<table>
<thead>
<tr>
<th><strong>Title of Lesson Plan</strong></th>
<th>Life Cycle of Trees</th>
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<tbody>
<tr>
<td><strong>Prepared By</strong></td>
<td>Glenna MaKosky</td>
</tr>
<tr>
<td><strong>City and State</strong></td>
<td>Rochester, MN</td>
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<tr>
<td><strong>Grade Level(s)</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Keywords (subjects covered)</strong></td>
<td>Life cycle (seed, seedling, sapling, adult tree, senescent tree, log); parts of a tree; tree leaf key</td>
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<tr>
<td><strong>Brief Description</strong></td>
<td>This lesson begins with an introduction to the parts of a tree and tree life cycles, including physical growth and change. A student (optional) could be dressed up as a tree to illustrate the major parts of a tree and what trees require. There are 2 correlating activities: use dichotomous keys so each student becomes a “tree-tective” to identify different local trees using leaves. The other is an outside hike through the woods where students look for examples of the different stages of the tree lifecycle and unique features of trees. Other optional activities could include how a tree has multiple annual/seasonal cycles within its life cycle through the use of tree cookies or core samples.</td>
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<td><strong>Total Time Required</strong></td>
<td>2+ hours</td>
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<tr>
<td><strong>Setting</strong></td>
<td>Classroom and school forest, park, etc.</td>
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<tr>
<td><strong>Lesson Objectives/Goals</strong></td>
<td>All living organisms have life cycles that include being born, growing up, reproducing, and eventually dying.</td>
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<td></td>
<td>- Physical growth and change are natural parts of the tree life cycle.</td>
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<td>- Trees are more likely to survive and thrive in each stage of their life cycle when survival needs are met.</td>
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<td></td>
<td>- A tree has multiple annual cycles within its life cycle (tree rings).</td>
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<td></td>
<td>- Seeds are an important stage in the life cycle of a plant.</td>
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<td><strong>Materials Needed</strong></td>
<td>Tree costume/props: <strong>Trunk</strong> - brown tagboard or felt material with armholes cut (could also have a piece of real bark attached and under this 2 layers of green construction paper with straws or tubing attached to represent the xylem and phloem located just under the bark); <strong>Roots</strong> – pieces of twine, yarn, or similar materials that stretch 2 times farther than branches; <strong>Branches</strong> – could use 2 real tree branches with leaves (paper or real) or an umbrella with leaves attached; <strong>Crown</strong> - a crown or hat with leaves on; <strong>Nuts or other Seeds</strong> from trees puppet or stuffed animals of animals that depend on trees Wood cookies (optional) Tree leaves and seeds to match tree keys Dichotomous tree keys (provided below) Worksheet (provided below)</td>
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<td><strong>Standards Addressed</strong></td>
<td>(Correlation to MN Science standards):</td>
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<td>- The student will describe the life cycles of plants and animals. (Grade2.IV.B.1)</td>
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<td>- The student will observe and describe some features of plants and animals that allow them to live in specific environments. (Grade2.IV.C.1)</td>
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<td>- The student will know that animals need air, water, and food and that plants require air, water, nutrients and light. (Grade1.IV.F.1)</td>
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<td>- The student will sort and classify objects in terms of their color, size, shape, weight, texture, flexibility, and attraction</td>
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**Procedure**

We’re going to be tree detectives or “tree-tectives” today! As a tree-tective, our job is to make some observations about trees.

How many of you like trees? Many people do! (State trees = favorite trees)

Why are trees important? Think of all the things we people get from trees. (Have students come up with a list.) Think of all the animals that depend on trees. (Have students come up with another list.)

Trees are so very important. But what makes a tree a tree and how do they get so big and tall? Trees have different parts, all with important jobs to do to keep the tree healthy and growing.

**Tree Costume** (PLT lesson 62 has a paper bag vest similar to the trunk part of this costume.)

I need a volunteer to help us remember the different parts of a tree. (Or just talk about and sketch each part.)

*(As students name the different parts of a tree, add that part of the costume or draw that part and share the function.)*

**Bark:** The “skin” of the tree that protects the inner living tissue of the tree. Can talk about the xylem and phloem.

**Trunk:** this is the main “stem” of the tree and from where all branches of the tree grow out of.

**Branches:** Branches help give a tree its shape. Some trees are shaped like ovals, others more like triangles or circles or…

**Leaves/ Crown:** The canopy is the branches and leaves of the tree. Leaves have the important job of making food for the tree. Leaves catch the sunlight to help make their food and to give us oxygen to breathe.

**Roots:** The roots hold the tree in the ground so it can stand straight. Roots also absorb water and minerals from the ground and send them up through the trunk and out through the branches.

**Seeds/ Cones:** Seeds are important because that’s where new trees come from!

A tree needs all its parts to survive!

*Have some fun after the costume is assembled. Maybe add a squirrel puppet or stuffed animal, a nest full of woodpecker, etc. Illustrate that lots of things depend on trees!*

Trees are living things so they need many of the same things in their habitats just like we need to survive in ours.

What do all living things need in order to survive? *Food, water, space,*
As students list off the 5 survival needs, reference the differences for ‘air’ needs of humans vs. trees: oxygen vs. carbon dioxide. Also distinguish differences in food needs of an animal vs. a tree: tree leaves make the tree’s food; animals need to eat.

The tree lifecycle
All living things go through cycles. Think of people: First you were a newborn, then an infant, toddler, etc. to adult. Trees go through their own lifecycle as well. What do all trees start their life as?

Seeds: Seeds, that’s right! They can be as big as a baseball or as small as the head of a pin. Some are flat, some are round; others are long and thin. Most travel; some by air, some by water, some by hitching a ride with a person or an animal.

Seedling: With water, warmth, sunlight food and air, that little seed will push its first stem up through the dirt. A seedling is the very young tree that emerges from the seed.

Sapling: A young tree

Adult tree: A mature tree bearing flowers, then fruits, cones or nuts.

Senescent tree: A dead/dying tree that is losing its bark and often has many dead branches

Decaying log: Lots of animals and decomposers will move in and help turn this log into rich soils that will help to nourish a new young seed! (Project Learning Tree lesson 79 has pictures of each stage.)

Sometimes people cut trees down before they die. That way we people get things that we need from trees. When a forester decides which trees should be cut, some trees that are old that make good homes for animals are left. Sometimes small trees are cut to make room so that the trees that are left can grow bigger. When a forester does this, people get to use trees and there is still good habitat left for all the creatures that depend on the forest.

Activities: Tree Leaf ID. Have the following leaves and seeds (nuts, cones, etc.) or pictures of its seed (This order matches the worksheet.): 1. Red pine 2. Cottonwood 3. Oak 4. White pine 5. Maple 6. Walnut 7. Spruce 8. Willow 9. Basswood 10. Box elder. Place a leaf and seed on a table along with the appropriate leaf key. (There are 3 different keys. These keys are over simplified – technically “many leaves on a stem” should be leaflets, but it’s easier for 2nd graders calling the leaflets leaves.) It helps to have a different leaf to use as an example to show students how to use one of the keys. Point out leaf edges, etc. It may be helpful to describe the key as a road map. To figure out what tree the leaf came from, follow the path (the arrow) that matches how the leaf
looks. The worksheet has boxes for students to draw both the leaf and seed from each tree and has the silhouette of the adult tree.

Tree Hike: Look for each life stage of trees. You could bring along cards with an example of each stage. Look at height, circumference, bark texture, leaves, etc. of individual trees. Look for signs of animals that need trees to survive.

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<thead>
<tr>
<th>Assessment</th>
<th>Tree leaf ID – correct tree matches</th>
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<tbody>
<tr>
<td>Literature Cited/References</td>
<td>Quarry Hill Nature Center Staff, Project Learning Tree lesson 62, 63, 64, 79</td>
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<tr>
<td>Forestry Tour Attended</td>
<td>Lake States 2008</td>
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Tree Scientists

Mountain Ash
Walnut
Box Elder

Spruce
Red Pine
White Pine

Cottonwood
Basswood
Willow

Cottonwood
Basswood
Willow

Box Elder
Mountain Ash
Walnut
Not Needle Leaves

Many leaves on a stem

3 – 5 Leaves

More than 5 leaves

Box Elder

11 – 15 leaves

Mountain Ash

More than 15 leaves

Walnut

Needle Leaves
In Groups Of One

Spruce

In Groups Of 2

Red Pine

In Groups of 5

White Pine

Prepared by staff of Quarry Hill Nature Center, Rochester MN 55906
Not Needle Leaves

One leaf on a stem

Leaf side with big bumps
- Maple

Leaf side with many small bumps
- Oak

Leaf Narrow
- or smaller
  - Willow

Leaf Wide
- or wider
  - Leaf Triangle
    - Shaped
    - Cottonwood
  - Leaf Heart
    - Shaped
    - Basswood

Prepared by staff of Quarry Hill Nature Center, Rochester MN 55906