

Tree's Company

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Overview: Trees, Photosynthesis, Conservation. In this lesson, students will explore the significance of trees in our world. They will discover the many ways we use trees and the importance of conservation. The process of photosynthesis will be examined and students will have an opportunity to learn how to determine the age of a tree.

Grade Levels: 2nd – 5th

Time Allotment: Two 40-minute sessions

Subject Matter: Science, Math

Learning Objectives:

Students will be able to:

- List at least three ways we use trees in our everyday lives.
- Identify the things a tree needs to make its own food.
- Explain the importance of tree conservation.
- Demonstrate how to find the age of a tree.

State Standards:

Science

2.5 The student will investigate and understand that living things are part of a system. Key concepts include:

*living organisms are interdependent with their living and nonliving surroundings; and

*habitats change over time due to many influences.

2.8 The student will investigate and understand that plants produce oxygen and food, are a source of useful products, and provide benefits in nature. Key concepts include:

*important plant products (fiber, cotton, oil, spices, lumber, rubber, medicines, and paper);

*the availability of plant products affects the development of a geographic area; and

- plants provide homes and food for many animals and prevent
- soil from washing away.

3.10 The student will investigate and understand that natural events and human influences can affect the survival of species. Key concepts include

* the interdependency of plants and animals;

* human effects on the quality of air, water, and habitat;

* the effects of fire, flood, disease, erosion, earthquake, and volcanic eruption on organisms; and

* conservation, resource renewal, habitat management, and species monitoring.

4.4 The student will investigate and understand basic plant anatomy and life processes. Key concepts include:

- * the structures of typical plants (leaves, stems, roots, and flowers);
- * processes and structures involved with reproduction (pollination, stamen, pistil, sepal, embryo, spore, and seed);
- * photosynthesis (chlorophyll, carbon dioxide); and dormancy.

4.5 The student will investigate and understand how plants and animals in an ecosystem interact with one another and the nonliving environment. Key concepts include:

- * behavioral and structural adaptations;
- * organization of communities;
- * flow of energy through food webs;
- * habitats and niches;
- * life cycles; and
- * influence of human activity on ecosystems.

4.8 The student will investigate and understand important Virginia natural resources. Key concepts include:

- * watershed and water resources;
- * animals and plants, both domesticated and wild;
- * minerals, rocks, ores, and energy sources; and
- * forests, soil, and land.

Media Components

Video: *A First Look At #108, Trees*

Web Sites:

(Culminating Activities)

Wood Magic Show: Kids Section

<http://woodmagic.forprod.vt.edu/Kids/index.htm> - this web site is an excellent source of information on trees, tree growth, and conservation. It is written on an elementary school level.

Carly's Kids Corner

www.arborday.org/carly - this web site is an excellent source of information about trees and conservation. It includes factual information and games.

(Cross-Curricular Activities)

Real Trees for Kids

www.realtrees4kids.org/elementary/elementary.htm - this web site is a good source of information on trees. It includes information, art and poetry activities as well as other interesting subtopics.

What Tree Is This?

<http://www.oplin.lib.oh.us/products/tree/> - this web site is an excellent source for identifying trees and leaves.

Materials

For Introductory Activity

- Book entitled *The Giving Tree*, by Shel Silverstein
- Poster-size paper for recording ideas

For Culminating Activities

Activity 1

- Poster from Introductory Activity
- At least one Internet ready computer connected to a large screen monitor

Activity 2

- At least one Internet ready computer connected to a large screen monitor

Activity 3

- At least one Internet ready computer connected to a large screen monitor

Activity 4

- At least one Internet ready computer connected to a large screen monitor
- One or two large leaf plants
- Two pieces of construction paper
- Scissors
- Several small paper clips

Activity 5

- At least one Internet ready computer connected to a large screen monitor
- Carly's Answer Sheet – All About Trees (attached at the end of the lesson)

Prep for Teachers

Prior to teaching this unit, bookmark all sites mentioned above. Take the time to review and cue your videotape to the first viewing segment. Photocopy all student handouts for distribution as needed during the lesson.

When using media, provide students with a Focus for Media Interaction, a specific task to complete and/or information to identify during or after viewing of video segments, web sites, or other multimedia elements.

Introductory Activity/Setting the Stage

To the Teacher: The following activity is used to provide your students with a personal link to the subject matter of this unit:

Step 1: Take students outside to sit under a large, shade tree.

Step 2: Read the book *The Giving Tree* to the children and discuss the relationship between the boy and the tree.

Step 3: Have children lie on their backs and look up through the branches. Ask students what they think about as they look up through the tree. Ask them to describe what comes to mind about trees. Encourage them to think about how we use trees in our world. Ask them how trees get their food and water and how the leaves change color. Record their ideas on the poster paper.

Learning Activities

Step 1: **Focus for Media Interaction**, Review the list of ideas from the session outside and tell the students they are now going to watch a video called *A First Look At Trees*. Ask them to compare their list of feelings, ideas, and uses about trees to the list given at the beginning of the video and be ready to add new ideas to the poster.

Step 2: **START** the video at the beginning of the program. **PAUSE** at the picture showing orange fall leaves (when the narrator says, "...and wonderful red, yellow, and orange leaves in the fall.") Ask students if they heard anything mentioned about how we use trees that was already on our list. Then ask students if they heard any new uses for trees we had not included. Add these to the poster. (ans. fun, shade, food, paper, houses)

Step 3: **Focus for Media Interaction**, Say, "Let's listen for the definition of a tree and where and how a tree grows." **RESUME** the video and **PAUSE** at the picture of the large rock at the end of the long root (when the narrator says, "...and carry water from the root to the rest of the tree.") Discuss the definition of the tree, where a tree grows, the root system of a tree, how far the roots grow, and what the roots do. (ans. A tree is a plant

with a strong, woody stem that grows above and below the ground. The roots support the tree and carry water to the rest of the tree)

Step 4: **Focus for Media Interaction**, Say, “Trees are the tallest and largest living things on earth. Now I want you to watch the video and listen for the tallest trees and find out how tall these trees are.” **RESUME** video and **PAUSE** at the picture of the tall white city building (when the narrator says, “...that’s about as tall as a 35 story building.”) Ask students to answer the focus questions. (ans. Giant redwood – 360 ft. tall)

Step 5: **Focus for Media Interaction**, Say, “You have found the name of the tallest trees. Now let’s see if we can find out what the two oldest living trees are and how old they are.” **RESUME** the video and **PAUSE** at the picture of the Bristle Pine Cone tree (when the narrator says, “...some are over 4,000 years old.”) Ask students if they were able to determine the two oldest trees and their ages. (ans. Sequoia- 3000 yrs. old, Bristle Pine Cone tree – 4000 yrs. old)

Step 6: **FAST FORWARD** to where the word “leaves” comes up on the screen. **Focus for Media Interaction**, Say, “Let’s watch now to find out what makes leaves green and why this is important.” **START** video and **PAUSE** at the picture of chlorophyll running through the veins of leaves. Ask students to answer the questions. (Chlorophyll – helps tree make food)

Step 7: **Focus for Media Interaction**, Say, “Now we are going to look for several answers to questions so you will have to listen carefully. (The teacher could divide students into small groups and have each group look for one question.)

Question 1: What three things do trees need to make food?

Question 2: What do trees put in the air to help us?

Question 3: What do we put in the air that helps trees?

Question 4: What is the most important thing trees do for our world?

Question 5: What should we do when we cut down trees? Why?

RESUME video and **STOP** at the picture of the man cutting down a tree in the woods (when the narrator says, “...when a tree is cut down, it should be replaced by a new tree.”) Call on each group to answer their question. (ans. question 1 – sun, water, carbon dioxide, question 2 – oxygen, question 3 – carbon dioxide, question 4 – making oxygen, question 5 – replace with new trees so we always have trees in our world)

Step 8: **Focus for Media Interaction**, Say, “Now let’s watch for other ways we use trees. See how many types of food the video mentions that we get from trees.” **RESUME** video and **PAUSE** at the picture of the medicine bottle (when the narrator says, “...and even some medicines come from trees.”) Discuss the three ways the video mentions that we use trees and see if they can tell how many foods (5) were mentioned. See if they can name them. (ans. Wood, food, medicine; foods – apples, oranges, peaches, almonds, cherries)

Step 9: **Focus for Media Interaction**, Say, “Now I want you to watch the video and find out how trees grow and be able to explain it.” **RESUME** video and **PAUSE** at the

picture of the tree trunk (when the narrator says, "...they also grow bigger around at the trunk and the branches.") Discuss the way trees grow. (ans. Trees grow from seeds. They grow at the tips of branches and at the roots.)

Step 10: Focus for Media Interaction, Ask, "Did you know that you can figure out how to tell how old a tree is by looking at a piece of its trunk? Let's watch this next section to learn how a tree trunk grows and how we can determine its age." **RESUME** the video and **PAUSE** at the tree falling in the woods (when the narrator says, "...let's use our trees wisely so we will always have plenty of trees.") Discuss this section with the students. (ans. Trees grow faster in the spring and slower in the summer with little growth in the fall and winter. The tree adds a growth ring each year in the thin layer just under the bark.)

Step 11: Focus for Media Interaction, Say, "Now, as we watch the end of the video, listen for what we should do so we will always have trees in our world and also to see if we hear any other ideas to add to the poster of tree uses. **RESUME** the video and **STOP** at the end of the video. Discuss answers with the students. (ans. - plant more trees than we cut down)

Culminating Activities

(The teacher may choose to do all or some of the culminating activities depending on the time allotted and the concepts most important to be covered.)

Activity 1

To the teacher: This activity can be done in small groups, individually, or as a whole group depending on how many computers you have available for your use.

Step 1: Say, "To complete our poster, we are going to look at a web site that shows us many and often surprising ways we use wood everyday. Let's take a look and see if we can add anything more to our poster."

Step 2: **Focus for Media Interaction:** Go to: <http://woodmagic.forprod.vt.edu/Kids/index.htm> then click on the section titled - [Everyday Uses of Wood in Your Home](#).

Step 3: As students look through the pages of this section, add new ideas to the poster.

Step 4: Discuss some of the unusual things mentioned that students would not have thought were made from wood. (rayon scarf, tencel shirt, dish soap, etc.)

Activity 2

To the teacher: This activity can be done in small groups, individually, or as a whole group depending on how many computers you have available for your use.

Step 1: Say, “Now, let’s take a look at the many features of wood including knots, bark, heartwood, sapwood, and growth rings. After we have learned a few things about tree growth, we will get a chance to count the rings of a tree and try to determine how old the tree is.”

Step 2: **Focus for Media Interaction:** Go to:

<http://woodmagic.forprod.vt.edu/Kids/index.htm> then click on the section titled – Wood Parts and Anatomy.

Step 3: As the students read through the pages of this section, stop and discuss some of the vocabulary mentioned and how different parts of the tree are formed.

Step 4: Let students try the ring growth counting quiz at the end of the section.

Activity 3

To the teacher: This activity can be done in groups, individually, or as a whole group depending on how many computers you have available for your use.

Step 1: Say, “We are now going to look at why trees are so valuable to us and what we need to do to help conserve trees in our world.”

Step 2: **Focus for Media Interaction:** Go to:

<http://woodmagic.forprod.vt.edu/Kids/index.htm> then click on the section titled - [Why Wood & Wood Products are a Good Choice!](#)

Step 3: As students read through these pages, discuss trees as renewable natural resources. Take the quiz at the end of the section to see how well the students understand this section.

Activity 4

Step 1: Say, “Now we are going to read a little more about how trees make their food and how they help us. We are also going to try an experiment to show how important sunlight is to trees and plants.”

Step 2: **Focus for Media Interaction** Go to: www.pbs.org/ktca/newtons/9/phytosy.html

Step 3: Read through the explanation about Photosynthesis and discuss the question at the end of the page.

Step 4: Set up the experiment at the end of the lesson and monitor the results for several days. Discuss why students think the result turned out the way it did.

Activity 5

To the Teacher: This activity would be best if every student could have their own computer or work in groups of two.

Step 1: **Focus for Media Interaction:** Say, “You are now going to do some exploring about trees on your own. I want you to go to the web site www.arborday.org/carly. Use the handout to answer questions from this site.”

Step 2: Give students time to look over the site and answer the questions on the worksheet. Give help to students as needed.

Step 3: Collect worksheets to check and return to students. Once all worksheets are collected, go over the questions and answers with the students to check for understanding and mastery.

Cross-Curricular Extensions

1. **Reading:** Set up a classroom library with fiction and non-fiction books about trees for students to enjoy.
2. **Writing and Art:** Go to the web site:
www.realtrees4kids.org/elementary/elementary.htm
Click on Art-Art-Art and follow the directions for leaf rubbings. Then click on Piney Poetry and follow the directions to write a poem and add it to the leaf rubbing.
3. **Social Sciences:** Many medicines come from trees and plants. Have students research and find medicines that come from plants, where they are found and who discovered them. (Most medicines that have been discovered from plants have been found in the Rainforest.)
4. **Math:** Students can measure the circumference of trees in the school yard, group and sort leaves, and weigh different parts of a tree (seeds, bark, etc.)
5. **Science and Technology:** Students can make tree and leaf identifications by researching and identifying local or regional trees. Information can be recorded by computer database, leaf collections, and student made picture books. Below are two web sites that can help with identification of trees and leaves.
<http://66.180.11.161/trees/treeID.html>
<http://www.oplin.lib.oh.us/products/tree/>
6. **More Science:** Bring in actual slices of a tree trunk and let students try to count growth rings and determine if there have been fires, bad winters, drought, etc.

Community Connections

1. Invite a forest ranger and/or Smokey the Bear to speak to students about tree conservation.
2. Invite someone who works in a lumber company to speak to the class about how a tree becomes lumber and how lumber companies contribute to conservation.
3. Request free trees from the 4-H Extension Office or the Arbor Day Foundation to plant and care for at home.

Student Materials

1. Handout for Culminating Activity #4

Carly's Answer Sheet

All About Trees

Go to the Internet Site: www.arborday.org/carly
Follow the Directions for each question.

A. Click on the Blue Button-Kids Make a Difference

1. Click on Trees and Your Community
Write down two things you found out about how trees help the community.

2. Click on Kids Make A Difference
What is one thing you could do to help conserve trees?

B. Click on the Brown Button – Arbor Day Farm

1. Click on Learn About the Farm
What is Arbor Day Farm?
2. Click on Arbor Day at the top of the Page.
What is Arbor Day and When is it celebrated?

3. Click on Celebrate Arbor Day
Write down two things you could do to make Arbor Day special in your community.

C. Click on the Green Button-Trees Make A Difference

1. Click on Rainforest Exploration

Write down two facts you found about the Rainforest

2. Click on A World Without Trees

Look at the picture without trees and then look at the picture with trees. Describe what our community would look like without trees.

D. Click on Fun and Games

1. Play two or three of the games.

Which game did you like best? Why?

