Shapes of Leaves: Sketching and Keying Oak Trees *Lesson for all age groups*

Teaching Point: Naturalists use observational skills to record what they see in the field in order to better understand nature. By sketching and recording observations, you will learn more about the trees that grow in our area.

Cross Cutting Concepts: Patterns; Structure and Function

NGSS: 3-LS3.B: Different organisms vary in how they look and function because they have different inherited information

4-LS1.A Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.

Time: 1 hour

Materials: Oak Key from Kate Marienchild (link to keys for purchase), one sheet of white paper, pencil, clipboard, prepared packets of sample leaves, acorns, galls etc. (given to teacher by docent- prepared by SMD)

Architecture	Lesson Script
Set ***1- 2 minutes***	Certain Oaks in California are fast becoming an endangered species because of (development, disease "sudden oak death," continual drought) yet oaks are the home for many species above and below the ground. The preservation and replanting of oaks helps combat climate change. Today, you will use observational skills to look at oak trees' leaves, galls, acorns, and bark to describe the trees' features and determine three prominent varieties you will see in California. As we hike through the oaks, we will stop and look at a) coast live oak b) valley oak c) blue oak and note where they are in the landscape.
Teach ***5 minutes***	**Once at the gathering place begin formal lesson:** We will be sketching various oak leaves from the coast live oak, the valley oak, and blue oak. We will make observations of our scientific field sketches by annotating things we notice. For example, you may note the size, shape, color, texture of your leaf and write that in notes next to your drawing. **If necessary, show the group a sample of a drawing with annotations.** During the sketching period it is important that you are quiet and still, focused on your sketching and observations (feel, size, smell...) This will allow your right brain to be most active and your sketches to be more accurate. **Leader provides paper, pencils, clipboards and seating arrangement appropriate for the group to share kits of leaves/acorns/galls so that everyone can draw at the same time and share the necessary items in turn as time allows.**
Active Engagement ***15- 30 minutes sketching***	Fold your paper into fourths **(demonstrate)** put your name on your paper in one of the quadrants. Note the date and location. **(demonstrate)** Use each quadrant to sketch a different leaf (acorn or gall). Your sketches are not meant to be perfect, but draw as big as possible and remember to be like a scientist by annotating your drawings with observations (words describing what you notice, size, shape, texture, color). **See ABCs of Nature Journaling lesson for sketching tips.** Label the things you notice about each leaf. How are they similar? How are they different? (10- 30 minutes depending on age) **Leader roams and asks questions as group members quietly draw.** **Group leader calls group members back to the general area and has pairs share their drawings and their leaves with each other. Encourage participants to talk using age appropriate descriptive/scientific terms.**

10-15 minutes sharing and adding information to create key	**For older groups, introduce the concept of keys and leaf vocabulary (veined, lobed, curved, symmetry, toothed)** Your sketches are what field scientists do in order to document what they notice and to come up with a system of organizing information. They often create keys for others to use as guides. **Distribute *The Identifying the Common Oaks of Northern and Central California* and have pairs look to find their leaves (acorns/galls) on the key and to add notations from the key to their drawings.**
Link ***Transfers back to student work and encourages accountability*** ***2 minutes***	Now that you have created your own oak tree key, let's see on our hike back how it works. Through the process of photosynthesis, trees like these oaks help take carbon out of the atmosphere and use it to make their food. This helps reduce the amount of C02 in the atmosphere and restores the health of soils and habitat for wildlife. Save Mount Diablo is dedicated to planting 10,000 native trees and plants in the next ten years. You can be a part of this initiative!