POLAR TREC
Learning Resources

Details


Completion Time: About a week

Permission: Download, Share, and Remix

Adventures in Tree Coring

Overview

Coring trees is a way of learning about trees without cutting them down. When a tree is cored, the rings are examined to learn about the history and growth of a tree. In this lesson students will participate in a hands-on activity to help them investigate what information can be gained by studying and comparing tree core samples collected from trees around their own school.

Objectives

Students will be able to compare and contrast growth rings from several different trees and explain one of the tools scientists use to study the history or health of an ecosystem. Students will also be able to draw conclusions about a tree's success based on information found in the growth rings.

Lesson Preparation

Students are not required to have prior knowledge in preparation for this lesson, however, teacher preparation is necessary to locate an increment borer prior to the lesson. It would also be beneficial to invite a guest speaker from a local forestry source to discuss an increment borer, how scientists use it, and how the information gathered is used.

Procedure

Day One: Show the tree slice sample to the class and engage them in a short discussion about what they know about trees. Next, have students create a KWL chart in their science notebooks and write what they individually know and want to know about trees. Afterwards, have students share their KWLs in small groups listing ideas from their group discussions on Post-Its to add to the large class KWL chart. Then introduce and read aloud to the class, Last American Rainforest: Tongass. Initiate a class discussion about dendrochronology and tree coring. Return to the tree slice with students

Materials

- Copy of Last American Rainforest: Tongass by Shelley Gill
- increment borer (used to core trees)
- sample of a tree slice with rings exposed
- student science notebooks
- chart paper
- markers
- Post-It notes
- rulers
- hand lenses

pointing out and discussing the properties of the varying rings observed. Students may want to use hand lenses and rulers. Ask students if they would be interested in studying the trees and their rings that are located around school. Ask students what they'd like to find out by studying these trees. Remind students since they are scientists they should use the scientific method. Ask students how the scientific method could be applied to this situation. Add any new information that comes up to the KWL chart and start a note-taking chart as the steps of the scientific method are pondered for this experiment.

Day 2: Remind students of what they did on Day 1. Ask students if they've thought of any new information that can be added to the KWL or scientific method charts. Take students on a mini field trip around the school grounds. Choose a tree and demonstrate the proper way to core a tree. Discuss any questions and input that students may have. Invite student input for other trees that would be good candidates to core. Obtain core samples with student help. Return to class.

Day 3: Review KWL and scientific method charts with students and add anything new. Have students observe the core samples using hand lenses, rulers and anything else they think may be helpful. Students should record their observations in their science notebooks. Ask questions that encourage students to ponder, classify, generalize and infer based on the evidence they have. In the same small groups as Day 1, have students share their science notebooks once again including their completed KWL chart. Once again, groups are to write their ideas on Post-Its to add to the class KWL chart focusing on the learned section now. Encourage discussion of the discoveries and conclusions students have drawn about what they wanted to find out in the experiment. Add final thoughts to the class scientific method chart. Wrap up the lesson by revisiting Last American Rainforest: Tongass to see if students now look at the story with new eyes and if they have any advice for the author/illustrator.

Extension

- Students can capture the lesson on video and in photos to create a movie of the project that can be shared with the community.
- Students can write letters to local scientists asking about tree coring and what they do with the information they collect.
- Students can discuss with local ecologists their own findings in the schoolyard ecosystem and how they may relate to neighboring ecosystems.

Resources

- Last American Rainforest: Tongass by Shelley Gill ISBN-13: 9780934007337
- http://web.utk.edu/~grissino/ (tree ring science)
- http://www.arborday.org/kids/carly/lifeofatree/ (life of a tree demonstration)
- http://cr.middlebury.edu/biology/treeline/educ_dialogue/virtual_tour/how/treecoring.htm (how to core a tree demonstration)

Learning Resources

Assessment
Students will be assessed based on two criteria: their participation each day of the lesson and their science notebook entries.

Credits
Jillian McGill

Learning Resources

National Science Education Standards (NSES)

Content Standards, Grades K-4

Content Standard C: Life Science
a. Characteristics of organisms
c. Organisms and environments

Content Standards, Grades 5-8

Content Standard C: Life Science
a. Structure and function in living systems
d. Populations and ecosystems
e. Diversity and adaptations of organisms

Content Standard F: Science In Personal and Social Perspectives
b. Populations, resources, and environments

Content Standards, Grades 9-12

Content Standard F: Science In Personal and Social Perspectives
c. Natural resources
d. Environmental quality

Other Standards

Alaska State Science Standards 4th Grade

The student develops an understanding of the processes of science by:
[4] SA1.1 asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring and communicating.

The student will demonstrate an understanding of the attitudes and approaches to scientific inquiry by:
[4] SA1.2 observing, measuring and collecting data from explorations and using this information to classify, predict, and communicate.

The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by
[4] SC3.1 identifying examples of living and non-living things and the relationship between them (e.g., living things need water, herbivores need plants)