# LESSON PLAN – "IN A NUTSHELL"_VA SOL SCIENCE K.8

**TARGET AGE GROUP:** Kindergarten
**ESTIMATED TIME:** 30 Minutes

## PURPOSE

The purpose of this activity is to teach K students about the life cycle of a tree and how certain types of trees change according to the seasons.

## VA SOLs

This activity can be used to complement classroom instruction related to the following VA SOLs:
**Kindergarten: Science - Earth Patterns, Cycles, and Change K.8:** The student will investigate and understand simple patterns in his/her daily life. Key concepts include:

a.) weather observations;
b.) the shapes and forms of many common natural objects including seeds, cones, and leaves;
c.) animal and plant growth; and
d.) home and school routines.

## OBJECTIVES

1) Define natural resource and give examples of natural resources.
2) Recognize that a tree is a natural resource.
3) Identify what a tree needs to grow.
4) Identify the growth cycle of a tree.
5) Identify the four parts of a tree.
6) List reasons trees are important.
7) Distinguish between coniferous and deciduous trees.
8) Define the four seasons, characteristics of each season, and the effect season changes have on deciduous trees.

## MATERIALS

- Book: "In a Nutshell" by Joseph Anthony
- Tree Template Worksheet *(1 per student)*
- Classroom set of Crayons
- Samples or Pictures of acorns, oak tree leaves, pine cones, pine needles, etc.
- Optional: Tree Cookies and Paper Plates *(1 plate per student)*

## REFERENCE

- "Project Learning Tree: Pre-K-8 Activity Guide"

## PREP WORK

- Print Tree Templates
- Acquire samples or pictures of acorns, leaves, etc.

## Background Information

- Definition: woody plants that are at least 20 feet tall at maturity, they generally have one single main trunk that remains unbranched for several feet, and a more or less well defined crown.
- Tree species are some of the largest living organisms on Earth.
- Perennial Plants: live for many years
- For additional information, refer to reference materials contained in binder and "Project Learning Tree" Manual.

## PART I: INTRODUCTION TO TREES and TREE LIFE CYCLE ACTIVITY

If possible, the instructor should invite the children to sit down in a listening/reading area within the classroom.

If this is the first activity of the day, introduce yourself and the agency/organization you represent. Briefly discuss what you do and how it correlates with this particular lesson.
Instructor Dialogue Example: Good Morning! My name is Jane. I work for XYZ Soil and Water Conservation District. We protect and preserve the natural resources of XYZ County.

**Student Question: What is a natural resource?** *Answer: A natural resource is something that occurs naturally and has value.*
The conservation district and our many partners primarily focus on five natural resources. Let's identify those five natural resources: S = Soil; W = Water; A = Air; P = Plants; A = Animals *(Prompt students to guess what each letter stands for.)*

Today's lesson is going to focus on trees. **Student Question: Is a tree a natural resource?** *Answer: Yes, b/c a tree is a plant.*

Discuss the following tree related items.

- **Student Question: Are trees alive? How do you know?** *Answer: They grow.*
- **Student Question: How are trees born?** *Answer: From a seed.*
- **Student Question: What do trees need to grow?** *Answer: Water, Soil and Other Nutrients, Air (Carbon Dioxide), Space, and Sunlight*
- **Student Question: Do trees die?** *Answer: Yes, but they can live a long time.* **Student Question: What are some things that can cause a tree to die?** *Answer: Lack of nutrients (Soil, Water, etc.), Drought, Fire, Insects, Fungi, Weather (Wind, Lightning, etc.)*
- **TREE LIFE CYCLE ACTIVITY ("Project Learning Tree" – Activity 79):** Discuss the idea of lifecycles by asking students to describe the lifecycle of a person. Make sure students include birth, childhood, teenage years, young adulthood, and so forth, in the discussion. If possible, write these stages on a board or chart. Ask students to identify the different jobs, roles, or things that a person might do in each stage of the lifecycle. Next, explain that like people, trees also have a life cycle. Ask students to imitate your movements as you enact the life of a tree.
    1) Curl up in a tight ball – you are a seed.
    2) Uncurl and kneel – you have sprouted.
    3) Stick up one arm (fist clenched) – you have grown a branch.
    4) Stick up another arm – you have grown another branch.
    5) Wiggle your fingers – you grow lots of leaves.
    6) Stand up (feet together) – you grow tall.
    7) Spread feet apart – you spread out lots of roots.
    8) Wiggle your toes – you grow lots of little roots (rootlets).
    9) Start scratching all over – you are attacked by insects and fungi.

10) Make a loud noise (kchhhhh!) – you get hit by lightning and lose a limb.
11) Smile and sigh (ahhhhhh!) – you become a home for wildlife in your old age.
12) Make a hammering noise (knock, knock, knock) and vibrate – woodpeckers peck into your dead wood.
13) Make a creaking sound and fall down – you blow down in a storm. Stick up one arm – a new seed sprouts from your rotting wood.

- **Student Question: What are the 4 basic parts of a tree?** *Answer: Roots, Trunk, Leaves, Branches*
- **Student Question: Why are trees important?**
  *Answers:*
  1. Trees provide oxygen for humans and animals to breathe.
  2. Trees provide shelter (homes) for wildlife.
  3. Trees provide food for wildlife and humans What type of food? *Fruits and nuts such as apples, walnuts, acorns, nutmeg, etc.*
  4. Trees, when harvested, provide numerous products (i. e. paper, toilet paper, fuel, lumbar, pencils, furniture, etc. Note: Over 5,000 products manufactured from trees.)
  5. Trees hold the soil in place.
  6. Trees provide natural windbreaks.
  7. Trees provide shade.
  8. Landscaping
- **Student Question: Think about a time in the fall when you walked in the forest, were all the leaves on all the trees changing color? Think about a time in winter when you walked in the forest, had all the trees lost their leaves?** *Answer: No, This is because there are two types of trees.*
  - Two Types of Trees: Conifers or Coniferous Trees and Broad-Leaf or Deciduous Trees
  - Conifers: Have seeds that develop inside cones; For the most part have needle-shaped leaves and they are evergreens, which means they do not lose all their leaves each year but instead stay green year-round; Examples include pines, spruces, hemlocks, and firs. Show students examples of pine needles, pine cones, etc.
  - Deciduous: Have broad, flat leaves; Lose all of their leaves each year; Examples include oaks, maples, beeches, and aspens. Show students examples of seeds and leaves from deciduous trees.
  - *Note: Some trees are not typical conifers or deciduous trees; Examples include larches that have cones and needles but lose their leaves each year, yew trees have needle-shaped leaves and are evergreen but have berries and not cones, and a holly is a broad-leaf tree that's evergreen.*

## PART II: READ A BOOK TO LEARN ABOUT THE LIFE CYCLE OF AN OAK TREE

- If possible, children should continue to sit in a listening/reading area within the classroom.
- The instructor will introduce a book about the life cycle of a tree: **"In a Nutshell" by Joseph Anthony**.
- As the book is read, the instructor will show pictures/illustrations featured in the book and ask children questions, as appropriate.
- If possible, pass out acorns for students to examine.

## PART III: TREE TEMPLATE WORKSHEET

- Ask students to recall the brief discussion on deciduous trees. State that an oak tree, which was featured in the book, is a deciduous tree. Deciduous trees change their appearance with the seasons. **Student Question: What are the four seasons?** *Answer: Spring, Summer, Fall, and Winter.* The oak tree will bud out in the spring, have bright, green leaves in the summer, the leaves will change color as the weather grows cooler and the days grow short in the fall, and by the start of winter all the oak tree leaves will be gone.
- Discuss with students how the change of seasons (i.e. change in weather) effects people.
- Distribute a worksheet and box of crayons to each student.

- Ask students to draw each tree as it would look in the spring, summer, fall, and winter. Students may choose to draw any tree; however, the instructor might suggest they draw an apple tree. Briefly discuss the life cycle of an apple tree – Spring = White and Pink Blossoms, New Green Leaves; Summer = Green Leaves and Green Apples; Fall = Red Apples and Leaves start to change color and eventually fall off the tree; Winter = No leaves, bare branches.

## CONCLUSION

Close w/ the following review questions:

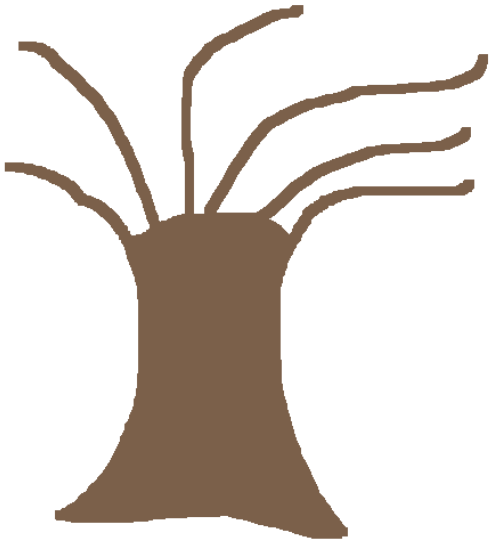
1. What is a natural resource? *Answer: Something that occurs in nature and has value.*
2. Is a tree a natural resource? *Answer: YES!*
3. How are trees born? *Answer: Seed*

## OPTIONAL ACTIVITY

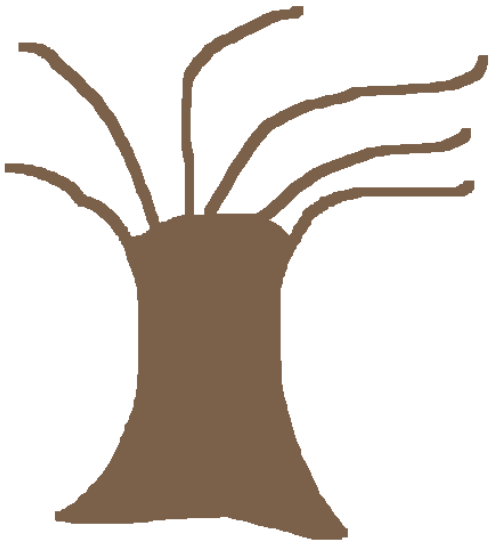
- **Refer to "Project Learning Tree" – Activity 79 for background information.**
- Show students a tree cookie and explain how it was obtained from a tree. Let students feel and examine the tree cookie.
- Explain what the rings on the cookie are and what they tell us about the tree (age of tree or limb, years of rapid or slow growth). Show students how to count the rings to determine the tree's (or limb's) age and let them practice.
- Using white paper plates with ridges, demonstrate for students how to create a "tree cookie" using the bumpy perimeter as the bark, the smooth inside edge as the cambium, and center circle as the heartwood.
- Have students each use a paper plate and crayons to create a tree cookie the same age as themselves. Have them identify when important events in their lives took place, such as when they were born, when they started school, and so on.

**NAME:** _____

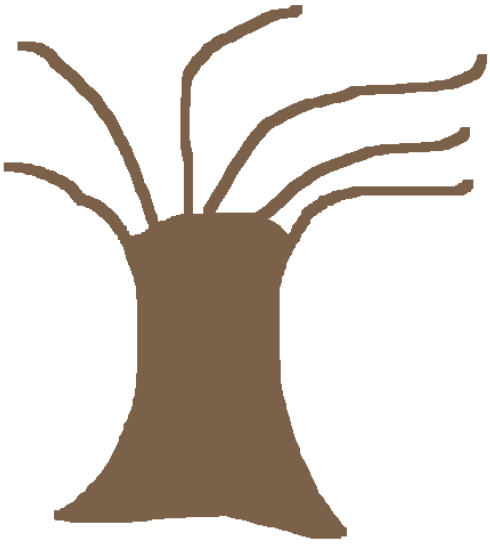
Directions: Using crayons decorate each tree according to the season.



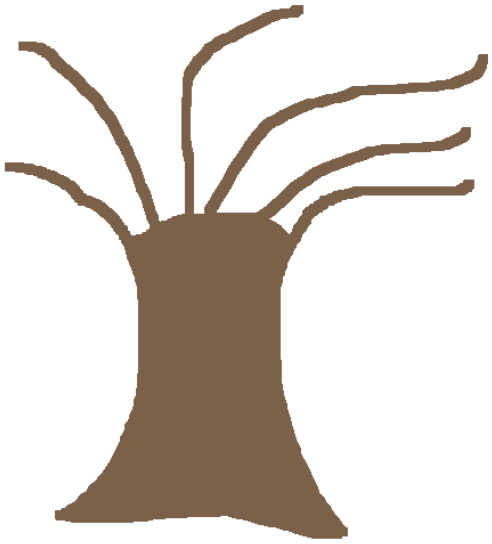
SPRING



SUMMER



FALL



WINTER