Phenology Unit Overview

Module Title: Phenology of California Poppy Grade level(s): K-4

<table>
<tr><td># of lessons: Six lessons and up to ten twenty minute observations</td><td></td></tr>
<tr><td>Big Idea – Student Learning:

Experiential learning through phenomenon-based citizen science: Students will witness first-hand how plants change through their life cycle and with the seasons. They will be challenged to learn about climate, the seasons, native plants, and the importance of timing of certain events in the life cycle of the plant. By studying the same individual plant as it changes with growth, students will develop observational skills.</td><td rowspan="2">Learning Targets – “I Can” Statements

● I can explain what a native plant is and why they are so important.
● I can be a citizen scientist by filling out my own datasheets and understanding the world around me.
● I can use my improved observation skills to ask good questions; scientists call these questions hypotheses.
● Sketching for science is different than art. I can record data with my drawings.
● I can explain to you why observation is the foundation of science.
● I can tell you what I saw California poppy do during the school year because I observed it over and over. I recorded data and noticed changes.
● I can record daily temperatures and rainfall and understand how this relates to the seasons and changes in plants.
● I can explain why seasons are important for plants.</td></tr>
<tr><td>Prior Knowledge:

The module is intended to be a stand-alone unit. Prior skills needed include being able to read and write.</td></tr>
<tr><td>Key Vocabulary:

• Seasons (spring, summer, fall, winter)
• Plant Parts (Flower, Stem, Roots, Leaves, Seeds, etc.)
• Plant Needs (water, sun, soil, oxygen, carbon dioxide, sugar, photosynthesis)
• Measurements (height, width, tall, inches, prediction)</td><td>Community/Place-based connections:
When kids notice more about the plants in the natural environment within and surrounding their community, it develops their sense of place. Plant communities set the tone for our natural environment. The smells, shapes, sounds of birds and insects in the trees, are all governed by which plants are present. By closely observing one species, children will notice more about the other plants around them. Improving their observation skills will help them notice the diversity around them. This project provides a good opportunity to connect the importance of plant diversity with the importance of diversity within the human world.</td></tr>
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What will be some community benefits? Our communities benefit when children learn at an early age that both humans and other animals need plants and their pollinators. When children become more aware of the natural world, they become better community players as they feel empowered and engaged in their ability to be citizen scientists. This project gives them citizen science skills at a young age and improves their understanding of the world around them. Near the end of the unit, students observation skills will help them better appreciate plant diversity. Discussing plant diversity is a great way to connect with discussing diversity within the human world as well.	**College/Career Connections:** Improving observation skills benefits all career paths and learning to sketch for science develops a skill highly beneficial for a wide range of college courses and STEM related careers.
Assessment: What evidence of learning can be gathered across the unit's implementation? Students ability to answer questions on their datasheets and their field sketches will improve throughout the school year. After a few exercises, improvements in their science drawings and datasheets will be apparent. The drawing in particular will be a good place to measure learning, as science sketching is just another form of data collection. With practice, they will notice and record more things each time. For example, instead of drawing a generic leaf, they will capture leaf shapes, including the tip, the base, the edges, they will record what veins look like on petals, etc. The questions they ask and the things they report noticing during class discussion also provide evidence of learning.	General Outline/Timeline of the Unit: • **Day 1: Seasons** • **Day 2: Plant Parts** • **Day 3: Grocery Story Botany** • **Day 4: What plants need** • **Day 5: California Poppy (planting, observing, and measuring is on going)** • **Conclusions (graphing and writing)**