Unit Series Lesson Plan

Texas Arbor Day | Upper Elementary

Teach with Texas Project Learning Tree

The Texas Arbor Day Unit Series for 3rd-5th grade introduces students to the importance of forests and their ecosystems through hands-on activities and critical thinking exercises.

Throughout the week, students will explore the complex relationships within forest ecosystems, understand the critical role of trees in maintaining environmental balance, and discover how everyday life is connected to the health of our forests. This unit aims to foster a deeper appreciation for nature and the essential role that trees play in our world.

Teacher Resources

Texas Forest Literacy Framework

A Texans guide to learning and teaching about trees, forests, and related natural resources and environments.

https://tfsweb.tamu.edu/TexasForestLiteracyPlan/

Workshops and Professional Development

Texas Project Learning Tree helps you master teaching about our environment. Learn more about training with TexasPLT.

https://www.texasforestry.org/programs/environmental-education

Unit Series Week Plan

Texas Arbor Day 2024

Grade Levels: 3rd - 5th

Unit Topic: Texas Arbor Day - Trees & Forest Ecosystems

Texas Arbor Day is Friday, November 1, 2024

Key Learning Areas	Skills
• Forest Ecosystems • Water Cycle and Conservation • Tree Biology and Function • Environmental Problem Solving • Health	• Observation & Analysis • Critical Thinking • Scientific Inquiry • Creative Expression • Collaboration and Teamwork

Materials

PLT Explore Your Environment K-8 Guide

Create a free PLT Educator Account to download the free student pages:

https://www.plt.org/resources/resources-for-plt-lessons

- **Fallen Log Observations Student Page: pg. 120 of "Explore Your Environment"**
- **Tree MD App:** https://texasforestinfo.tamu.edu/treemd/
- **Tree Needs Student Page: pg. 115 of "Explore Your Environment"**
- **Tree-tective Trouble Guide Student Page: pg. 202 of "Explore Your Environment"**
- **Veggie Plate Student Page: pg. 81 of "Environmental Education Activity Guide"**

Shop the full guide and additional resources at shop.plt.org

Week Summary

Texas Arbor Day Unit Series

Monday

Summary:
Students will begin their journey with forests by learning about how complex soil is, and how important the interactions between decomposing matter and small organisms are.

Main Activity: Starting from the Ground Up **Time:** 45 minutes

Tuesday

Summary:
Students learn about plants' crucial role in a forest system when filtering our waters! Here they see the interactions plants and soil have with surface water.

Main Activity: Nature's Water Filter **Time:** 45 minutes

Wednesday

Summary:
Building on soil & water concepts, this lesson explores tree survival needs. Students discuss how all living things need specific resources to thrive. Understanding trees' needs (space, sunlight, water, soil) helps us care for our forests and create a healthy balance for plants.

Main Activity: Tree Needs **Time:** 30 minutes

Thursday

Summary:
Students become "tree detectives" in a park! They'll use observation and critical thinking to identify healthy and unhealthy trees, just like detectives solve mysteries. This hands-on activity reinforces lessons and connects them to broader problem-solving skills.

Main Activity: TREEting with Care **Time:** 45 minutes

Friday

Summary:
Students will explore the surprising ubiquity of plants in seemingly diverse dishes like spaghetti, fried rice, tortillas, and vegetable soup. Through this exploration, they will gain a deeper understanding of the fundamental role plants play in our daily food choices.

Main Activity: Plate of Plants **Time:** 30 minutes

Monday

Science TEKS: 3.1D, 3.7A, 3.10B, 4.7A, 5.1A

Starting From the Ground Up

Students will begin their journey with forests by learning about how complex soil is, and how important the interactions between decomposing matter and small organisms are.

Learning Outcomes

- Identify how organisms interact with fallen logs and rotting wood
- Explain how organisms depend on dead wood
- Describe decomposition

Vocabulary

- Decomposition
- Decay
- Nutrient
- Detritivores

Materials

Find a place that has dead logs, large fallen limbs, decomposing tree stumps, or rotting pieces of lumber. Print out "Fallen Log Observations" student page.

Activity Details & Instructional Strategies:

1. Head to a fallen log site. Students become soil detectives, observing its makeup and discussing its importance for plant life.
2. Fallen leaves and branches litter the ground. This mystery leads to a discussion about decomposition, the natural process that cleans up the forest and prevents a giant pile of dead wood.
3. Divide into teams to investigate a chosen log. Equipped with a student worksheet, teams craft their own investigation questions about the log's age, inhabitants, and plant life. They'll gather evidence like insect holes and animal tracks to solve the mystery.
4. Back in the classroom, teams present their findings. This ignites a group discussion about the fate of dead trees, the fascinating interactions between animals and the log (like using it for shelter or laying eggs), and the crucial role of decomposition in recycling nutrients.
5. The grand finale is understanding how fallen logs benefit the entire forest. Students learn how these logs become homes for various creatures, who in turn become food for others. As the log decomposes, its stored nutrients are released, nourishing new plant growth and continuing the forest's cycle of life.

Assessment

Have students create a time-lapse drawing: a fallen tree (bare), then teeming with life (decomposing), and finally a small mound or new growth. Students can write a report with pictures (drawings or photos) summarizing their investigation findings.

Tuesday

TEKS 4.3B, 4.7A, 4.7C, 5.Intro.1D

Nature's Water Filter

Students learn about plants' crucial role in a forest system when filtering our waters! Here they see the interactions plants and soil have with surface water.

Learning Outcomes

- Show how plants help water soak into soil in a watershed.
- Explain how plants reduce water runoff and increase groundwater in a watershed.
- Describe how plant roots affect water flow and soil erosion in a watershed.

Vocabulary

- Runoff
- Erosion
- Watershed

Materials

- Three milk cartons
- Soil
- leaf litter
- watering can
- clay or playdough

Activity Details & Instructional Strategies:

1. Prepare the Milk Cartons:
    a. Ask an adult for help cutting each milk carton in half horizontally.
    b. Using a pushpin carefully poke several small holes in the caps of each carton (these are drainage holes).
2. Build Your Mini-Watersheds:
    a. Place the top half of each carton upside down on the bottom half.
    b. Fill all three containers halfway with potting soil. Fill one with leaf litter and/or small plants, and another with playdough or clay (this will serve as concrete/asphalt).
3. Time to Rain!
    a. Carefully pour water evenly over the soil surface in the mini-watersheds.
4. Observe and discuss how long it takes for water to drain from the bottom holes in each carton.
    a. What was the plants' effect on the water's speed? What happened to the water in the bare soil watershed? Where do the water go when there's concrete and no plants to help soak the soil?

Assessment

Prompt students to imagine two pieces of land that are exactly alike, except one is bare and the other is covered by a forest. Now there is a stream running through each area. Have them write about what differences they might see between the two streams. Ask them to think about how the water might move and how clear the water would be in each.

PROJECT LEARNING TREE TEXAS

Wednesday

TEKS 3.10A, 4.10A, 4.9A 5.12A, 5.13

Tree Needs

Building on soil & water concepts, this lesson explores tree survival needs. Students discuss how all living things need specific resources to thrive. Understanding trees' needs (space, sunlight, water, soil) helps us care for our forests and create a healthy balance for plants.

Learning Outcomes

- Model tree competition for resources.
- Analyze how light, water, and nutrients affect tree growth.

Vocabulary

- Photosynthesis
- Tree rings
- Cooperate
- Competition

Materials

- Tree cross-sections
- Print out "Tree Needs" Worksheet
- 4-6 different colored tokens (math cubes, poker chips or colored paper pieces)

Activity Details & Instructional Strategies:

1. **Brainstorm**: Ask students what trees need to grow (water, sunlight, air, nutrients). Discuss what happens if they lack resources.
2. **Model Setup**: Show a tree cross-section (or drawing) and explain growth rings. Students draw their own "age" with rings on paper.
    a. Distribute resource tokens. Assign colors to represent needs (e.g. blue=water).
3. **Round 1**: Students spread out, representing trees, and try to gather resources within reach (arms). Record collected resources. Discuss results - did all trees get everything they need? What might happen if not?
4. **Round 2**: Trees move closer together and repeat resource gathering. Compare results to round 1. Discuss competition for resources and how it affects growth.
5. **Advanced Rounds** (Optional): Try rounds with fewer resources, different tree density, or new resources (fire, insects). Discuss how these elements affect trees.
6. **Wrap-up**: Discuss the simulation as a model, its strengths, and limitations. Can forests cooperate? Briefly introduce mycorrhizal fungi as an example.

Assessment

Have students write a 10-year story (or skit) highlighting positive and negative events, analyze data from a specific simulation round to describe their "tree experience," and then draw a 10-year tree cross-section explaining the conditions represented in each ring (drought, competition, fire, etc.).

PROJECT LEARNING TREE TEXAS

Thursday

TEKS 3.1A, 3.4A, 4.4A, 4.13A, 5.1A, 5.4A

TREEting with Care

Students become "tree detectives" in a park! They'll use observation and critical thinking to identify healthy and unhealthy trees, just like detectives solve mysteries. This hands-on activity reinforces lessons and connects them to broader problem-solving skills.

Learning Outcomes

- Recognize symptoms of unhealthy trees
- Describe potential causes of their poor health due to resource limititations.

Vocabulary

- Symptoms
- Diagnosis

Materials

- Organize an outdoor "Tree-tective" field trip to observe diverse trees with leaves.
- Have TREE MD App on smart device, or "Tree-tective Trouble Guide" worksheets.

Activity Details & Instructional Strategies:

1. Discuss what makes people sick (poor diet, germs, etc.) and how we stay healthy (exercise, good food).
2. Have students imagine themselves as "Tree-tectives" investigating tree health. How might keeping a tree healthy be similar or different from keeping ourselves healthy?
3. Outdoor Observation: Take students outdoors to observe a variety of trees onsite or nearby. Using the Texas A&M Forest Service TREE MD App, or the "Tree-tective Trouble Guides", have students spot signs of unhealthy trees. Encourage them to take notes and draw what they see (broken branches, unusual leaves, holes, damaged trunks, etc.).
4. Tree-tective Diagnosis: Have students explain what they think caused any damage, using clues they observed.

Assessment

Have students draw pictures of a healthy tree and an unhealthy one and list the qualities of healthy trees and some causes of poor tree health. Have them report on their investigation of the trip, describing the results and explaining the findings. Have students present their findings using a scientific claim-evidence-reasoning (CER) structure.

Friday

TEKS 3.10A, 4.Intro.1E, 5.10A, 5.10B, 5.5F

A Plate of Plants

Students will explore the surprising ubiquity of plants in diverse dishes like spaghetti, fried rice, tortillas, and vegetable soup. Through this exploration, they will gain a deeper understanding of the fundamental role plants play in our daily food choices.

Learning Outcomes

- Identify edible plant parts like roots, stems, and leaves, with examples
- Explore how plants transform into various foods and discuss their dietary importance

Vocabulary

- Fruit
- Flowers
- Seeds
- Legumes

Materials

- Print out "Veggie Plate" Student Page
- Recipe Options:
  - Pre-prep ingredients
  - Students bring their own
  - Grocery store field trip

Activity Details & Instructional Strategies:

1. Have students brainstorm plant-based foods, listing whole plants (potatoes) and processed options (French fries). Write everything on the board.
2. Highlight hidden plant sources: tortilla chips (corn), bread (grains), and even pizza (crust & sauce)! Encourage them to find more examples and add them to the list.
3. Analyze the list. Can students identify the plant parts used in each food? Create categories on the board (roots, leaves, etc.) Discuss which animals also eat these plant parts. Emphasize that not all parts of an edible plant are safe for humans, and animals can sometimes eat things we can't.
4. Distribute student worksheets ("Veggie Plate"). Have students identify the plant part for each food (fill in the blanks) and color the page if they wish. Review the answers together.
5. For older students, assign research on the vitamins and minerals provided by each vegetable on the plate.

Assessment

Challenge students to identify the origins of their food. They can ask questions like: "What part of the plant gives us walnuts?" or "Where does maple syrup come from, and what kind of tree makes it?" Encourage them to research the origins of ingredients like bread and explore the surprising plant sources behind familiar foods.