.us/lands/education/index.htm>

- Educational supplements (CD-ROMs for students and teachers, educational trunks, posters, books, etc.)
- ENTICE workshop schedule
- Project WET, Project WILD, and Project Learning Tree
- Contests and grants

**Audubon Illinois Wildlife Series Display Boards**

- Butterflies and Moths
- Amazing Bats
- Illinois Owls

See [www.champaigncountyaudubon.org](http://www.champaigncountyaudubon.org) for a list of resources for loan housed at the Education Center at the Homer Lake Forest Preserve.