

Grade Level

5th – 6th Grade

Overview

This activity will introduce phenology to students and will serve as a 'warm up' to conducting more complex observations to be submitted to *Natures Notebook*. Students will observe one specimen on their own and practice making simple observations. Followed by a group discussion, students will have the opportunity to share out their process and submit one *Nature's Notebook* observation into the database for Red Butte Garden.

Background

Introducing Phenology and the use of observations in a citizen science project can encourage students to connect to the world around them in a meaningful way, while gathering data that will contribute to Red Butte Garden's record keeping.

Real-world Connection

Understanding and practicing making an observation will allow students to think like a scientist. Whether they know it or not, students are probably constantly making observations to understand the world around them. This activity will show students how sharing observations can be fun, they can use their senses to learn something new, and contribute to citizen science efforts.

Learning Objectives

- Define Phenology
- Explain what a citizen scientist is
- Explain how to make observations
- Make an observation using 5 senses
- Understand how to keep a record of observations

State or National Standards

- Objective 1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
- Objective 2: Describe how some characteristics could give a species a survival advantage in a particular environment.

CONDUCTING THE ACTIVITY

Time Required

- 10-15 minutes

Logistics

- Any space in the Garden where students can explore on their own, but still be seen by lead.

Materials needed

- Simple *Nature's Notebook* observation cards (1 per student)
- Wet erase markers (1 per student)

ENGAGE (Connect to prior knowledge)

- Understand audience knowledge: Ask students by raise of hand to explain what an observation is.
- Discuss how observations are made: How do we use our senses?
- Practice using observations about each other 'John is wearing a blue shirt' etc.
- Why is it important to use our senses and make observations? Discuss how we understand what is happening around us at any given time is through observation.
- Discuss how observations are useful in science- to understand how things work, to explore new things etc.
- Introduce the role of observations in the Garden and relate it to phenology:
 - What season is it?
 - Do you expect to see more or less ____ in the next few months? Why?
 - How do you know that the Garden will change throughout the year?
- Explain phenology:
 - All the changes that happen from year to year is actually an important field of science: phenology is the timing of lifecycle events and their relationship to the environment. Can you think of some things that might change over the course of our seasons other than the way the plants look? (animals, pollinators, birds etc.)
 - Many people have worked at the Garden for a decade or more and have stated that they've observed it change over the years. For example, an area that used to be a wetland with damp soil all year long is now dry almost 60% of the year. Why do you think that's happening? Do you think we see the same animals there as we used to?
 - Unfortunately, we have no real evidence or record-keeping to show when the last year was that our wetland was wet. How do you think the Garden could keep track of these changes better?
 - If we had tracked these changes better, we'd have a larger understanding of what's happening in our Garden.

EXPLORE (Hands-on learning)

- Tell students that the observations they make today will help the Garden understand seasonal changes or phenology over the course of time.
- Hand out simple observation cards and allow students to take a few minutes to find a space with a plant of their choosing to practice making an observation.
- Establish a time or call to make to let the students know when they have two more minutes.
- Gather back together to discuss as a group.

EXPLAIN (Listening and communicating understanding)

Either in pairs or as a group allow students to share their findings about their plant/animal.

- You could include a discussion about adaptations, age of the specimen etc.
- What was the most obvious observation?
- What was the sense you used the most to observe?
- Did you try to use a sense you didn't expect to use to answer a question?

EXTEND (Group projects, real world connections)

Describe to students how a citizen science project works and why it's important to document observations:

- If you did this every day, do you think you'd have a great set of information to work with if you were to ask the question: How do things change over time?
- Do you suspect you have time to do this every single day? What if a school group comes tomorrow that we could do this with, would it be easier to gather data with a whole bunch of people rather than just one?
- Citizen scientists are volunteers that collect data for scientists to use from all over the world.
- Ask students if they'd like to take an observation that will be submitted into *Nature's Notebook* Database. Use the iPad to collectively enter data on select species in the garden
- Did you know that you just did science by making an observation? Your observations could help the Garden understand what is happening here!

EVALUATE (Summarize, check for understanding, assess)

- Gauge students interest in the activity and understand which specimens they were most drawn to
- Why did you choose that specimen?
- What did you like about the specimen you observed?
- Did anything surprise you about it? why?
- Did you learn anything about your specimen that you did not know because you took extra time to observe?
- Do you want to see the data that other students have gathered here?
- How did you contribute to science today? What does it mean to be a citizen scientist?



Scientific Name: _____

Nickname: _____

Site: _____

Date: _____

Observer: _____



Scientific Name: _____

Nickname: _____

Site: _____

Date: _____

Observer: _____

Do you see	Phenophases
Leaves?	Y N ?
Flowers or Flower Buds?	Y N ?
Fruits?	Y N ?

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Do you see/hear....	Phenophases
Active birds?	Y N ?
Birds feeding?	Y N ?
Bird calls/ song?	Y N ?

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What do you see? _____

What do you hear? _____

What do you smell? _____

What do you feel with your hands? _____

What else do you notice? _____

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