Spring Weather Brings Garden Treasures

Noticing Growth in the Garden

Day 1 of Cultivating Connections Spring Sequence

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Target Grade Level
1st - 5th grade

Essential Question
What elements of spring weather make plants grow?

Objectives
By the end of this activity, students will be able to:

- Explain 3 elements of spring weather that influence plant growth
- List & describe 2 resources used to observe or track growth in the garden

STE(A)M Integration

Art: Decorating journals.

Science: Observation & data tracking

NGSS Performance Expectation
3-ESS2-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.

Lesson Length
60 minutes

Offsite Prep
15-30 minutes

Onsite Prep
10 minutes

Summary

This activity introduces 1st - 5th grade students to weather patterns and their effect on local gardens, using interactive storytelling, an art project, and journaling. By teaching students how to identify spring weather patterns they will observe how sunlight, rainfall, and temperature influence plants in the garden. Students will use journals, thermometers, rain gauges, and rulers/measuring sticks to measure and track data. The journals are a place for students to log the data they gather through measuring plants, rainfall, and temperature. Students will get in the habit of routine data collection, analysis, and graphing.

Rationale

The activities in this lesson allow students to make connections to local spring weather conditions through observation and data tracking. Being knowledgeable of spring weather patterns will empower students to think critically about their local garden environment, and enhance their sense of place. Journaling is one method of inciting critical thinking and awareness of the environment. Whether students are tracking plant growth, or writing a reflections about what habitats students observed in the garden, they will develop a keen sense of awareness of patterns that occur in the natural world.

Background

Gardens flourish under specific weather conditions. Rain, sunlight, and a temperate climate are beneficial for plant growth in the garden. Spring weather in the Pacific Northwest provides hospitable conditions for the garden. The warmer, wet weather and longer days encourage plants to start their journey to becoming fully grown plants. Tracking how the plants grow in relation to spring weather will allow students to see a connection between the garden and the climate in the

Preparation for Lesson

1. Print the journal double sided; 1 journal per student. Align pages and use construction paper as the outside cover. Fold journals in half, and staple.

2. Place rain gauge in a space that is open and allows for rain capture.

3. Place thermometer in accessible location.

4. Draw a graph outline on the flip-chart for rain, temperature and two-plants.

Materials

- Spring Weather Story (attached)
- 1 pencil per student
- Abundance of markers
- 4 rulers or yardsticks
- 1 journal per student (Attached)
- Graphing flip-chart
- Construction paper (1 per student)
- Thermometer
- Rain Gauge

Key Vocabulary

- Weather elements
- Hospitable

Evidence of Learning

- Datalog
- Data graph

Garden Connection

Plant Growth

Pacific Northwest.

This lesson compares rain, temperature and sunlight, and explores their role in the garden. The water that plants get from the rain helps transport vital nutrients through the plant. Pollination is a phenological stage that is greatly affected by extreme temperatures, and this can act as a major impediment to plant growth and production. Lastly, sunlight gives plants the energy that they need to grow.

Procedure

Introduction (5 minutes)

Ask students to come together in a circle. Go over the plan for the day, mentioning we will listen to an interactive story to learn about spring weather, we will introduce journals, flip-chart graphs, rulers, rain gauges, and thermometers, going over how to use them as a measuring tool and how to read the measurements. Explain to the students how we will be using these tools to make observations and log plant growth in the garden over the next 5 weeks. Then we will look at the thermometer, the rain gauge, and measure plant height, before entering the data in our journals using the datalog. After everyone has a chance to log the data we will circle-up and discuss our findings before graphing the data on our flip chart. Tell the students that as we log data about weather and garden growth, we are practicing being scientists, in order to have a better understanding of why the garden grows.

Interactive Storytelling (10 minutes)

Inspire students with *The Season of Life* story. It involves participation through a role-play activity that teaches participants how the specified weather elements influence plants in the garden. One facilitator will read the story, while the other facilitator will act out the sounds and motions students can mimic throughout the story. The facilitator may divide roles amongst the students (i.e. one student is the sun, one student can make rain sounds, and the rest can pretend to be plants). The lead instructor can also opt to use hand gestures to help students identify when students can act out part of the story. Both facilitators should maintain high energy levels and enthusiasm to keep the students engaged. There are no definitive motions to go with the story, facilitators should be animated and do what feels intuitive when acting out gestures. Facilitators can refer to the bolded words and phrases as a cue for hand gestures if guidance is needed.Use *The Season of Life* story (attached at the end) as a basis for the level of detail this lesson will explore.

1. Have students sit or stand in a circle on the ground and let them know they will hear a story about rain, temperature and sunlight in spring.
2. Inform students they should listen closely because their help is needed to tell the story. You can give a practice scenario, (ie. Rainfall is frequently mentioned throughout the story), and ask the kids to practice the sounds and hand motions for rain. You could also have the students demonstrate a hand motion for the sun. Various ways of interpreting sounds and motions during the story are acceptable.
3. Tell the students to listen closely and make observations, and ask the group if they have any questions
4. Let students know when you count down from 3,2,1 on your hands, at 1 they should plant both feet on the ground and remain silent until the next action.
5. Read *The Season of Life* and refer to one of the two stories provided, depending on the grade level of the students.

Art Activity (10 minutes)

Introduce the journal to students by explaining that they will use it as a tool to keep track of the temperature using a thermometer, rainfall using a rain gauge, and height using rulers. If the plant is really tall, they can use yard sticks.

1. Mention to students we will take the next 10 minutes to decorate the cover of their journal using markers, mentioning they will need to write their name on the front of their journals, as we will collect these after each lesson.
2. Ask if there are any questions
3. Have children select which markers they would like to use
4. Have them seek out a flat surface they can color on
5. Watch the time and give children a 1 minute warning
6. When the time is up, have students come back to the circle for the next set of instructions

Journal Activity (15-20 minutes)

Inform students we will track the growth of two pre-selected plants for the duration of the program. We will rotate between measuring stations, then come together to discuss our findings.

1. Have students open their journals to page 1.
2. Have them write down the names of the two pre-selected plants.
3. Have students write in the date on their data log.
4. Ask students if they have any questions.
5. Split the students into 4 groups, one group for each measuring station (2 groups can work as well, do what seems intuitive for the size of the class).

6. Give each group 2 rulers and assign each group to a station.
7. Have students document their findings at each station.
8. Once the groups have rotated through all of the stations, have students come back to the circle to discuss the data.
9. Ask for a volunteer with a quiet hand to share the data they got and open the discussion to the group.
10. Take a rough group average and either assign a role or ask for a volunteer to help graph the data on the flip-chart. Do this for all four graphs.
11. Mention to students we will be discussing the growth of our plants in relation to the weather during our last session.

TO SIMPLIFY

For younger age groups, consider making the measurements and recording results as a whole group, taking volunteers to perform each task.

TO ADD COMPLEXITY

Provide the following prompt for students to answer in a blank page in their journals: *What kind of weather do you think plants need to grow?*

Wrap-up (10 minutes)

Have students circle up for assessment activity. In order to assess understanding participants will use the thumbs up/thumbs down approach. Educators will ask questions meant to incite critical thinking (adapt for different age groups).

- *"What are you excited to see in the garden this spring? Are there specific things you want to look for?"* (i.e. evidence of pests, friends of the garden, plant growth, etc.)
- *"Based on the story, why do you think we need to look after the garden? Why can't we just leave the garden alone?*
- *"Based on the story, what do rain and sun do for plants?"*
- *"Why are we tracking the plant growth in the garden?"*

Have students find a partner and spend 3 minutes sharing what they have learned about ideal weather conditions for the garden. Give 1 minute warning as time lapses. Regain students attention using techniques such as "clap once if you can hear me, etc."

Explain to students the next questions are verbal response and your curious if anyone can make connections to other information they have learned, either through experience or in school.

- *"Can anyone tell me what else helps plants grow besides weather?"* (soil, worms, Co2)
- *"Can anyone tell me what happens to plants during winter?"* (dormant, unable to survive because of cold temp.)
- *"Who can tell me why spring is the optimal season for plant growth?"* (perfect mixture of rain, sun, and warmth)

- *"How can you observe and track plant growth in the garden?"* (measuring sticks, journals.)

Adaptations

To simplify:

- Only select one plant.

To add complexity:

- Have students calculate the average of all the data sets from the group.
- Have students pick their own two plants, have them graph the data in their journal on pages 3-6.
- Have students look up weekly weather patterns on the internet, have them create a log in the back of their journal.

Rainy Day:

Use the internet to look up weather for the day, have students estimate how much their plants have grown.

Adapted From

A Wild Seed Story: A Year in the Life of a Meadow

"How Much Sunlight is Needed to Grow Carrots?".*SF Gate.* Hearst Communications Inc. Web. 20 March. 2017

"Tips for Growing Dandelion." *Global Healing Center.* Web. 20 March. 2017

"How to Grow Arugula in the Pacific Northwest. *Northwest Edible Life.* 30 January. 2014 Web. 20 March. 2017

The Season of Life*: Adapted from *A Wild Seed Story

1. As winter comes to an end, each and every day, the sun rises a little higher into the sky. As the days grow longer plants and animals look forward to warmer and sunnier days.

2. As the temperature gets warmer, **plants take a peek out** from the blanket of soil and come to find a world bustling with life. Now, all the snow and frost have melted, animals come out of hibernation and seedlings embark on their journey into full grown plants.

3. The first day of spring marks the middle of the sun's journey in the sky, and the heat that the sun gives off is not as strong as in summer, or as weak as in winter. The sun gives energy for the **plants to soak up** and turn into food, and **springtime showers pour water** for the plants' roots to drink.

4. The life of plant, however, is not an easy one, and even though springtime creates healthy weather conditions for the plants to grow, different plants need different levels of sun and water, and spring weather patterns can be unpredictable.

5. Some days, the temperature is very cold, and **hale drops** on the plants below. The chilly weather can make the plants **wilted and bent** as they **hunch over to stay warm.**

6. Sometimes, **rain** does not come for days, and the plants and soil become **dry and thirsty.**

7. Some days, the weather is just right, and plants receive healthy amounts of food and water for the garden to flourish. When the **sun is out**, the plants' bright green leaves **face up towards the sky**, like **hands trying to catch the sun's rays.**
8. When it rains, the **roots spread deep into the ground**, and these roots slurp up the **water like little straws**. As the roots get deeper and stronger, they protect the plants from blowing away in the wind or washing away from too much rain.
9. Spring weather can be very unpredictable, and it does not always help the plants grow. But when it is too dry, we can water the plants, and when it is too rainy, we can cover the plants to protect them. As caretakers of the garden, we help the garden survive, just like the garden helps us.