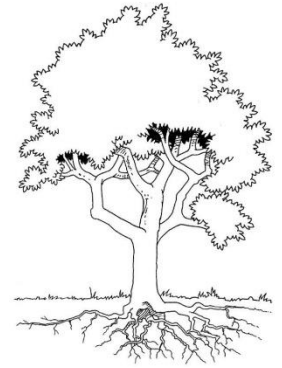


Lesson: Action Project

Topic/Essential Questions: How can we keep the water clean? How can we restore forest habitat?

Unit: "Why Are Trees Terrific?" Kindergarten Environmental Literacy Unit



Content Standards:

- NGSS K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.
- SL.K.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
- SL.K.6 Speak audibly and express thoughts, feelings, and ideas clearly.
- Social Studies 3.d.1.b. Identify ways that people change their environment to meet their needs, such as planting crops or cutting forests
- Foundation for EL Standard 5.0 Humans and Natural Resources

Length of Lesson: 30 minutes

Student Outcome: The students will demonstrate action to prevent erosion and/or restore forest habitat.

Knowledge of the Learner:

- Prerequisite Knowledge, skills and processes: trees and animals are living things with basic needs; listening, observing, following instructions
- Student needs, interests, previous learning: These will vary among students.
- Conceptual difficulties: Trees prevent erosion, native vs. non-native plants
- Differentiated: The instructor may pace the lesson according to the responses and participation of the students.

Knowledge of Content:

- Content knowledge for instructor: Provided in the text of the lesson.
- Vocabulary: Erosion, native, non-native, invasive, restore, habitat, forest
- Resources:

Action Project Supplies

Hand rakes

Buckets

Planting poster

Wheel Barrow

Plants

Shovels

Trowels

Gloves

Mulch

Water

Wood chips

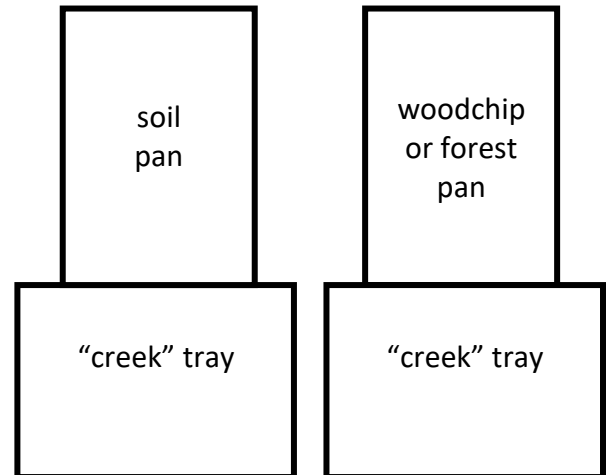
Pre-Assessment: During the opening at the beginning of the field trip, Camp Woodlands staff will invite students to share what they have learned at school about trees including trees as living things, trees as plants, parts of a tree, and what is a forest.

Action Project Options:

This will be determined during planning by the teacher and Woodlands staff. This might include erosion control projects such as spreading wood chips or planting OR planting native plants for forest restoration.

Option 1: Erosion Control**Erosion Model:****Procedure:**

1. Welcome students to the activity and introduce yourself.
2. Show students the erosion model. (If the action project is spreading wood chips, the woodchip pan will be used with the soil pan. If the action project is planting, the forest pan will be used with the soil pan. If "Roots and Boots" (the waterfront lesson) is **not** being taught, both the woodchip pan and forest pan will be used with the soil pan.) Explain that they are going to perform an experiment. Explain that the pans represent two hills, one with woodchips (or a forest) and one with soil. The shallow trays are a creek at the bottom of the hills.
3. Ask students to predict (guess) what will happen when it rains on each hill.
4. Pick two students to be "rain clouds" and have the students pour water with the watering can onto each hill one at a time; all other students should make rain sounds. Have students describe what happens. Which water is cleaner? Which hill had more erosion? Was your prediction correct?
5. If "Roots and Boots" is being taught, conclude this part of the lesson by explaining that the woodchips cover the soil and slow down the water to help stop erosion. Go to number 7 in the procedure.
6. If "Roots and Boots" is **not** being taught, show students a potted tree. Gently lift the tree out of the pot to show the roots to the students. Ask students, "Why didn't the soil fall? What held the soil? *The roots*. Point out how the roots hold the soil. Return tree to the pot.
7. Explain that trees growing near the water keep it clean. Their roots hold the soil in place. This helps the things that live in the water.
8. Between groups, pour muddy water into the woods where it will not drain into the cove.



Action Project: Wood Chips. Before students arrive, note the marked area that will be chipped.

1. Ask the students where wood chips come from. *Trees*.
2. Explain that when water rushes over soil, the soil goes away with the water. This is called erosion. Ask students why erosion might be a problem for the fish and other animals that live in the water.
3. Tell the students that if we can slow down the water like we did in the experiment, we can help stop erosion.

4. Explain that today we will be using wood chips to cover the ground to help slow down the water when it runs over the ground.
5. Show the students where the wood chips will be placed.
6. If available and close by, show students an example of an onsite erosion problem.
7. Give each student a bucket and a hand rake.
8. Show how to place the bucket next to the pile of woodchips and use the hand rake to fill it.
9. Have all the students fill their buckets using hand rakes.
10. Walk to the area that is being covered with wood chips.
11. Have students dump the woodchips out of their buckets. The chips need to be 4 to 6 inches thick so they should not be spread out.
12. Continue covering the area with woodchips until the 15 minutes are finished.
13. Cheer for students, telling them that they made a difference today.
14. Do the "Who Can?" cheer with students:
 - a. Say, "Who can?"
 - b. Students answer, "We Can!"
 - c. Say, "Who Can?"
 - d. Students answer, "We Can!"
 - e. Say, "Who can change the world?"
 - f. Students answer, "We can change the world!"

Assessment: Ask students, how did they help stop erosion today? *We covered the bare soil with woodchips that help slow down the water.*

Action Project: Planting for Erosion Control. Before students arrive, use flags to mark areas where the plants will be planted or pre-dig holes. Depending on the hardness of the soil and the size of the plants, the holes may or may not need to be pre-dug before each group arrives.

1. Ask the students what part of the plant grows underground? *Roots*
2. Explain that when water rushes over soil, the soil goes away with the water. This is called erosion. Ask students why erosion might be a problem for the fish and other animals that live in the water.
3. Tell the students that if we can slow down the water like we did in the experiment, we can help to stop erosion.
4. Explain that today we are planting _____ to help soak up rain water and slow it down when it runs over the ground.
5. Show the students where the plants will be planted.
6. If available and close by, show students an example of an onsite erosion problem.
7. Follow the directions on the planting poster. Demonstrate how to dig a hole, remove the plant from the pot, massage the roots, put the plant in the hole and backfill the hole.
8. Pair students up and give each pair of students a hand shovel and a plant.
9. With the help of the chaperones have the students plant their plants.
10. If there is enough time and more plants, students can plant more.
11. (Follow steps 13 & 14 above for the cheer under **Option 1: Erosion Control, Action Project: Wood Chips**)

Assessment: Ask students, How did they help stop erosion today? *We planted _____ to*

help soak up the rain and slow down the water running across the ground.

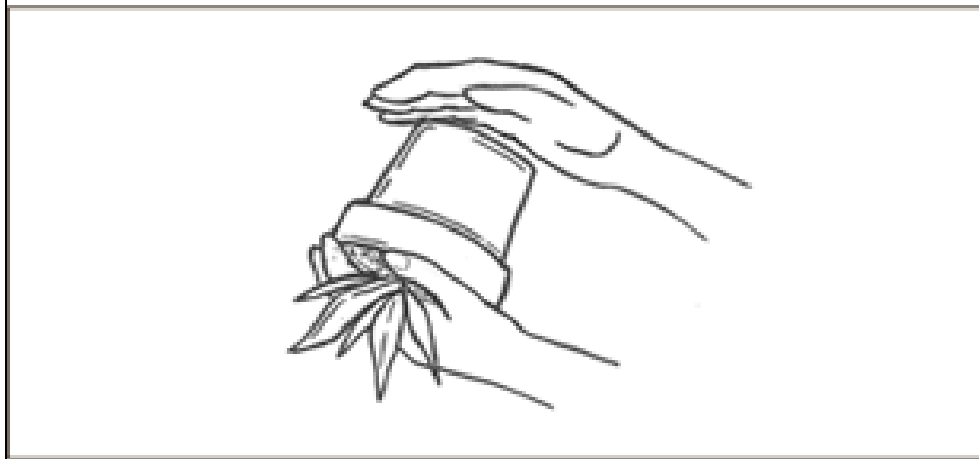
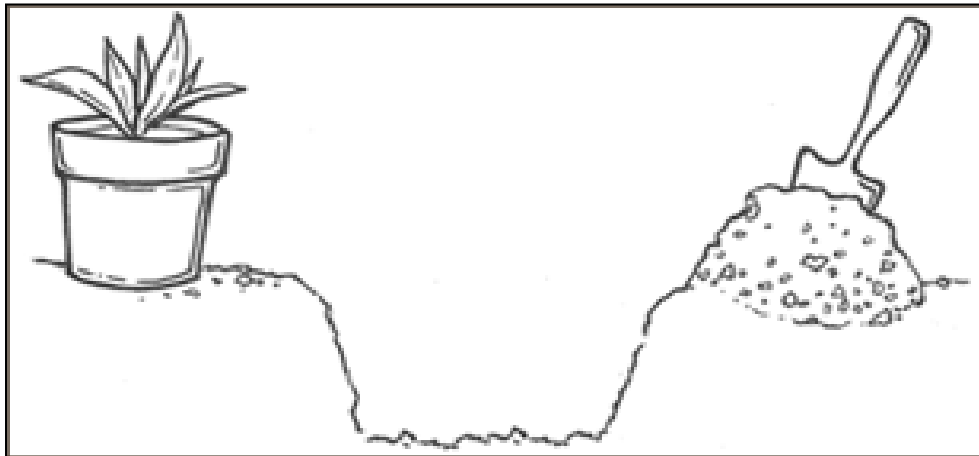
Option 2: Forest Restoration

A planting area that has been cleared in advance of invasive plants will be marked. With guidance from Woodlands staff, set out plants in planting area for the first group.

1. Inform students that sometimes there are plants growing in the forest that are not supposed to be there. They have been brought from far away and planted by people. These plants are “non-native,” which means they do not grow in the forest naturally. Many non-native plants cause problems in the forest because they can be “bullies;” they grow too fast and spread out really far. Another word for this is “invasive.” They invade the forest, take over and make the native plants disappear. The native plants are the plants that are supposed to be here. Native plants provide food and shelter for the animals here. The non-native plants do not help the animals here.
2. Show students an example of the invasive plant problem at Woodlands (vinca, multi-flora rose).
3. Tell the students that if we get rid of the non-native plants and plant native plants we will help restore the forest to its natural state.
4. Explain that today we are planting _____ .
5. Show the students where the plants will be planted and how to plant (follow the directions on the planting poster, pages 5.) Demonstrate how to dig a hole, remove the plant from the pot, massage the roots, put the plant in the hole, backfill the hole, water the plant.
6. Pair students up and give each pair of students a hand shovel and a plant.
7. With the help of the chaperones have the students plant their plants.
8. If there is enough time and more plants, students can plant more.
9. (Follow steps 13 & 14 for the cheer under **Option 1: Erosion Control, Action Project: Wood Chips**)

Assessment: Ask students, Why are native plants better than non-native plants? *They provide food and shelter for forest animals.*

Take Action- How to Plant



***Massage roots before placing plant in ground.**

