

Sandia Mountain Natural History Center

Ecology Field Program

Tree Key Lesson plan

Your Name: SMNHC staff	
Grade Level: 5 th	Subject Area: Life Science
Lesson Title: Tree Key	Lesson Length: 20-30 minutes

The Teaching Process

Lesson Overview

Focusing on producers, students identify local trees using a dichotomous tree key. An emphasis is placed on observation of tree characteristics and structure.

Lesson Objectives

1. Students will learn to recognize indigenous trees of the Sandia Mountains
2. Students will increase their botanical vocabulary, and develop their observational skills
3. Students will understand trees as types of producers of and their connections to the ecosystem (food, shelter, organic matter, soil stabilization).

Standards addressed

NMSS: NM I- Scientific Thinking & Practice, BM I- Scientific Method II; NM II- Life Science, BM I- Ecosystems 1

NGSS disciplinary core ideas: LS 1.C, LS 2.A, LS 2.B

NGSS crosscutting concepts: Structure and function

NGSS science & engineering principles: Engaging in argument from evidence

CCSS: RI 5.4, RI 5.10, RF 5.3, SL 5.1, L5.1, L5.4

List of Materials / Location

Dichotomous tree key, journal and pencil, an area with a variety of trees and suitable ground for students to explore

Instructional Sequence

Phase One: Engage the Learner

The instructor focuses the students on the *producers* of the local ecosystem, which connects directly to the introduction from earlier in the day. The instructor may lead a discussion about the reasons why identifying trees is useful to people (foresters, Native Americans, the Spanish settlers, a variety of scientists), touching on the connections to wildlife habitat, food resources, medicinal values, soil stabilization and water availability.

Optional: As an exercise to illustrate the importance of observation, students draw a tree and a leaf in their science journals. At the close of the activity they will look at their drawings and compare the (lack of) details to the many structures that distinguish one tree from another.

What's the teacher doing?

- Ask students to recall and/or describe some producers they've seen so far.
- Guide students while they recall plant/tree parts and their functions.

What are the students doing?

- Use prior and recently gained knowledge to actively participate in discussion on producers: plant morphology and their role in an ecosystem.
- **OPTIONAL** Create an illustration (as a base to compare

<ul style="list-style-type: none"> • Explain the usefulness of tree identification • OPTIONAL Have students illustrate a tree and a leaf in their science journals- to be revisited after the activity. 	<p>their idea of a tree & leaf to an observation of such).</p>
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Phases Two-Four: Explore the Concept; Explain the concept and define terms; Elaborate the Concept

Students set out to identify up to ten tree species. This activity’s main focus is to emphasize the importance of close observation and to notice and distinguish between the attributes of equivalent structures (needles, scales, leaves, bark) of several different trees. Students will learn and use specific terminology including, but not limited to: *needles, scales, lobes, coniferous and deciduous*.

<p>What’s the teacher doing?</p> <ul style="list-style-type: none"> • Explains directions for tree key and describe boundaries for activity. • Actively monitors students by checking for understanding, guiding students through activity and discussing finds. 	<p>What are the students doing?</p> <ul style="list-style-type: none"> • With partners, students explore the area to identify and distinguish between several different trees. • Students discuss, determine and record identified trees.
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Phase Five: Evaluate students’ Understanding of Concept

At this point, the instructor brings the group back to informally assess students. Students share some trees they’ve identified, but must provide evidence (using the tree key as reference). It must be noted that correctly identifying the trees is secondary to students carefully observing the trees, distinguishing between them, and supporting their claim with evidence. As an option, finish up with a look back at their illustrations to see what details may have been left out, focusing on the difference between our idea of something and how that changes through observation.

<p>What’s the teacher doing?</p> <ul style="list-style-type: none"> • Gathers students back to meeting area. • Leads students in sharing their finds and citing evidence. • Assesses student understanding. • OPTIONAL Guides students in short discussion about the importance of observation in connection to their drawings. 	<p>What are the students doing?</p> <ul style="list-style-type: none"> • As a group, students share some of the trees they’ve identified and back up their claim with descriptive evidence based on the dichotomous key. • OPTIONAL Students look at drawings and compare the (lack of) details to the many structures that distinguish one tree from another.
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