Interdisciplinary Curriculum Guidebook

Trees are terrific...

from Acorn to Oak!

2022 Revision

Take a Closer Look at the Mighty Oak

Step: #1

Basic Activity

Classroom Activity:

Students will learn to use a basic tree key and create a simple key to identify some oak species in their community, or identify their state tree or tree common to their region.

Objectives:

Students will be able to:

Describe Several ways oaks have affected the development of the United States

Use a simple classification key

Identify characteristics unique to oaks that separate them from other trees.

Research oaks (or common tree genus) found in their community and create a simple key that uses characters of two or three different species to distinguish one from another.

Time Recommended:

One 60 minute class period.

Materials Needed:

Copy of handouts on page 7 and 8 (one per student)

Pencil or paper

Tree field guides/books or internet access

A list of oak species common to your area

Leaf samples from as many different kinds of trees as possible, include conifers and broadleaves (for broadleaf samples, bring in a twig with several leaves attached)

Acorn Sample (if available)

National Science Education Standards Correlation:

Students will develop an understanding of:

Populations and ecosystems.

Diversity and the adaption of organisms.

National History Standard Correlation:

Students will:

Develop an understanding of national symbols through which American values and principles are expressed.

Instructional Sequence

Anticipatory Set

Ask students to name some symbols of our nation. Record responses on the board without comment. Fill in the list of remaining symbols on the board as you tell the class that the United States has a national flag, a national bird (the Bald Eagle), a national anthem ("the Star Spangled Banner"), the national motto ("In God We Trust."), the national flower (the rose), and even a national march ("Stars and Stripes Forever.")

Tell students that other nations have similar symbols that reflect their history and culture but, in addition, many countries also have a national tree. Examples include:

Canada - maple India - Banyan Denmark - beech

Lebanon - cedar Finland - birch Honduras - Celba

Trees are also depicted on a number of flags and coats of arms. *Ask students why they think a country would have a national tree.* (Answers may include important food or timber products the tree provides to the nation, beauty, shelter, shade, etc.) Comment that while every state in the United States has a state tree, America has never had a national tree.

Previously all United States symbols had been selected by politicians, but in 2001, for the first time, the American public had the opportunity to vote a for a national symbol, a national tree. The voting process, hosted by the Arbor Day Foundation, made it possible for Americans from all walks of life to help select the tree they felt best reflected our country to serve as this important national symbol. Not only adults, but school children a across the had their first opportunity to vote for something of national significance.

Hundreds of thousands of people participated in the vote. On April 27, Arbor Day 2001, votes were tallied and the oak was announced as thew people's choice for the national tree. In celebration, presidential cabinet members, government officials, special dignitaries, and the 2001 Arbor Day National Poster Contest winner planted a young oak tree on the United States Capitol Grounds.

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Explain that the United States has a wealth of tree species, more than twice as many as in all of Europe. America has the largest, the oldest, and perhaps the most beautiful trees in the world. *Ask the students why, out of all these trees, the oak might have won—what would people have considered important in selecting a tree that represents the spirit of America, and of its people?* (Allow discussion for several minutes.)

Draw a tree trunk on the board and write the word OAK in it. Using comments from students, guide discussion to create a visual "map" to illustrate possible considerations why the oak might have been selected as the national tree. (see Illustration 1). (If time allows, do Enrichment Activity on page 3). If not already mentioned, offered as possibilities that perhaps people wanted to select a tree that:

Grows in many places across the country

About 60 different oak species grow in the United States. Oaks are the most widespread broadleaf trees in our country.

Has multiple uses

Oaks have strong wood, with a beautiful grain, that is prized for furniture and flooring.

Oaks is valued in shipbuilding and for railroad crossties, which was important in the development of our nation.

White oak was prized for barrels because it held liquids better than almost any other kind of wood.

Oak contains tannin, a chemical used by Native Americans and early settler to pound into animal skins to make them soft and long lasting.

The bark of some oaks has been used in medicine, for dyes, and even for cork; and acorns are one of the most important food sources for wildlife.

Has good physical features or characteristics

Oaks are hardy and can live up to 300 years or more.

Oaks generally have a spreading shape which provides lots of shade, with leaves often being striking and distinct.

Oaks are sturdy and grow with endurance and longevity.

Oaks often grow tall, with some growing well over 100 feet.

Oaks are attractive trees, and can bare striking fall colors.

Illustration 1: Using comments from students, guide discussion to create a visual "map" to illustrate possible considerations why the oak might have been selected as the national tree.

Has played an important role in United States history

Oaks are the trees most commonly found in legends. For example a tribe of Native Americans believed a white oak was the ancestral guide for when to plant corn.

Oaks are associated with many historic events and figures.

- Abraham Lincoln found his way across a river near Homer, Illinois, using the Salt River Ford Oak as a marker.

Jeremiah Wadsworth saved the Connecticut Charter by hiding it in the hollow of an old oak tree. The tree later become known as the Charter Oak.

Andrew Jackson took shelter under Louisiana's Sunnybrook Oaks on his way to the Battle of New Orleans

The Republican Party was founded under the Republican Party Oaks in Michigan.

The ship "Old Ironsides" or the USS Constitution earned its nickname in the strength of its live and white oak hull, famous for deflecting English cannonballs.

USS Constitution

"Old Ironsides"

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Enrichment Activity

If you have extra time to devote to this activity you may wish to keep the visual map single at first. Allow students to do research and report back to the class on these four topic areas. Then they can fill in details on the visual map themselves. Information about oaks can be found in reference books or on the internet at:

www.arborday.org/trees/treeguide

Help students understand that no matter why people voted for oak to be the national tree, oaks are an important part of our nation's heritage. They are also damage-resistant, hardy trees that have merited admiration and respect for shelter and many vital products their wood has long provided Americans.

Ask students how many of them can recognize an oak? Can they describe how it is different from other kinds of trees?

Tell students they are going to have a chance to identify several different kinds of trees and learn a little bit more about oaks in detail. (Note that if students are to be graded on the activity, put the performance assessment criteria (page 6) on the board.).

Key Concept: Explain that despite their vast variety, oaks share distinctive characteristics that set them from other tree families.

Oaks produce and grow from acorns as their seeds

Most oaks can live for centuries

Many oak species also share a common shape, being rounded with a broadly spreading crown. Some oaks hold onto their dead leaves though the winter and shed them in the spring, prior to budbreak.

Latin is the language of taxonomy, and each species is referred to by a single Latin name. Using a common language that is understood by scientists all over the world, no matter what their native language, helps provide distinct identification for plants that have many common names. The Latin name consists of two words (occasionally three). The first word is the name of the genus (a group of closely related species) and the second word is usually descriptive and designates the particular kind or species of plant or animal, For example: *Quercus rubra* is the Latin name for Northern Red Oak ... *Quercus* is the genus name and rubra is the species name.

The Activity - Use a basic tree key and create a simple key to identify some oak species in your community . (If oaks are not available, students can learn to use a basic tree key and create a simple key to identify their state tree or a tree common to their region).

Preparation: State the activity by introducing students to some of the necessary concepts they must have for tree identification. Have several examples of conifers on hand, some with scale-like leaves and some with needle-like leaves. If possible, have actual examples of broadleaf trees, one that shows an opposite attachment to the twig, one that shows a compound leaf, and one that shows a simple leaf. When actual samples are not available, draw examples on the board or overhead. (See illustrations on page 3 and 4).

Basic Information: Explain that there is a scientific process scientists use to classify plants and animals. This process is called **TOXONOMY**. Taxonomy provides an organized system for grouping things based on certain "like" characteristics. When scientists classify trees, they start by dividing trees into two main groups, conifers (softwoods) and broadleaves (hardwoods).

Conifers are cone-bearing trees and most are evergreen. Conifers have needle-like or scale-like leaves.

Needle-like conifers: Tell students to closely examine a conifer sample with needle-like leaves. Have them look to see if each needle attaches individually to the twig or if the needles are attached to the twig in bundles of needles grouped together. This is one clue that they may need to look for when identifying a mystery tree.

Scale-like conifers: Have students looks closely at a sample of a conifer that has scale-like leaves. Point out how the tiny scales overlap each other. Explain to students that some of these conifers may have cones that look more like small berries.

Make sure students can distinguish between conifers with needle-like and scale-like leaves before proceeding to a discussion of broadleaf trees.

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Broadleaves: Trees that have thin, flat leaves that are usually shed annually (deciduous). Broadleaf trees bear a variety of fruit and flowers. Carefully explain to students that where the leaf stalk attaches to the twig there is usually a **BUD**. That bud is next year's leaf, already on the tree. The leaf will fall off, but the bud will remain on the twig through the winter, opening into a new leaf the following spring. Point out that if a bud is not exposed or visible, look for a swelling at the base of the leaf stalk to determine attachment. Tell students that the bud (or swelling) is an important clue—it tells them THE LEAF STARTS HERE! In the classification process of broadleaf trees, scientists look at two important clues to further separate these trees into groupings.

Simple or Compound leaves: One important reason to look for the bud is to determine if the tree has simple leaves or compound leaves. Draw sample pictures on the board to illustrate what students should look for. Explain that they should find the bud or swelling and then look at the leaf stalk (petiole). If there is just one blade on the leaf stalk, it is a SIMPLE leaf. If there are many blades on the leaf stalk, it is a COMPOUND leaf. Tell students that the multiple blades of the compound leaf are called LEAFLETS.

Also important for students to know is that the leaflets on the compound leaves are attached to the leaf stalk (not the twig) in several ways. When leaflets are attached across from each other on the leaf stalk in a pattern that resembles a feather, that leaf

is referred to as PINNATELY compound. If the stalk comes up and branches out again giving the appearance of a number of feathers attached to the leaf stalk, that leaf is referred to as a BIPINNATELY or TWICE COMPOUND leaf. If the leaflets are arranged on the leaf stalk in a pattern that looks like the fingers on the palm of a hand, that leaf is referred to as a PALMATELY COMPOUND leaf.

Opposite Arrangement or Alternate Arrangement:

Another important reason for students to look for the bud or swelling where the leaf stalk attaches to the twig is that it will also help them determine the ARRANGMENT of the leaves on the twig. When two or three leaves are arranged directly across from each other on the twig it is called OPPOSTIE ARRANGEMENT. When leaves stagger up the twig that is called an ALTNERATE ARRAGEMENT. It is very important to stress to students that opposite and alternate arrangement refers to the way The leaves are arranged on the twig, not the way the leaflets are arranged on the leaf stalk.

Encourage students to closely examine the leaf attachment. Sometimes many buds will be clustered close together near the end of the twig giving the impression of being opposite (often common with oaks). But if students look down a little further on the twig, they will see that these buds or leaves actually have an alternate arrangement.

Mention that many other factors are important in tree identification. Other things scientists look at are:

Leaf Characteristics: Leaf margin (the edge of the leaf) which can be lobed, toothed, or entire (smooth).

(Tree Identification continued to next page)

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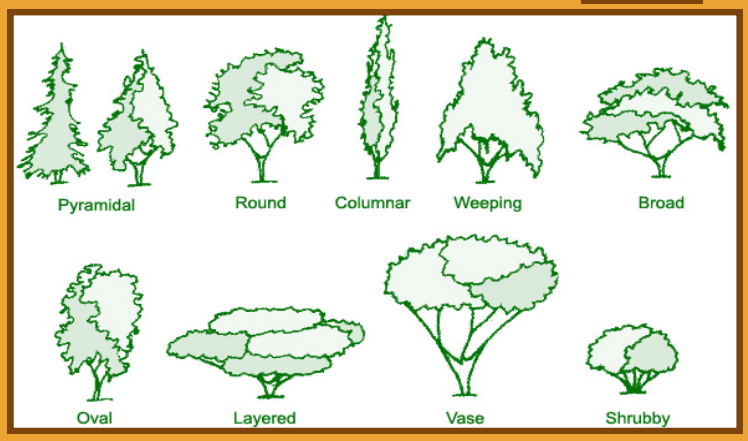
Bark: Tree bark can be smooth, rough, or scaley. Each tree species has characteristic way of expanding or breaking its bark forming patterns by which many trees can be identified.

Seeds/Fruits: Most trees grow from seeds. A mature plant produces seed that is the genetic material for new plants of the same kind to grow. Some trees have seeds, seed pods, or fruits which aid in tree identification (oaks have their characteristic acorns, grown by no other tree family.

Tree Shape: Spreading, columnar, triangular.



Buds and Twigs: Buds can be large and fat, like the magnolia; long, sharp, and slender, like the beech; button-shaped, like the dogwood; or tiny, like the hawthorn. All offer clues that help identify a tree.

Once you have reviewed the basic information with your students that they understand the terms will need to know the answer the classification questions, it is time to begin the activity. Give each student a copy of the Basic Tree Identification Key (page 7 and 8). Take students outside to observe some of the characteristics previously discussed by examining trees on the school grounds or in the neighborhood. This will help them sharpen their observation skills. Practice using the key together as a class.

Gather students in front of a tree. Instruct students to look at the descriptions above the two big boxes on the worksheet that say, "BEGIN HERE." *Ask students to look carefully at the tree and determine which of the two descriptions best describes the tree.* (If it is a conifer, students will work with the clues in the left text box. If it is a broadleaf tree, students will work with clues in the right box.)

Explain that in each step, as they move from the top of the box down, they will need to choose between two clues that give tree characteristics. They need to pick the box with the clue that best describes their mystery tree down to a genus or species.

In some areas, depending on the time of year, only conifers will be available for identification. Have students use the key classification key to discover what kinds of trees they are likely to be. Students work in pairs and record their results. Determine if any oaks are growing near your school. If so, let students closely examine them. If the oak has not leafed out, look fore dead leaves under the tree and remnants of acorns. Some oaks in warmer parts of the United States are evergreen (they keep their leaves though the winter) and some oaks hang onto their dead leaves into the next spring making them easier to identify year round.

Explain that they are going to take a closer look at the oak. Return to the classroom and hand out copies of the Student Worksheet (page 8). Review the General Characteristics of Oaks section together. Then take a look at the sub-groupings of red and white oak. Use the information provided on the handout to fill in the first two sections on the worksheet. Write the list of oaks common to your area on the board. Allow students to work together to research characteristics that would help classify these oak species and enter those in the bottom section of the worksheet. Students now have a working key they can use to identify some of the oaks in their community. (If there are no oaks in your community, have students look at the model on the worksheet and work together as a class to create a key)

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Assessment:

The ability of a student to key out actual tree groups and create a key for several species within as authentic assessment. The student should be able to:

	Points:
Identify the seed that is unique to oaks and draw accurate example of that seed.	0 - 2
Use the Basic Tree Identification Key to correctly classify several unknown trees.	0 - 2
Accurately describe two ways the Oak was used in the building/settling of our nation.	0 - 2
Accurately complete the worksheet and classify at least two oak species (or common trees)	0 - 4
TOTAL:	0 - 10

- The Audubon Society Field Guide to North American Trees, Knopf Publishing, New York.
- Antunez de Mayolo, Kay—Investigating the Oak Community, California Oak Foundation.
- Brockman, C. Frank—Trees of North American, Golden Press, New York.
- Burnie, David—Trees, Eyewitness Books. Alfred A. Knopf, New York.
- Davis, Brian—The Gardener's Illustrated Encyclopedia of Trees and Shrubs, Rodale Press, Emmaus, PA.
- Duncan, Wilber and Marion—Trees of Southeast United States, University of Georgia Press.
- Elias, Thomas S.—The Complete Trees of North America, Van Nostrand and Reinhold Company, New York.
- Johnson, Hugh—Encyclopedia of Trees, Gallery Books.
- Miller, Howard & Samuel H. Lamb—Oaks of North America, Naturegraph Publishers Inc.
- Mitchell, Alan—Trees, Illustrated by David More, Gallery Books.
- Nature Study Guild - Master Tree Finder
  - Pacific Coast Tree Finder
  - Desert Tree Finder
  - Winter Tree Finder
  - Rocky Mountain Tree Finder

  Write: Nature Study Guild, Box 972, Berkeley, CA 94701
- Petrides, George—A Field Guide to Trees and Shrubs, Houghton Mifflen Company.
- Phillips, Roger—Trees of North America (A photographic Guide), Random House, Inc. New York.
- Rabinette, Gary D.—Trees of the South, Van Nostrand Reinhold Company.
- Sarge, C.S.—Manual of the Trees of North America, Dover Publications, New York, NY.
- Symonds, George W.—The Tree Identification Book, Quill.
- Thomson, Ruth—Trees, Usborne First Nature Book, EDC Publishing, Tulsa, OK.
- U.S. Department of Agriculture—Trees Native to the Forests of Colorado and Wyoming. U.S. Government Print Office.
- U.S. Department of Agriculture, Forest Service—Important Trees of Eastern Forests. Western Publishing Company, Inc.
- Zim, Herbert and Alexander Martin—Trees, A Guide to Familiar American Trees. Golden Press, New York, NY.

Websites:

- www.sdda.sd.gov/Forestry
- www.horticopia.com
- www.treeguide.com/NorthAmericanTree
- www.arborday.org/trees/treeguide/browsetrees

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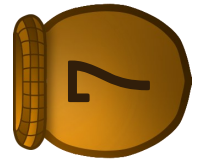
Identification Key



Look Carefully at the tree you wish to identify. Every part of the tree—the tree shape, the bark, the buds, the fruits/seeds, and the leaves—all will provide clues to help you identify the mystery tree. This simple Tree Key will give you an idea of what kind of tree it might be. Closely examine the tree, then read the first two choices. Which best describes the mystery tree?* If it has cones and needle-like or scale-like leaves, you will begin selecting from tree clues in the left box. If it has leaves that are thin, flat, and broad, you will begin selecting from the tree clues in the right box.

THIS IS A CONIFER

- The tree has **needle-like** leaves
  - Needles clustered in **bundles**.
    - Needles in bundles of 2-5, evergreen. *These are pines.*
    - Needles in clusters of many, deciduous. *These are larches.*
  - Needles attached **singly** to the twig.
    - **Needles are flat,** hard to roll between your fingers. *These are Douglas fir, redwood, hemlock, or fir, if evergreen, baldcypress, if deciduous.*
    - **Needles are square,** easy to roll between your fingers. *These are spruce.*
- The tree has **scale-like** leaves that hug the twig. *These are cedars, sequoia, or cypress.*

THIS IS A BROADLEAF

- The tree has **simple** leaves (one leaf blade)
  - Leaves arranged **opposite** on the twig. *These are maple,*
  - Leaves arranged **alternately** on the twig. *These are oak, elm, ginkgo, poplar, beech, aspen, tuliptree, kukui, cottonwood, magnolia, mulberry, tupelo, pawpaw, redbud, willow, holly, hackberry, linden, sycamore, hophornbeam, sweetgum, or birch, to name a few.*
- The tree has **compound** leaves (more than one leaf blade)
  - Leaves arranged **opposite** on the twig.
    - **Palmate shape.** *These are buckeye or horse-chestnut.*
    - **Pinnate shape.** *These are ash or boxelder.*
  - Leaves arranged **alternately** on the twig. *These are honeylocust, mimosa, walnut, pecan, locust, hickory, yellowwood, mountain ash, paloverde, tesota, goldenraintree, mesquite, tree-of-Heaven, Kentucky coffeetree, or pagodatree, to name a few.*

** Palms are more closely related to grasses than to conifer and broadleaf plants commonly known as trees. Members of the palm family, like cabbage palmetto, have largely unbranched, column-shaped trunks which vary in height. They are not included in this key.*

The Oak—General Characteristics

Oaks are broadleaf trees that bear seeds called acorns. They have simple leaves, arranged alternately. They are often

The White Oak Group—Characteristics

- The bark is generally light gray or brown.
- Acorns mature during one year.
- Acorn cups contain no hair inside.
- Leaves are lobed or serrated (saw-toothed) without bristles.
- Acorns are sweeter, with less tannin that the red oaks.
- The white oak produces the most valuable oak lumber because the cells contain bubble-like structures called tyloses that make the heavy wood leak proof. Used for furniture and barrels.

The Red Oak Group—Characteristics

- The bark is often dark gray, brown, or black.
- Acorn cups take almost two years to mature.
- Acorn cups contain fine, silky hairs inside.
- Leaf lobes are usually pointed and bristle-tipped; some are un-lobed with the leaf ending in a bristle, and a few are oval with smooth edges.
- Acorns are more bitter, with more tannin, than white oaks.
- The wood is not watertight, but is used for lumber flooring, railroad ties, and furniture.
- The name "red oak" probably refers to the red fall coloration some red oaks display in some years.

Student Worksheet

Name _____

DIRECTIONS: Now that you know how to use a tree identification key, expand the key to identify oak species in your region. This key starts with broadleaf trees that have simple leaves with an alternate arrangement which incudes oaks, elms, poplar, beech, etc. Use reference books or the internet along with this worksheet to get the information you need to create your own tree key to identify oaks in your community. Fill in the blacks where indicated. (If you do not have oaks in your area, research some

BEGIN HERE

Fruit/seed is an _____.
It is an oak.

Fruit/seed is NOT an acorn. It could be an elm, ginkgo, poplar, beech, aspen, cottonwood, kukui,

The inside cup of the acorn is smooth, not hairy. Acorns mature in one year.

The inside cup of the acorn is slightly not hairy. Acorns mature in two year.

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Step: #1

Take a Closer Look at the Mighty Oak

Additional Activity - Acorn Survivor

Classroom Activity:

Students will play a game that demonstrates what an acorn needs to germinate and grow, as well as some of the factors that affect the likelihood an acorn will survive to become an oak tree.

Objectives:

Students will be able to:

Name the main components a seed needs to germinate and grow into a tree.

Identify several of the many factors that can impact the germination and survival of a young oak tree.

Time Recommended:

One 30-45 minute class period

Materials Needed:

Activity cards on page 12 (Number determined by class size-one card per child)

Pencil and paper

Tape player/tape (optional)

National Science Education Standards Correlation:

Students will develop an understanding of:

Populations and ecosystems

Resources and the environment

Natural hazards

Set Up: Photocopy and cut out the needed number of Activity Cards on page 12. You should make:

- Two to three acorn cards;
- Four or five of each Tree Needs cards; and
- One of each Tree Danger card.

Example: For a group of 22 students, you would need the following number of cards:

Tree Needs	Tree Danger
5 good soil	1 insect pest
5 water	1 deer
5 sunlight	1 squirrel
3 acorn	1 blue jay

(For smaller groups, you may remove one of the tree danger cards to prevent the game becoming too difficult to win.)

Background: A tree is a living organism. Like any living thing, a tree has certain needs that are essential for it to row and thrive. Some trees can reproduce from cuttings, but most trees, like oaks, start from a seed. Starting as a seed, a tree requires water, soil, sun air (carbon dioxide), and space to grow.

The seed of an oak is an **acorn**. An acorn can be described as a baby oak in a box with its lunch. The acorn shell houses and protects the seed. There is enough food stored within the acorn to feed and sustain the young oak as it begins to grow until lit develops leaves and can start to produce its own food though the process of photosynthesis. Sometimes acorns, particularly red oak acorns, need a period of dormancy over the winter before they will germinate.

Water is an essential ingredient for life. Often water is required to soften the seed coat so the tiny plant inside can germinate. Water is a vital part of a tree's basic structure and is one of the main components of photosynthesis. It also transports nutrients from the soil to the tree roots.

Soil sustains and supports the tree. The soil holds the water and contains essential nutrients the tree needs to grow. Tree roots spread out in the soil, sucking up water and pulling in nutrients. There are many different soil types, each capable of supporting different kinds of trees.

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Oaks, like all green trees and plants, get their energy from the **sun**. It is the catalyst for the process of photosynthesis. Each of the tree's leaves is like a tiny factory - taking in sunlight and air (carbon dioxide) and mixing them with water and nutrients form the tree's roots. When this happens, the leaves make a sugar-like food that feeds the tree.

As trees mature they need **space** to grow. Without enough space, trees may have to compete with other plants for light, soil nutrients, and water.

The average number of acorns produced by oaks varies species to species and can vary tree to tree. A study by Goodrum and Reld reported that 10 inch diameter Northern Red oaks produced an average of 1,127 acorns per tree. However, very few of these acorns ever become oaks.

In the forest, oak trees drop many acorns every year. Once the acorns have been dropped, the oaks depend on outside forces, like squirrels and blue jays, to carry the acorns to other parts of the forest. Occasionally a bird will drop an acorn as it flies. Sometimes after a squirrel has buried an acorn in a different part of the forest, the squirrel will forget to go back and eat it. In either case, the acorn is then left on the ground and if conditions are right, it will sprout into a young oak tree.

Many factors limit an acorn's chance for survival. The acorn may fall directly under the tree where it will not get enough sunlight to grow, or it may fall in an area where the soil is poor. Too much rain or a flood could damage the acorn or a drought could prevent the young oak from growing. Animals might eat the acorn. It is estimated that 24% of an acorn crop is eaten by birds and squirrels.. Insect larvae can damage up to 50% of an acorn crop. Acorns are also an important food source for deer, chipmunk, mice and wild turkey. Even if the acorn sprouts, a lawnmower may cut the newly sprouted oak or someone might inadvertently step on it. An acorn's survival is chancy at best

The purpose of this activity is to demonstrate to students that many challenges of an acorn faces to survive and grow into an oak.

Anticipatory Set: *Initiate class discussion by asking students if they know what an oak tree needs to grow.* (Responses will vary). As students respond, elaborate briefly on the function of each "tree seed" mentioned and direct discussion so all factors (acorn, water, soil, sun, air and space) are reviewed. List these needs on the board.

Next ask students to think of factors that might affect an acorn's chance for survival. Incorporate Background Information into the discussion if not mentioned by students. List these dangers on the board.

Activity: Explain that they are going to play a game called Acorn Survivor. Each student will play a role in the game. Some students will be tree need-the things an oak tree needs to grow. Other will be trees danger-factors that might keep an acorn or young oak from surviving.

Identify four bases equidistant around the room or on the playground. (Use three bases if you have fewer than 18 students.) Tell students that at each base enough air (carbon dioxide) and space area available for an acorn to start to grow, but other tree needs like water, good soil, and plenty of sunlight are still required.

Put Activity Cards into a box and instruct each student to draw out a card, making sure to keep the picture on the card hidden from others students. Tell student they need to move from base to base (ecosystem to ecosystem) while the music is playing and when the music stops (or the teacher calls stop) they need to quickly get the base nearest to them. (Make sure too many students don't all group at one base.)

Once all students have reached a base, ask the students with acorn cards to raise their hand. Those bases then become ecosystems that might support the growth of an oak. Ask students with insect, squirrel, blue jay, or deer cards to raise their hands. Any acorn in a group that contains one or more of these tree dangers does not survive.

Explain, even if animals do not eat an acorn, its survival is certainly not guaranteed. A number of factors are still required for the acorn to germinate and grow. Next ask the students with water, soil, and sun cards to raise their hands. To survive and grow into an oak, an acorn must also be in a group that contains at least **one of each** of the trees needs.

Record the total number of acorns and the number that survived the first round of play. Have all students put their Activity Cards back into the box and draw again. Play several rounds until an acorn finally survives.

Return to the classroom and do some 'acorn math' to determine what percentage of acorns actually survived to become an oak.

Assessment: Each student will write a creative story that details the struggle of an acorn to become an oak. The story should include tree needs and some dangers the acorn encountered as it grew to be a mature oak tree. Stories can be illustrated and displayed around the room.

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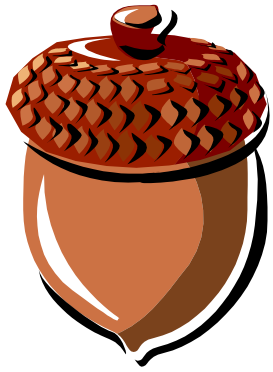
ACTIVITY CARDS

Oak Tree Dangers

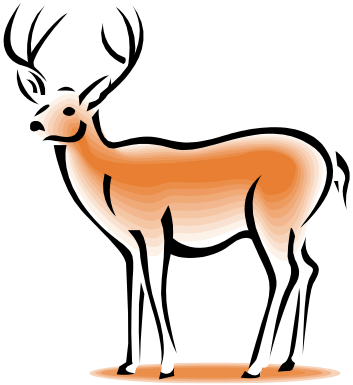
Squirrel

Insect Pest



Blue jay

Deer



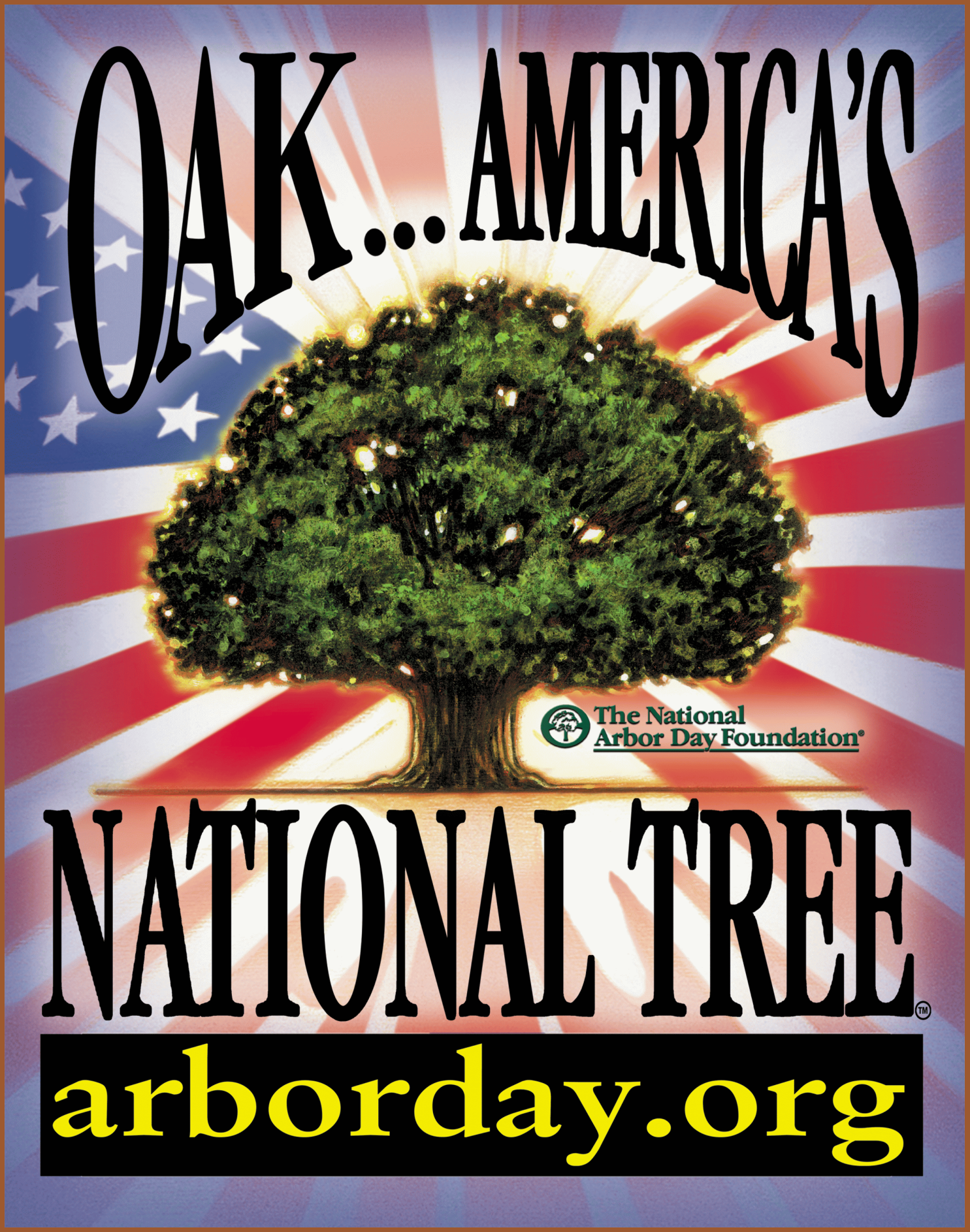
Oak Tree Needs

Good Soil

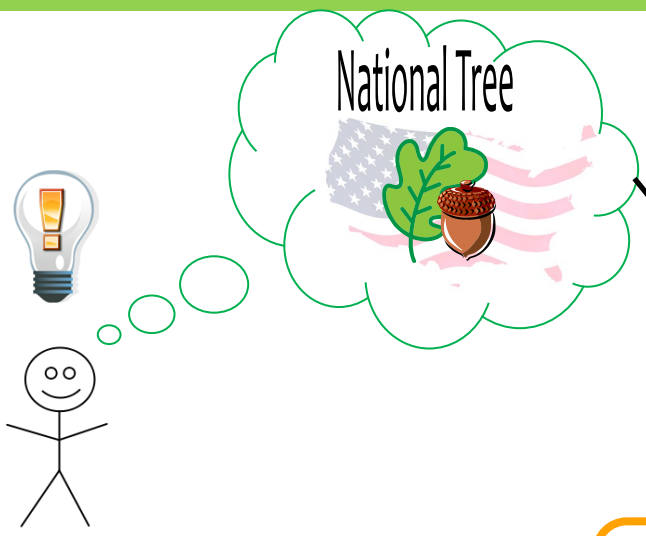
Sun

Water

Acorn


OAK... AMERICA'S
The National Arbor Day Foundation®
NATIONAL TREE™
arborday.org

How a Bill becomes a Law



Bill is introduced by member of House or Senate

Bill first reading

Referred to House or Senate Committee

Committee reports bill to Members of House or Senate

Bill second reading

Debate on Bill and first vote

Bill third reading, final debate and vote

If passed, the Bill is sent to the second chamber where the process repeats

If House and Senate Bills differ, Bill goes to conference committee

If passed, the bill may be signed into law or vetoed by the State Governor or President of the United States

For an additional bill to law exercise, please see the Kids in the House activity: "From A Bill To A Law" available for free at: http://kids.clerk.house.gov/lesson-plans/lesson-legis-1.pdf

** Taken in part with permission by the Arbor Day Foundation.*

Step: #2

Create a Poster

Trees are Terrific... from Acorn to Oak!

Objectives:

Students will create a poster the reflects their understanding of a healthy diverse forest.

Deadline:

Make certain that your school winner meets the entry deadline as stated in the enclosed cover letter or contact your state coordinator listed on page 12.

Time Recommended:

A minimum of one class period is recommended.

Materials needed:

Paper no smaller than 8 1/2 x 11" and no larger than 14 x 18"

Markers, crayons, colored pencils, paint pens, water, ink, acrylic, and/or tempera paint.

National Art Education Achievement Standards:

Students generalize about the effects of visual structures and functions and reflect upon these effects in their own work.

Students employ organizational structures and analyze what makes them effective or not effective in the communication of their ideas.

Students select and use the qualities of structures and functions of art to improve communications of their ideas.

Students integrate visual, spatial, and temporal concepts with content- to communicate intended meaning in their artworks.

Poster Contest State Prizes

1st Place:

- $125 cash prize
- Certificate of Achievement
- Special Recognition with poster distributed across the state
- Poster featuring in the annual South Dakota Arbor Day Poster Contest Calendar
- $175 in supplies for supplies for their classroom

2nd Place:

- $100 cash prize
- Certificate of Achievement
- Poster featured in the annual South Dakota Arbor Day Poster Calendar

3rd Place:

- $75 cash prize
- Certificate of Achievement
- Poster featured in South Dakota Arbor Day Poster Contest Calendar

4th-12th Place:

- Certificate of Achievement
- Poster featured in the Arbor Day Calendar

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Poster Contest Rules

Use this checklist to make certain all entries are eligible for judging. Entries not meeting these guidelines will be disqualified.

- ☐ **Eligibility:** All South Dakota 5th grade students are eligible to enter their schools' poster contests. *Each School may submit only* one poster *to the State Arbor Day Poster Contest.*
- ☐ **Originality:** Posters must be original. Copyrighted cartoon characters, TV figures, and photographs are not acceptable.
- ☐ **Medium:** Posters may be drawn in marker, crayon, colored pencil, painted pens, watercolor, ink, acrylic or tempera paint. Bright Colors that reproduce well are best.
- ☐ **Presentation:** Posters may be on poster paper or drawing paper. The posters will not be accepted for judging if they are matted, framed, or laminated. Posters must be flat and it is best posters are not folded or rolled.
- ☐ **Size:** Posters cannot be smaller than 8 1/2" x 11" and cannot be larger than 14" x 18". Oversized or undersized posters will not be accepted.
- ☐ **Theme:** Include the theme, "*Tree are Terrific... from Acorn to Oak"!* In the poster design. The theme must be free drawn and spelled correctly. Stencils, computer-rendered text, clipart, collages, and pressed letters are invalid.
- ☐ **Signatures:** Posters must be signed by the student in the lower right-hand corner on the front of the poster with the Student's first and last name.
- ☐ **Entry Forms:** Complete one School Report Form (page 20) and attach it the back of the poster. Methods that don't puncture the poster or add bulk are best. (Tape, glue stick)
- ☐ **Posters Will Not Be Returned:** Due to mailing costs, if you would like your school's poster back, they will have to be picked up or other methods used. They will be discarded on June (TBA), (TBA).

Posters are Due: March (TBA), (TBA)

Please Mail Posters To:

John Hartland

Department of Agriculture and Natural Resources

4305 S Louise Ave. Suite 107, Sioux Falls, SD 57106

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School Winner Report Form

After selecting a school winner, copy and complete this form, attach it to the back of the poster, and send it to your contest coordinator (John Hartland, 4305 S Louise Ave, Suite 107, Sioux Falls, SD 57106).

TBA School Winner Report Form

(All information should be complete to expedite contact of winners.)

Winner's Name: _____

Winner's Home Address: _____

City: _____ State: _____ Zip: _____

Winner's Parent or Guardian Name: _____

Teacher's Name: _____

Teacher's Email: _____

School Name: _____

School Address: _____

City: _____ State:_____ Zip _____

School Phone (_____) _____

Important:

Please indicate the number of posters entered or drawn in the school contest in the box to the left:

Number of teachers in school or participated.

**All artwork becomes the property of contest sponsors .*

Arbor Day Poster Contest

TBA

Certificate of Participation

This certifies that

_____

Has successfully presented an understanding of environmental stewardship practices and the importance of trees.

Through artistic expression, the above named individual has communicated a message of hope for the future of our planet.

Let it be known that the South Dakota Department of Agriculture and Natural Resources, Division of Resource Conservation and Forestry, along with the Dakotas Society of American Foresters, Aspen Arboriculture Solutions, and the South Dakota Arborist association recognize the unique and creative contributions offered by our state's youth and extends special appreciation for these efforts.

_____ _____

Gregory J Josten State Forester Teacher

ASPEN ARBORICULTURE SOLUTIONS
Sioux Falls' Tree Care Expert

South Dakota Arborists Association

SAF
forests. resources. community.

Arbor Day Poster Contest

TBA

School Winner

This certifies that

_____

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_____ _____

Gregory J Josten State Forester Teacher

ASPEN ARBORICULTURE SOLUTIONS
Sioux Falls' Tree Care Expert

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SAF
forests. resources. community.

Step: #3

Celebrate Arbor Day

Get your students outside and celebrate!

Since 1872, Arbor Day has been celebrated throughout the United States and Arbor Day celebrations in schools have always played an important role. An Arbor Day celebration can be:

Simple: Plant a tree in honor of your school poster context winner or to recognize an outstanding volunteer.

Inspiring: Have your graduating class plant a tree with the younger students. This is a tradition that honors the students leaving and gives new students something to enjoy throughout the years.

Entertaining: Students could compose poems about trees or perform an Arbor Day play (a sample play is available at www.arborday.org/arbordayplay). This could be performed for fellow students, families, or senior citizens.

Whatever you choose for your celebration, go outside and enjoy the trees and environment that surround you!

The 2011 South Dakota Arbor Day Poster Contest winning art by Lauren Crouch who attends St. Michael / St. Katharine Drexel Elementary school in Sioux Falls.

Black Hills Spruce

(Picea Glauca var. densata)

State Tree of South Dakota

Black Hills spruce is a naturally-occurring variety of white spruce native to South Dakota. It is more compact and slower growing than its northern counterparts. Also, its needles are more dense and are darker in color, varying from bright green to bluish green. It was seen by French explorers in 1743.

Black Hills spruce ranges from 30-60 feet in height and 15-25 feet in width. The tree is fairly drought-resistant and prefers full sun exposure. It makes a good yard or ornamental tree and is good winter cover for birds and other wildlife. The tree was adopted as the official state tree by the State Legislature on March 10, 1947.

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