TREE STUDY INDOOR LAB
LESSON PLAN

Subject area: Tree value to shores, lakes, rivers, and wetlands
Grade level: Middle School
Seasonal timing: Fall or Spring when leaves and cones are available
Instruction time: 45 minutes

A. Learning Goal: Students will learn the interrelationship and value of shoreline trees/plants. Establish the contribution of trees and other vegetation to a healthy shoreline.

B. Objectives: Learners will be able to:
- Establish the contribution of trees and other vegetation to a healthy shoreline.
- Recognize characteristics of trees for identification.
- Determine the age of a tree using a bore sample.
- Determine the height of a tree using a clinometer.

C. State Standards:
- SCI.SEP5.m – Using mathematics and computational data.
- SCI.LS1.C.m – Plants use the energy from light to make sugars through photosynthesis. Within individual organisms, food is broken down through a series of chemical reactions that rearrange molecules and release energy.
- SCI.LS2.A.m – Organisms and populations are dependent on their environmental interactions both with other living things and with nonliving factors, any of which can limit their growth. Competitive, predatory, and mutually beneficial interactions vary across ecosystems but the patterns are shared.
- SCI.LS2.D.m – Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on — for example, water purification and recycling.

D. Setting: Indoor classroom.

E. Materials and Resources:
- Tree study lab packets and writing utensils.
- Selection of local cones and needled branches (white oak, red oak, jack pine, etc.).
- Selection of local leaves (white oak, red oak, aspen, birch, etc.).
- Basic tree identification key.
- Tree cross-section/slab for aging, if available.
- Stamps and ink pad.
- Tape measure (50') to show clinometer.
- Clinometer for each student team.
- Tree borer and core sample for demonstration.

F. General delivery, see teacher guide for detailed implementation suggestions:

Introduction

- Review with Q/A what trees are in our area.
- Discuss how trees benefit lakes, rivers, wetlands.
- Identify trees using an identification key and other tips for simple classification.
- Demonstrate how a clinometer works.

Small Group: Have students work in their teams and instructor checks identification.

- Students identify sample leaves, cones, needled branches.
- Have students calculate the height of the room with the clinometer.

G. Assessment:

Students write a short paragraph on how trees are important at their home.