

# **Trees for Teens: Project Tree House!**



**2010-2011 School Year  
High School**

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A special thank you  
 to all the Trees for Kids/Teens  
 partners for 2010!



# Trees for Kids 2010-2011

## The Program

Trees for Teens is an educational program that incorporates educational experiences with planting trees. A focus is placed on Iowa's elementary and secondary school students. Its goals are to educate students about the values of trees and to encourage tree planting projects at schools or at other public areas in the state of Iowa.

This unique program is sponsored by the Iowa Department of Natural Resources – Bureau of Forestry, MidAmerican Energy, Black Hills Energy, Alliant Energy, Trees Forever, Iowa Tree Farm Committee, Iowa Woodland Owners Association, Iowa Bankers Association, and Iowa Landscape and Nursery Association.

This year the educational materials included are lesson plans, learning centers, bulletin boards, and resource lists. This group of five lesson plans can be seen as a thematic unit about trees and the habitats they provide. The unit is linked to the Iowa Core Curriculum and it incorporates the multiple intelligences. Some of the subject areas touched upon are science, reading, geography, computer skills, social studies, and math. Feel free to utilize any or all of the materials provided. You may print or photocopy as needed. If you would like a hard copy please contact the Iowa DNR Trees for Kids Coordinator at 515-281-6749 or visit the TFK/TFT webpage at: [www.iowadnr.gov/forestry/treesforkids](http://www.iowadnr.gov/forestry/treesforkids).

## The Trees

Trees for Kids and Trees for Teens offers grant funding to plant trees at your school every spring and fall. Schools are selected based on their grant application. Over 20 projects are funded a year. Please visit the Trees for Kids website [www.iowadnr.gov/forestry/treesforkids](http://www.iowadnr.gov/forestry/treesforkids) for an application. If you have questions about the application process or the program contact the Iowa DNR Trees for Kids Coordinator at 515-281-6749.

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**Bureau of Forestry**

## Lesson 1: What's a Tree Made of?

**Grade Level:** 9-12

**Preparation Time:** 30 Minutes

**Lesson Time:** 60-90 Minutes

**Goal:** Students will know the different organelles and functions of cells found in plants.

### Objectives:

- Students will research the structure and function of cells found in trees, using this information they will complete a worksheet.

### Iowa Core Curriculum:

**Grades 9-12 Life Science-**Understand and apply knowledge of the cell.

### Multiple Intelligences:

- Visual/Spatial- The resources provide photos. The use of drawing allows students to link the written functions of the cell to their drawings.
- Verbal/Linguistic- Students have the opportunity to read and listen.
- Logical/Mathematical- Students must draw while taking scale into consideration.
- Bodily/Kinesthetic- Within the expand activity students use their hands to build a cell.
- Interpersonal- Students have the opportunity to work with others.
- Intrapersonal- Students have the opportunity to work individually.

### Materials:

- Worksheet for each student
- Computer for each student or for pairs

### Vocabulary:

- Xylem- vascular tissue made of specialized cells. Carries water and nutrients from the roots to the rest of the tree.
- Phloem- food carrying tissue that transports sugars throughout the plant.
- Cambium- creates new xylem and phloem.
- Plant cell- has nucleus, nucleolus, nuclear pores, vacuole, cell wall, mitochondrion, chloroplast, cytoplasm, golgi apparatus, plasma membrane, ribosome, smooth endoplasmic reticulum, rough endoplasmic reticulum, and microtubule.
- Animal cells have microtubule, nucleolus, nuclear pores, cytoplasm, mitochondrion, vesicle, golgi apparatus, ribosomes, plasma membrane, smooth endoplasmic reticulum, lysosome, rough endoplasmic reticulum, and centriole. Some animals also have a vacuole, but it is much smaller than a plant cell vacuole.
- Eukaryotic- These cells have a nucleus and are bound by membranes. They are also known as membrane-bound organelles.
- Prokaryotic- These cells do not have a nucleus. Example, bacteria.
- Cytoplasm- a semifluid material found inside the plasma membrane.
- Endoplasmic reticulum- the site for protein and lipid synthesis. It is a system of folded sacs, and it has interconnected channels. The pleats and folds provide a large surface

area. Rough endoplasmic reticulum has ribosomes attached to it. Smooth endoplasmic reticulum has no ribosomes.

- Ribosomes – ribosomes are the organelles that help manufacture proteins. Free floating ribosomes produce proteins that are used in the cytoplasm, while bound ribosomes produce proteins that are bound within membranes or are used by other cells.
- Mitochondria- In the mitochondria fuel particles like sugar are converted into energy.
- Vacuole – a sac where food, enzymes, and other needed materials are stored. Some may store waste material.
- Golgi apparatus is a flattened stack of membranes. Here proteins are modified, sorted, and packaged into sacs called vesicles.
- Lysosome – digest excess or worn-out organelles. They also digest food particles, and bacteria or viruses. They can fuse with vacuoles and dispense their enzymes so that the waste inside is digested.
- Centrioles are made of microtubules that function during cell division. They are found in pairs.
- Chloroplasts- Food producers of plant cells.
- Cell wall – A barrier that is inflexible and provides support, protecting the plant cell.
- Cell membrane- flexible boundary. Here movement of substances in and out of the cell is controlled.
- Nucleus- the nucleus is where the DNA is stored.
- Nucleolus- Site where ribosomes are produced.

#### **What will Happen:**

- Students will use the resources provided to draw each type of cell, to answer questions, and to compare plant and animal cells.

#### **Getting Started:**

To prepare for this activity, become familiar with the resources provided. Complete one of the worksheets and use it as a reference for grading.

#### **Engage: 5-10 minutes**

- Trees provide homes for many living things.
- For this to be possible trees are made up of many different parts that allow it to function effectively.
- As a class make a list of tree parts:
  - Crown- the area of the tree that includes the trees and branches.
  - Trunk- Supports the tree and the crown. It is like a highway that allows food from the leaves to travel to the roots and for nutrients from the roots to travel to the leaves.
  - Heartwood- Can be found in the center of the tree. It develops as sapwood-carrying tubes get clogged and can no longer carry water or sap. The clogged tubes become hard and provide support for the tree.
  - Cambium- A layer of cells. This layer is one cell thick and can be found inside the inner bark. The cambium produces the phloem and xylem cells.
  - Xylem (sapwood) - Water and nitrogen come together with mineral nutrients forming this tree sap. It is carried up tubes from the roots to the leaves.

- Phloem- is the inner bark. It is a sugar that is made in the leaves or needles of a tree. It is carried down tubes to the branches, trunks, and roots. It is changed into food (starch) for the tree to grow.
- Bark- The bark protects the tree from insects, disease, heat, cold, and other injuries.
- Roots- Anchor the tree in the soil, which provides support for the trunk and crown.
- Leaves- Where photosynthesis takes place. The leaves are like the lunchroom. They make food! Leaves are green because they contain chlorophyll, which reflects green light and absorbs the other colors in sunlight. Chlorophyll allows plants to combine carbon dioxide and water to form sugar.
- For a more complete definition of each go to <http://www.ncforestry.org/webpages/classroom%20activities/trees/partsoftree/parts.ht>

**Explore: 20-30 minutes**

- We are going to take a closer look at what trees are made of. Many different cells make it possible for trees to transport water and nutrients. Let's take a look at the xylem, phloem, and cambium cells.
- Give student time to research the cells found in trees.
- While researching, students should fill out the worksheet provided.

**Explain: 10-15 minutes**

- Allow students to share their finding with tablemates.
- Have a class discussion
  - How do the xylem, phloem, and cambium cells work together?
  - What do these cells need to function properly?
  - How are plant and animal cells different?
  - Why do plant cells have organelles that the animal cells do not?

**Evaluate:**

- To evaluate, collect student worksheets or grade on participation.

**Expand: 25-30 minutes**

- Allow students to look at a plant cell and a human cell under a microscope. Have them compare what they see.

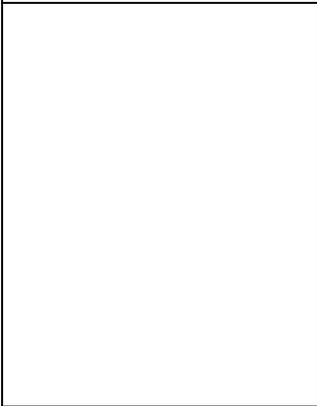
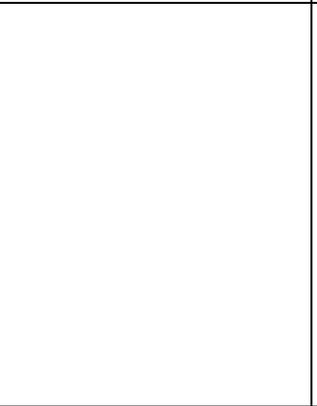
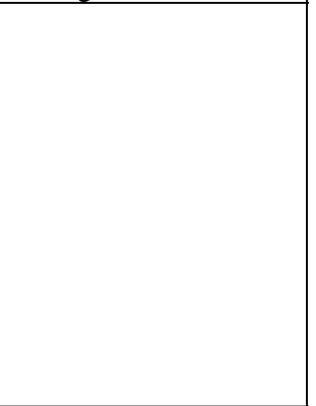
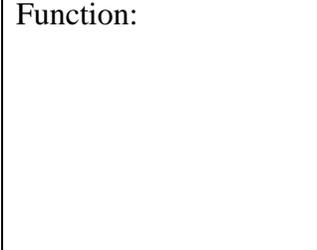
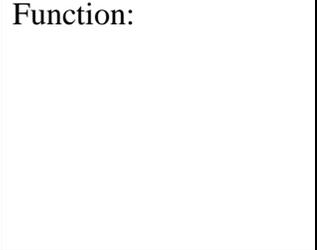
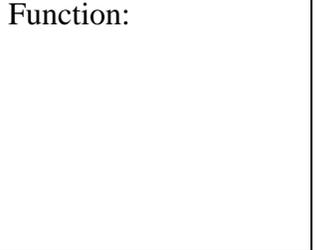
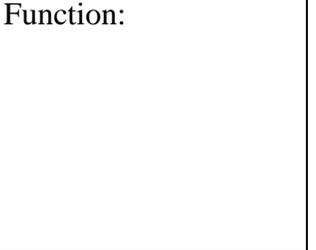
Or

- Have students build 3-d cells
  - Before beginning this activity, have students bring different materials from home that can represent different parts of each cell. (Scrap paper, newspaper, magazines, rice, pasta, toothpicks, cotton balls, beads, paper towel tubes, plastic wrap, aluminum foil, straws, play dough etc.) You need enough materials for each student to make their own 3-D cell.
  - After completing their research, have students put together and label their plant cell.
  - To finish have students do a museum walk, allowing them to see each of their classmates cells.
  - You may choose to test students on the different parts of the cell, or grade their finished cell.

Worksheet:

Name: \_\_\_\_\_ Date: \_\_\_\_\_

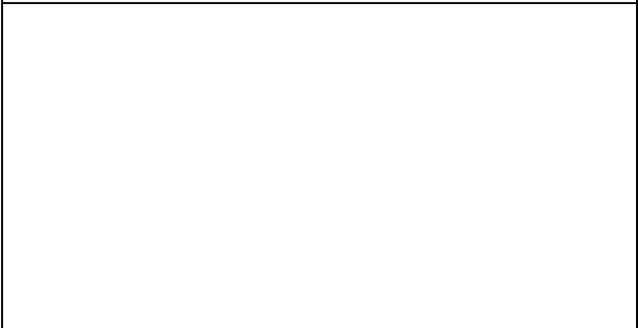
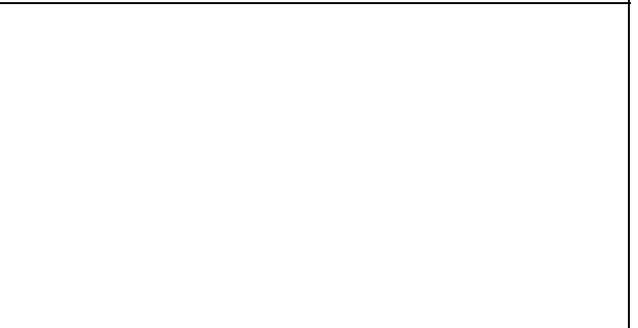
1. Draw a picture of each type of tree cell:

Phloem	Xylem	Cambium	All together
			
Function:	Function:	Function:	Function:
			

2. How do these layers of cells work together when they are functioning properly?

3. How do plant and animal cells differ?

(Draw)

Plant Cell	Animal Cell
	

## Lesson 2: Photosynthesis & The Structure of the leaf

**Grade Level:** 9-12

**Preparation Time:** 30 minutes    **Lesson Time:** 50-70 minutes

**Goal:** Students will be familiar with the structure of a leaf and the process of photosynthesis.

### Objectives:

- Students will create a study booklet that shows a visual and provides a description of each section of the leaf.

### Iowa Core Curriculum:

**Grades 9-12 Life Science-** Understand and apply knowledge of the cell. Understand and apply knowledge of matter, energy, and organization in living systems.

### Multiple Intelligences:

- Visual/Spatial- Students create a study guide that includes drawings.
- Verbal/Linguistic- Students have the opportunity to listen, write, and discuss.
- Interpersonal- Students have the opportunity to work in groups.
- Intrapersonal- Students have the opportunity to work individually.

### Materials:

- Booklet for each student
- Pencils

### Vocabulary:

- Energy is the ability to do work.
- Autotrophs are organisms that make their own food. Plants are photoautotrophs that convert energy from the sun.
- Heterotrophs are organisms that ingest food to obtain energy.
- Petiole- a leaf stalk that attaches the leaf to the plant.
- Blade- Broad and flat part of a leaf.
- Midrib- The main central vein of a leaf.
- Cuticle- A waxy, water-repelling, layer on the outer surface of the leaf. This layer helps protect leaves from invading bacteria, insects, and fungi. This layer is usually thicker on plants that live in environments that are dry. There is a cuticle layer on the top and bottom of the leaf. The underside layer is usually thinner. The epidermis secretes the cuticle through the guard cells and stoma.
- Upper epidermis- This layer is transparent so light can go through to the palisade layer.
- Palisade mesophyll cell- Most chloroplasts are found in this layer. Chlorophyll is found in the chloroplasts. Chlorophyll is the green pigment that absorbs light energy.
- Vascular bundle- Is also known as the veins. They provide support for the leaf. They also provide transportation for water and minerals through the xylem and food through the phloem.
- Spongy mesophyll cell- this layer is below the palisade mesophyll. It has cells that are irregularly-shaped, and they contain some chlorophyll. There are air spaces between them. These spaces allow carbon dioxide and oxygen to move easily between cells. This

layer of cells communicates with the guard cells, letting them know when to open and close.

- Lower epidermal cell- Thin layer of cells outer area of the leaf. Provides protection.
- Stoma- A small opening in the surface of a leaf. It is located in the epidermis that allows air to flow in (carbon dioxide) and oxygen to flow out through an opening that connects the outside to the inside. It also lets water escape.
- Guard cell- Located in the epidermis of a leaf or stem. It regulates the opening and closing of the stoma.
- Stomate- the combination of guard cells and stomata.

### **What will Happen:**

Students will research the structure of a leaf, making a study guide type book to put their thoughts together.

### **Getting Started:**

To prepare for this activity, become familiar with structure of a leaf. Have multiple leaves on hand for students to explore. Make your own booklet so you can use it as a reference.

### **Engage: 5-10 minutes**

- Begin by having a short review of the cells from the previous lesson.
- Write autotrophs and heterotrophs on the board. If plants are a type of autotrophs and humans are a type of heterotrophs what is the definition of each? Have students write a definition in their notebook.
- Discuss, creating a classroom definition of each.
- Trees create their own food, making them autotrophs. As we learned in the previous lesson there are many parts of the tree that have different functions. Today we are going to see how the process of photosynthesis takes place.
- Where does food production take place?
  - Leaves.

### **Explore: 20-30 minutes**

- Begin by allowing students to explore a leaf
- Using loose leaf or blank sheets of paper allow students make a booklet. On the front page, students should draw a leaf and label the blade, petiole, midrib, and veins.
- Hold up a leaf. This leaf has many layers. Each layer is important for different reasons. Today you are going to make a book that focuses on each layer of the leaf.
- Explain: You are going to create an informational book on the structure of leaves. You will research the structure of the leaf, and will designate one page of your book to each layer. Draw, label, and describe each layer. On the last page of your book draw the leaf structure as a whole and do a write up on how each layer works together. You must include the process of photosynthesis in your book. Where does photosynthesis take place? Describe the process.
- Explain: You may use computer resources or books to find information. (Your textbook may have some information.)

### **Explain: 5-10 minutes**

- Have students discuss the leaf structure and photosynthesis in small groups.

### **Evaluate:**

- To evaluate have students turn in their booklet, or have them do a write up on how the structure of the leaf supports the process of photosynthesis. Or, how does the leaf work with the rest of the tree?

**Expand: 20 minutes**

- To expand have students research the carbon cycle. How does photosynthesis tie into this?

### **Lesson 3: Forests around the world**

**Grade Level:** 9-12

**Preparation Time:** 30 minutes    **Lesson Time:** 50-90 minutes

**Goal:** Students will be familiar with forests from around the world.

**Objectives:**

- Students will research a forest.
- Students will write an essay that shows their understanding of the importance of the forest, as well as, the impact physical conditions and human settlements have had on the forest.

**Iowa Core Curriculum:**

**Grades 9-12 Geography:** Understand how physical and human processes shape the Earth's surface and major ecosystems. Understand how human actions modify the environment and how the environment affects humans. Understand how culture affects the interaction of human populations through time and space. Understand how cultural factors influence the design of human communities.

**Multiple Intelligences:**

- Visual/Spatial- The engage activity allows students to see forests from around the world.
- Verbal/Linguistic- While researching, students are able to read and write.
- Interpersonal- Students have the opportunity to work in groups.
- Intrapersonal- Students have the opportunity to work individually.

**Materials:**

- Computers
- Paper and pencil

**What will Happen:**

Students will research a forest. Using the information they gather they will write an essay. Student will then share their findings with small groups or with the whole class.

**Getting Started:**

To prepare for this activity find photos of different forests from around the world. Use these photos in the engage activity. Make a list of a variety of forests, large enough for each student in your class to be assigned a different forest.

**Engage: 5 minutes**

- We now have an idea of what makes up a tree and how they function. So, where can we find them?
- Bring up photos of different types of forests and have students guess where the forest is located.
  - What about this photo tells us where it may be located?

**Explore: 30-40 minutes**

- Assign each student a different forest so as to not have duplicates. Have students research the forest and write an essay.
  - What about your ecosystem is an important attribute to our society?
  - How has your forest changed over time?
  - How do extreme physical conditions affect your forest, if at all?
  - Are there human settlements or structures in your forest?
    - What are the positive and negative impacts of these settlements?
    - How have they adapted to the physical conditions of your forest?

**Explain: 10-30 minutes**

- Have students give a short presentation on their forest to small groups or the whole class.
- Discuss similarities and differences between the different forests.
- What kinds of forests are there?
- How do they meet the needs of the ecosystems they are in?

**Evaluate: minutes**

- To evaluate collect student essays or grade their presentation.

**Expand: 10-20 minutes**

- Have students do further research on the forest they were assigned. What is being done to protect or maintain that forest?

## Lesson 4: Forest Management Techniques

**Grade Level:** 9-12

**Preparation Time:** 30 minutes    **Lesson Time:** 55-120 minutes

**Goal:** Students will be aware that different management techniques are used to effectively care for our forests.

### Objectives:

- Students will work in groups to research a type of forest management, using their findings they will create a management plan for their 1,000 acre forest.
- Students will present on or debate using the information they found.

### Iowa Core Curriculum:

**Grades 9-12 Geography** Understand how physical and human processes shape the Earth's surface and major ecosystems. Understand how human actions modify the environment and how the environment affects humans.

### Multiple Intelligences:

- Visual/Spatial- Websites will provide videos, photos, etc.
- Verbal/Linguistic- Students have the opportunity to write, listen, and discuss.
- Logical/Mathematical- Students use logical thinking to create a plan that fits their forest, their forest management goals, and their management technique.
- Interpersonal- Students have the opportunity to work in groups.
- Intrapersonal- Students have the opportunity to work individually.

### Materials:

- Computers
- Paper

### Vocabulary:

- Harvesting- trees are harvested for many reasons. These include: improving the health of the forest, controlling what grows there, attracting certain wildlife, providing a source of income, producing different forest products, and improving access for those using the forest recreationally.
  - Clearcutting- Removing all trees in an area, and/or regenerating certain species such as oak or shade intolerant species. Efficient way for ridding an area of unhealthy trees. Removes all canopy cover and can be unattractive, but with time a new habitat can be created. Can be used to create edges, which are where two types of habitats meet.
  - Shelterwood- Mature trees are removed in two or three harvests over a 10-20 year period. This is an effective method in allowing regeneration of moderate shade intolerant to shade intolerant species.
  - Seed Tree- Five or more trees are left scattered per acre. They are left to provide seeds for new trees.

- Group Selection- Small scale clearcut, generally no more than ½ of an acre. Groups of trees in an area are harvested over many years so within 40-50 years they have all been cut.
- Single-tree Selection- Individual trees are removed because they are ready for harvest, have low value, or are in competition with other trees. This is generally suited for shade tolerant species.
- Thinning- When trees are crowded they must compete for sunlight, nutrients and water. Thinning the forest often consists of removing low quality trees that are competing with healthier trees. This type of management allows the remaining trees to grow more effectively and improves the forest's understory and herbaceous forest floor layer.
- Reforestation- Planting trees in an area that has been harvested. Because trees are a renewable resource they can be grown, harvested, and replanted over and over again. There are two basic types of reforestation. They are natural regeneration, which relies on nature to return an area to forestland. The second type is artificial regeneration, which is when humans sow seeds or plant seedlings.
- Prescribed burning- Reduces the amount of leaves, branches, and dead trees on the forest floor. Helps control the spread of wildfires. This can also be used to help regenerate oak by eliminating competing vegetation.
  - For more information on each of these visit The North Carolina Forestry Association at:  
<http://www.ncforestry.org/WEBPAGES/FOREST%20MANAGEMENT/FORESTMANAGEMENTINDEX.htm>

### **What will Happen:**

Students will work in groups to create a forest management plan for a 1,000 acre forest. They will then give a presentation about their plan, or will participate in a debate using their forest management plan.

### **Getting Started:**

To prepare for this activity become familiar with the different forest management techniques.

### **Engage: 5 minutes**

- Many of the forests we learned about in the last lesson are managed using different techniques.
- Have students create a list of management techniques they think are used in forests.
- Have students share/discuss their list in small groups.
- Make a class list.

### **Explore: 30-40 minutes**

- Put students into groups of 3-4. Assign each group a type of forest/timber management.
- Give students time to research their type of management. Each group should make a pros and cons list.
- Have each group share their pro and con list- Students should take notes at this time.
- Explain to students that they have each been given 1,000 acres of forest. In their groups, have students decide what condition their forest is in. What does it look like? What does it need? Then have them create a management plan using only the technique they were

assigned. They should create forest management goals and a desired outcome for their forest, creating a plan that will help them reach those goals.

- If your type of management is practiced on this land, what will your forest look like in 5 years? 10? 30?
- Do you think that your type of management is the most effective way of maintaining health in your forest?
- What other types of forest management would work well within your plan?
- Each group should create a visual to explain their plan.
- Then allow students to form an alternate plan an assortment of techniques that they feel meet the needs of their forest.

**Explain: 20-40 minutes**

- Have each group share the type of forest management they had, the pros and cons, and their forest management plan.
- After all groups have shared, have students discuss in small groups: Which type of forest management do you think is most effective? Would this management be effective in all forests? Why or why not? How can you use multiple types of forest management techniques to conserve our forests while allowing us to use trees for the many products they provide?
- You may also choose to have a class debate, having each student represent their type of forest management.

**Evaluate:**

- Grade students on their presentation to the class or have them do a write up on the discussion questions in the explain section.

**Expand: 20-30 minutes**

- To expand assign each group one of these Iowa Forests

○ Shimek State Forest
○ Loess Hills State Forest
○ Yellow River State Forest
○ Stephens State Forest

- Each group can find their forest management plan on, <http://www.iowadnr.gov/forestry/sfplan.html>
- Allow students to take a look at this plan
  - What are the annual harvest goals?

And

- Introduce the Forestry Bureau's poster contest. Check out the newsletter for more information.

## Lesson 5: Wood Where?

**Grade Level:** 9-12

**Preparation Time:** 40 minutes    **Lesson Time:** 35-55 minutes

**Goal:** Students will be aware that trees provide much more than wood and paper.

### Objectives:

- Students will create definitions for cellulose, nitrocellulose, rayon, log, wood pulp, tree gum, and other ingredients that are come from trees and are found in household products.
- Students will categorize household objects according the tree ingredient that is found in them.

### Iowa Core Curriculum:

**Grades 9-12 Geography** Understand how physical and human processes shape the Earth's surface and major ecosystems. Understand how human actions modify the environment and how the environment affects humans.

### Multiple Intelligences:

- Visual/Spatial- The wood products matched with the ingredient provide visuals.
- Verbal/Linguistic- Students have the opportunity to discuss, listen, and read.
- Bodily/Kinesthetic- Students are able to touch items.
- Interpersonal- Students have the opportunity to work in groups.
- Intrapersonal- Students have the opportunity to work individually.

### Materials:

- A number of items that come from trees

### Vocabulary:

- Wood- Has tiny fibers, also known as cellulose, and lignin (natural glue that holds the fibers together).
- Cellulose- Used in paper and many more products such as toilet seats, tool handles, helmets, toothbrushes, etc. Can be refined into rayon fabric (used in clothing) and nitrocellulose, which is used to make nail polish, solid rocket fuel, and industrial explosives.
- A log is piece of a trunk or large branch.
- Wood Pulp is ground up tree that is soft and moist.
- Tree gum is a sap extracted from trees.
- Silvichemicals- Chemicals from trees.

### What will Happen:

- Students will create definitions for different parts of the tree that provide ingredients for household items. Using these definitions students will categorize items according to the ingredient they believe is found in that item.

### Getting Started:

To prepare for this activity collect a number of items that have an ingredient that comes from a tree. See explore.

**Engage: 5 minutes**

- Have students take out a sheet of paper or individual white boards. Ask them to write down a numeric answer to this question: How many different products are made from trees? Have students hold up their answers.
  - There are over 5,000 products that have an ingredient which comes from a tree.
- Now answer the following: Which of the following does not have an ingredient that comes from a tree?
  - A. Cosmetics B. Turpentine C. Peanuts D. Twinkies
    - C. Peanuts do not grow on trees
- Believe it or not many things that we use in our everyday lives have an ingredient that comes from a tree. That is why it is important for us to use effective forest management techniques. We are very reliant on tree.

**Explore: 20-30 minutes**

- Allow students to research the different ingredients that come from trees, and through their research, create a definition for each ingredient.
  - What is the ingredient called when listed on clothing or in food, etc.
  - What is your definition of the ingredient?
  - In what household products can it be found?
  - How does it become usable in household items?
- Have many different items some that come from trees and others that don't. Include some things that come from wood, some from pulp, and some that contain cellulose (in clothing look for the ingredient rayon), lignin, tree gum, bark, etc.
  - [http://www.idahoforests.org/wood\\_you.htm](http://www.idahoforests.org/wood_you.htm)
  - <http://www.ket.org/trips/forest/products.htm>
- After researching and creating definitions have students place the items you brought in the correct category according the definitions they created.

**Explain: 10-20 minutes**

- Come together and create a class definition for each ingredient that comes from a tree.
- Go over each item that you have chosen and discuss which category it belongs in.
- Do you think that we could live a day without using a tree product?

**Evaluate:**

- To evaluate collect student definitions.

**Expand:**

- To expand have students complete a scavenger hunt. On their own time, have students look for multiple items from each category that contain an ingredient that comes from a tree. They can do this at home or at a store. Have them write the name of the items and the name of the ingredient that is found in them.
- Have an interactive bulletin board for students to place the items they found.

This activity has been modified from its original version found on <http://www.idahoforests.org/img/pdf/lessons/scavenger.pdf>

Or

- See how trees benefit your community. Register on i-Tree to receive tools that will allow you access their urban forestry analysis and benefits assessment tools. Use their software to identify and manages the structure, function, and value of urban trees.
  - <http://www.itreetools.org/resources/content/i-Tree%20Brochure.pdf>

- <http://www.itreetools.org/>

Or

- Have students take data on each tree found on school grounds or on their property at home.
  - What is its species?
  - What is its diameter?
- Then enter the data into the National Tree Benefit Calculator
- Have students keep track of their findings. They can then calculate how much the trees are benefiting the school, or their neighborhood.
  - [http://www.arboday.org/calculator/index.cfm?utm\\_medium=TreeGuideMenu%2Bfeature&utm\\_campaign=TreeCalculator](http://www.arboday.org/calculator/index.cfm?utm_medium=TreeGuideMenu%2Bfeature&utm_campaign=TreeCalculator)

# Plant a Tree

Now that you have completed the Trees For Kids unit, make a difference in your community. Plant a tree using a tree planting guide found on

[http://www.alliantenergy.com/wcm/groups/wcm\\_internet/@int/documents/contentpage/016443.pdf](http://www.alliantenergy.com/wcm/groups/wcm_internet/@int/documents/contentpage/016443.pdf)

Or

<http://www.extension.iastate.edu/Publications/Pm1591.pdf>

Make sure to review what students have learned and to discuss the planting process.



## Resources

### Iowa Department of Natural Resources-

#### Bureau of Forestry

502 E. 9<sup>th</sup>; Des Moines, IA 50319-0034  
<http://www.iowadnr.gov/forestry/index.html>

#### MidAmerican Energy

[www.midamericanenergy.com](http://www.midamericanenergy.com)

#### Iowa State University- Forestry Extension

Department of Natural Resource Ecology and Management  
339 Science II, Iowa State university;  
Ames, Iowa 50011-3221  
[www.forestry.iastate.edu](http://www.forestry.iastate.edu)

#### Project Learning Tree

Barbara Gigar, Local PLT Coordinator  
2473 160<sup>th</sup> Rd; Guthrie Center, IA 50115  
[www.plt.org](http://www.plt.org)  
<http://www.iowadnr.com/education>

#### Natural Resources Conservation Service

Find your local office by visiting:  
[www.ia.nrcs.usda.gov](http://www.ia.nrcs.usda.gov)

#### Black Hills Energy

[www.blackhillscorp.com](http://www.blackhillscorp.com)

#### Alliant Energy

[www.alliantenergy.com](http://www.alliantenergy.com)

#### Trees Forever

770 7<sup>th</sup> Avenue; Marion, IA 52302  
319/373-0650

#### Iowa Woodland Owners Association

Carol Fullenkamp  
319/837-6178  
[www.iowawoodlandowners.org](http://www.iowawoodlandowners.org)

#### Iowa Tree Farm Committee

[www.treefarmssystem.org](http://www.treefarmssystem.org)

#### Iowa Nursery and Landscape Association

PO Box 1647; Waterloo, IA 50704  
319/215-6855  
[www.iowaanla.org](http://www.iowaanla.org)

#### Iowa Bankers Association

8800 NW 62<sup>nd</sup> Ave; Johnston, IA 50131  
515/286-4300  
[www.iowabankers.com](http://www.iowabankers.com)

#### Iowa One Call

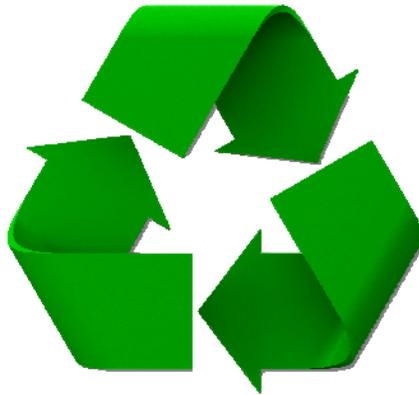
[www.iowaonecall.com](http://www.iowaonecall.com)

1-800-292-8989

# Trees For Kids: Project Tree House! 2010-2011

Please contact the Trees For Kids / Teens Coordinator at 515 / 281-6749 if you would like a printed copy of these materials or go to the Trees For Kids webpage at:

[www.iowadnr.gov/forestry/treesforkids](http://www.iowadnr.gov/forestry/treesforkids)



If you decide to print this booklet, please use recycled paper.

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