

**URBANA PARK DISTRICT
Anita Purves Nature Center**

SCHOOL TOUR: GREEN MACHINE

TEACHER'S GUIDE

Grades: **1st & 2nd**

Program Length: **1.5 Hours**

Focus Concept: *Trees play an important role in forest ecology, providing food, shelter, and other products. Each stage in the life of a tree plays a role.*

OBJECTIVES: Students will

1. Name three components necessary for photosynthesis to occur (sunlight, water, carbon dioxide)
2. Describe the life cycle of a tree
3. Name the parts of a tree
4. List three reasons why trees are important in the ecology of a forest

INTRODUCTION

After a long, cold and inactive winter, the leaves on the trees begin their sugar-making process. Through drama, dancing, games and observation, the students will be introduced to the complex mechanism called photosynthesis and discover the roles that trees play in the ecology of the forest.

Common Core Standards Correlated

Area	Strand	Standard	Standard Numbers
English Language Arts	Speaking/Listening	Comprehension & Collaboration	1.SL.1,3,6 2.SL.1,3,6
English Language Arts	Language	Conventions of Standard English	1.L.1 2.L.1
Mathematics			2.MD.A

Next Generation Science Standards Correlated

Physical Science	Life Science	Earth & Space Science
	1-LS1-1, 1-LS3-1, 2-LS2-2 2-LS4-1	

Illinois Learning Standards Correlated

Learning Area	Goal	Standard	Benchmark
Science	11	A	1b, 1c, 1f
	12	A	1a, 1b
		B	1b
	13	A	1a
		B	1a
Social Science	17	B	1a
		C	1a

WORD BANK: The following words will be used by the educators during the program.

Air	Forest/Forester	Photosynthesis
Bark	Growth Requirements	Roots
Carbon dioxide (CO ₂)	Growth rings	Seed
Chlorophyll	Nutrients	Soil
Decay	Oxygen	Sunlight
Decompose	Plants	Water

SUPPLEMENTAL ACTIVITIES

The following activities are intended to provide ideas to be used before or after the field trip. Some are more appropriate for older or younger students. Feel free to adapt activities to match your students' ability level.

1. **Draw a Tree:** Ask each student to make a drawing of a tree from memory, without using a model and without going outside. Then take your students outside and let them examine several trees. You might suggest to the students that they look to see what colors they can find, sniff to find out what the tree smells like, look to see if any animals live on the trees, and touch the bark.

After the students have thoroughly explored the tree, using several of their senses, return to the classroom and ask each student to make a second sketch from memory.

2. **Adopt a Tree:** As a class or as individuals, adopt a tree in the school grounds. Over time, look for changes. When do the buds open? Do any birds nest in the tree? How big is the trunk? Examine the bark and make bark rubbings. Without identifying the tree, have the students name it for some distinguishing characteristic. Incorporate the tree into artwork or photography (see *Project Learning Tree*).
3. **Plant a Tree:** Plant a tree in the school grounds for Arbor Day (the last Friday in April). Contact your local city arbor division for information on Arbor Day activities, sources for trees or guest speakers.
4. **Importance of a Tree:** As a class, brainstorm a list of all the jobs a tree does - beautifies the land, provides shelter and foods for animals, holds soil, makes oxygen, provides shade, etc. *Mr. Tamarin's Trees* (see reference list) is a perfect accompaniment to this activity. How do humans use trees? (The *A to Z From a Tree* poster from the Illinois Department of Natural Resources will be helpful.) Brainstorm a list of wood products (furniture, pencils, toilet paper, maple syrup, turpentine). Imagine how hard it would be to live without trees!
5. **Paper Making:** There are a number of good books on the subject of paper making with children. It is very easy, very messy, and lots of fun to experiment with different types of paper and molds. The children can use the paper to make collages, bookmarks, pictures, etc. For a simple description of the process, see *Project Learning Tree*.
6. **Tree Dramatics:** Read *The Giving Tree*, by Shel Silverstein. Afterwards, have the students act out the story. Some can be the various stages of the tree's life (seedling, sapling, mature tree, very old

tree). Others can be the wind, sun, rain, birds and animals that live in and around the tree. Discuss possible endings, such as fire, clear cutting by man, natural "old age" death, etc.

7. **Plant Personification:** Outside, ask your students to "plant" themselves, feeling roots grow from their feet deep into the ground. Grow branches and move like the emotions trees might feel when there is a:

Gentle breeze	Violent thunderstorm
Gentle rain	Snow storm
Forest fire	Squirrel running up the trunk
Bird nesting	Person climbing
Person carving on bark	Person planting their seeds
Person harvesting them	

8. **Early Buds:** Early in spring, before the buds open, bring in some branches from shrubs or trees. Place these in a jar with water and watch the buds open. Forsythia and pussy willow are good plants for this activity. Maple trees have non-showy flowers and are useful to show that trees have flowers that many people don't even notice!
9. **Photosynthesis:** Green plants use sunlight energy, water and carbon dioxide to produce food through a process called photosynthesis. The students can do experiments to help them understand the necessary components for photosynthesis. Compare the growth of two plants by placing one in the dark and leaving the other in a sunny window. Periodically bring the two plants together to compare growth, take measurements, and discuss the differences. Try other experiments with photosynthesis: water vs. no water; airtight container vs. open container. Do plants prefer water or diet cola or fruit juice? Cold or warm temperatures? Does a plant grow better if there are earthworms in the potting soil? Explain to the students the importance of scientific method and the importance of keeping everything the same except for the variable you are testing.
10. **Maple Syrup:** In late March and early April, when the temperatures begin to reach the 40's and 50's, the sap begins to flow in the maple trees. Have the students investigate where maple syrup comes from and how it is made. Try collecting sap and making maple syrup (see *Project Learning Tree*, Activity #56). Several forest preserves or nature centers in central Illinois sponsor "maple syrup days". Check the web sites for Funk's Grove or the Vermillion County Conservation District and suggest your students make a family visit. (Pancake breakfasts are often involved!)
11. **Leaf Hunt Relay:** Have the students collect leaves from different trees. How are the leaves similar? How are they different? Can they identify the leaves using a book with pictures of leaves? Use the leaves to play matching games. Divide the class into teams. Give each team a different leaf shape. Place all of the leaves at one end of the play area and line the teams along a line at the other end. The first person in each team must run down to the pile of leaves, find a match, run back and tag the next person in line who will do the same until every team member has had a chance to find a matching leaf (see *Project Learning Tree*).
12. **Leaf Collection:** Ask the students to collect as many different kinds of leaves from trees as they can find in their neighborhood. After identifying the leaves, press the leaves under heavy books, between several sheets of newspaper, for at least a week. After the leaves are flat and dry they can be mounted with dots of glue onto paper. Put the mounted leaves into a magnetic page photo

album for a class leaf collection. (Please note that although you may collect leaves from many Urbana parks, the collection of leaves from natural areas such as Busey Woods and Meadowbrook Park is prohibited.)

13. **Tree Guide:** A guide to the trees of Carle Park in Urbana is available from the Urbana Park District at 901 N. Broadway. Over 40 different trees are identified. After a field trip to Carle Park your class can make their own guide to the trees which grow around the playground or school neighborhood.
14. **Borrow the Trees & Forests Educational Loan Box** from the Nature Center. It contains a seed collection, wood cookies, pictures, reference books, and an activity guide. Also available is a Plants and Seeds Educational Loan Box. Call 384-4062 for more information.
15. **Other Resources:** The Illinois Department of Natural Resources has a variety of posters and some activity books about trees and leaves available for educators. They can be ordered by visiting their website. Although the posters and activity books are free, shipping is charged.

REFERENCES

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