

Title of Lesson Plan	Forest Succession (eco systems are not static)
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Grade Level(s)	3 rd - 6 th grade
Keywords (subjects covered)	Environment, forest, species, ecology, habitat, life cycle, bark, phloem cambium, xylem and heartwood.
Brief Description	Students will observe different stages of tree growth and will identify the tree's role in the ecosystem in relation to other plant and animals' lifecycles.
Total Time Required	Several half hour sessions and one all day field trip
Setting	Starker Forest (or local forest)
Lesson Objectives/Goals	Students will demonstrate an understanding of tree structure and the role of trees in forest ecology.
Materials Needed	I used the Project Learning Tree Manual (Activities 79 and 80) and a diagram of tree trunk layers (Activities 76 and 62). In place of a field trip to Starker Forest, use the videos from the TFF Education Kit. Tree Cookies!
Standards Addressed	5.1 Organisms change throughout their lifetimes. Species of organisms change over long periods of time. 5.3 As organisms go through their life cycle of growth, maturity, decline, and death, their role in the ecosystem also changes. 5.4 Ecosystems change over time through patterns of growth and succession. They are also affected by other phenomena such as disease, insects, fire, weather, climate and human intervention. (PLT Manual page 428)
Procedure	<p>In class, students will examine tree cookies and diagrams of trees.</p> <ol style="list-style-type: none"> 1. Find out what the class already knows. What do you know about trees? What exactly is a forest? What else lives in a forest besides trees? What is an old growth forest? 2. <u>Life cycle of a tree.</u> Brainstorm with students using the life cycle of a plant. Include "dead tree" and "rotting log." in the tree's life cycle. Have students draw the life cycle using their favorite tree. Make a variety of books on trees available if there is time for research. 3. <u>Tree Cookies.</u> Have variety of tree cookies available. These can be 1"-2" cross sections of a trunk or limb of a fallen tree. Or substitute a paper diagram like the one in the PLT manual in Activity 76. Demonstrate how to count the rings (only count the dark rings or the light ones). Then encourage students to count the rings on their tree cookie. List on the board these terms: bark, phloem (FLOW-uhm), cambium, xylem (ZEEYE-luhm) and heartwood. Discuss the function of each of these tree parts, then have the students locate them on their tree cookie. Why are some rings bigger than others? What would a drought year do to the tree rings (What's a drought)? Are there other marks left by branches, insects, fire or other scars? 4. <u>Journals.</u> Have students write a story about the tree that their tree cookie came from. They could work either alone, in pairs or groups. Was there a terrible storm when it was small? Did a deer almost step on

	<p>it? When it was older, did it over shadow seedlings as it reached for the sun? How old was it when it got cut down. Why was it cut down? The story can be factual or total fantasy. They must include 3-5 facts discussed in class. Share the stories with the class.</p> <p>5. <u>Forest Succession</u>. Field Trip to Starker Forest. An abandoned field or a burned forest returns to a natural healthy state through natural successional stages of plant and animal life cycles. Reforestation can also demonstrate life cycles- (but with less variety.) Starker Forest has plantings labeled by the year they were planted. Students will look for other types of plant life at each stage and signs or sounds of animals. This is a guided tour. The guide will point out skeletal remains of animals, grasses, shrubs and other clues the students will record in a small notebook. They will use this information to get a picture of how the forest and therefore, the forest ecology, changes over time.</p>
<p>Assessment</p>	<p>Students will create a “tree cookie” of their own life, labeling trunk parts. Each student will use one white paper plate. They will draw a small circle in the center of the plate and label it “heartwood” and their birth date. They will draw concentric circles, each labeled consecutively (stopping at their age). These layers will be labeled xylem, cambium, phloem and on the outside edge, “outer bark.” They will label the different years of their life according to events that happened at that age (“Disneyland,” or “my sister was born,” etc.) When a new member joined their family, they can start a new branch at that point that goes to the edge of the plate.</p>
<p>Literature Cited/References</p>	<p>Project Learning Tree Manual, TFF Education Kit</p>
<p>Forestry Tour Attended</p>	<p>July 2009</p>

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