Forest Bathing and Scientific Observation

The Environmental Cooperative at Vassar Barns
Setting: Classroom and outdoor space (this lesson can be done virtually if students have access to nature e.g. their backyard or a local park)
Grade: 1st grade – 12th grade
1st grade - 6th grade: recommended to focus on the scientific observation section of this lesson
7th grade - 12th grade: recommended to focus on the forest bathing section of this lesson
Time: 1 - 1 ½ hours

Overview

Students will learn about the mental and physical health benefits of spending time outdoors

Students will learn how to practice forest bathing

Students will become familiar with scientific observation and questions through hands-on practice using their 5 senses and the terms I notice, I wonder and it reminds me of

Materials

- Notebook
- Pencil

Engagement

5 Minutes

1. Begin powerpoint presentation
2. Show students a picture of nature that would inspire "awe" and ask for their reactions
    a. Does it make them feel happy? Relaxed? Excited? Scared? Nothing?
    b. Definition of awe: a feeling of reverential respect mixed with fear or wonder (Oxford)
3. Why is this feeling of awe or being in nature important?

Explanation

10 Minutes

Forest bathing/spending time in nature can:

a. Reduce the stress hormone cortisol
b. Strengthen your immune system
c. Reduce feelings of anxiety, depression and anger
d. Improve cardiovascular health

e. Improve metabolic health

f. Improve overall well-being

4. Why is forest bathing/spending time in nature important?

    a. Think about the thousands of years where humans spent most of their time outdoors...what are the health impacts of this sudden change for humanity?
    b. We spend 93% of our time indoors and 10 hours and 36 minutes on screens, more time than we spend sleeping! (Qing Li)
    c. Negative impacts of spending a lot of time on technology include anxiety, depression, headaches, insomnia, and much more
    d. We are now an urban species and city living can be stressful causing more mental health illnesses, more heart attacks, more cancer and more strokes (Qing Li)
    e. "WHO calls stress the health epidemic of the 21st century" and spending time in nature can significantly reduce stress levels

5. Why forest bathe?
    a. Reduce stress, improve your connection to nature, reduce the stress hormone cortisol, strengthen your immune system, improve concentration and memory, reduce feelings of anxiety, depression and anger, improve cardiovascular health, improve metabolic health and improve overall well-being

6. Ask students if they have ever tried forest bathing? Have they ever noticed mental or physical health benefits of spending time in nature?

7. What is forest bathing?
    a. Shinrin-yoku is the Japanese term for forest bathing. Forest bathing originated in Japan. Dr. Qing Li is the Chairman for the Japanese Society for Forest Medicine and his book *Forest Bathing: How Trees Can Help Find You Health and Happiness"* is used as a guide for this lesson

        i. "Shinrin-yoku means bathing in the forest atmosphere, or taking in the forest through our senses. This is not exercise or hiking, or jogging. It is simply being in nature, connecting with it through our sense of sight, hearing, taste, smell and touch (Qing Li)."

        ii. "Indoors we tend to use only two senses, our eyes and our ears. Outside is where we can smell the flowers, taste the fresh air, look at the changing colors of the trees, hear the birds singing and feel the breeze upon our skin. And when we open up our senses, we begin to connect with the natural world (Qing Li)."

Explore

30-40 Minutes

Students will need to be in an outdoor setting for this section of the lesson

1. While Dr. Qing Li and other forest therapy guides/professionals would recommend spending at least 2 hours forest bathing, this is unrealistic to do in a classroom setting. We encourage you to inspire your students to take time out of school to practice forest bathing. What will be practiced in this lesson is how you would forest bath in a park/backyard or as Dr. Qing Li would call it, a "green micro break." Even just this practice will help you to unplug from technology and help refresh your mind from the mental fatigue of the day. It can be a great starting point for finding a deeper connection with nature. Dr. Qing Li states that after 20 minutes of forest bathing, you will start to feel the effects.
2. Explain to students that they will have 20 minutes to practice forest bathing (10 minutes for grades 1-6). Some tips for forest bathing:
    a. Pay attention to your stress levels before and after the exercise
    b. Do not take any technology with you
    c. Focus on your breath and practice deep breathing
    d. Close your eyes at times to help you focus on sound
    e. Find a comfortable place to sit or decide on a path to walk
    f. Look at specific things like the petals of a flower or the bark of the tree. Look for patterns and follow your curiosity. Walk up to a tree, you can even talk to it.
    g. Have water with you and make yourself physically comfortable with the clothes you wear so that this is not a distraction
    h. Just like scientific observation, observe with your five senses
3. **Ask your students to find one natural object to use to make observations for the next section of the lesson**

Scientific observation

We are using a lesson plan adapted from *Beetles* called I notice, I wonder, It reminds me of…

a. This observation lesson plan from Beetles is a great lesson to do on its own too!
b. Remind students that they are scientists and good scientists make good observations! You can begin talking about observations by asking students, "who are exceptional observers? Think about books, movies, history..Sherlock Holmes, Helen Keller..anyone they know?...scientists?"...Hope Jahren?
c. Ask students what makes some observers better than others? Tell students that good observers have trained themselves to notice and think about things that others don't
d. Tell students that you are going to teach them some tricks that will help them be

better observers...and better scientists!

e. **Go through each prompt and have students write down a number of observations based on each prompt. Then have students share.**
    i. In a classroom setting, it may be easier to split into small groups to allow for students to share within those groups

I notice - To make an observation begin a sentence with "I notice," and then describe what you observe with your senses
Remember:

- Observations are what you notice in the moment, not what you already know
- Saying "I notice it's a leaf" is identification, not observation
- Saying "It looks awesome," or "I notice it's gross," is your opinion, not an observation
- Saying "the leaf has been eaten by bugs" isn't an observation if you can't see any bugs. It's a possible explanation for the observation that it has holes

I wonder - Students should come up with one good question about something they just observed
For example:

- I wonder what ate that leaf?
- I wonder how long that tree has been alive for?
- I wonder what kind of bird I hear?

(Why questions can be hard to answer so encourage students to start their questions with I wonder if, I wonder when, I wonder how, I wonder what. These are all better ways to formulate a question that can be discussed in the classroom)

It reminds me of - Students make connections between what they are observing and what they already know

- This could be something they remember, information they already know, something the object looks like…
- You can think of more comparisons if you focus on one part of the object you are observing
- An example is, "The veins on this leaf remind me of the lines on the palm of my hand (*Beetles*)"
- Another example: "This flower reminds me of the flower garden my mom planted last year"

4. If you are teaching this lesson alongside the Big Read book *Light in the Lake,* now would be a good time to mention that Addie used observation to discover what was happening to Maple Lake. She records what she sees, hears, feels and smells in her brother's journal. She is using the Scientific Method.

Elaborate and Evaluation

15-20 Minutes

Students will be evaluated through the discussion of the following points and questions:

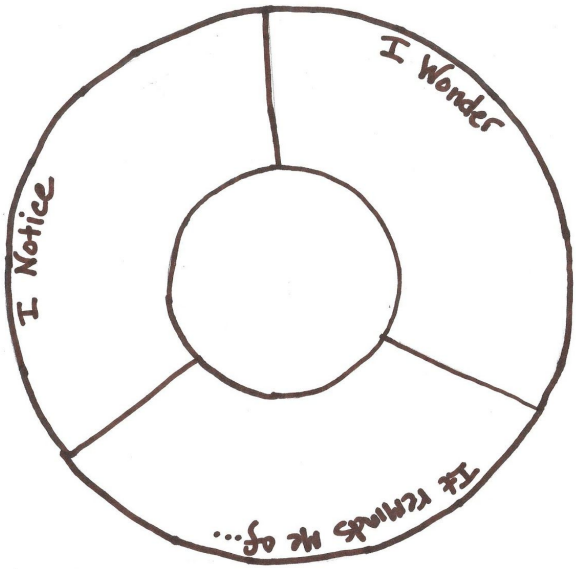
1. Ask students how they felt making observations.
    a. Was it easy or difficult? Did it help them see any patterns? Did they discover anything interesting?
    b. These prompts for observation can help students become comfortable with making scientific observations, an important aspect of being a good scientist
2. Ask students to pick one question they came up with (from I wonder), and formulate a hypothesis to that question. Remember a hypothesis is an explanation based on evidence, or an "educated guess".
3. Ask students how they felt before, during and after forest bathing?
    a. Do they feel calmer than before they did this exercise? Do they feel more energized?
4. Come back to discussing the mental and physical benefits of forest bathing:
    a. Reduces stress (reduces the stress hormone cortisol), improves our connection to nature, strengthens your immune system, improves concentration and memory, reduces feelings of anxiety, depression and anger, improves cardiovascular health, improves metabolic health and improves overall well-being
    b. These micro breaks can help you re-focus and improve concentration
    c. How can these green micro-breaks be implemented in your own life? Or bringing nature inside (indoor plants in office spaces can reduce stress)
        i. Other impactful ways to spend time in nature include gardening and exercising outside

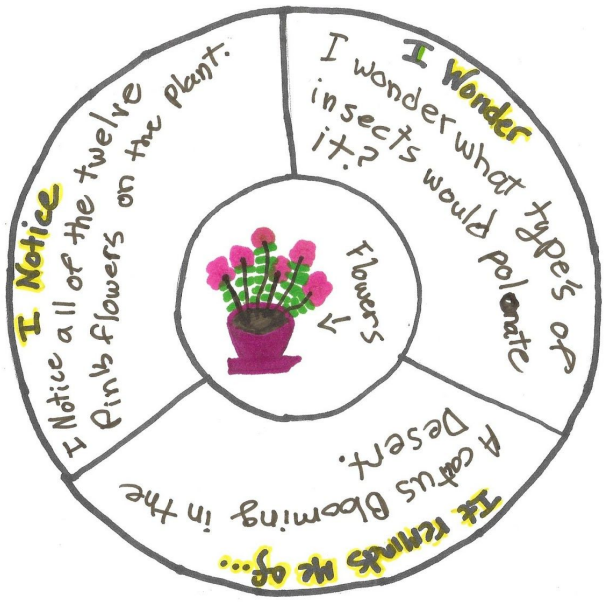
5. Ask students if they think that if people spend more time in nature, they will be more willing to take care of it?
    a. "When we love nature, we are likely to look after it. The more we connect with the natural world, the more likely we are to preserve it for the future (Qing Li 279)."

6. Further discussion questions for the class:
    a. Are you inspired to learn more about anything you saw?
    b. Do you think you will try forest bathing in your free time?
    c. Why do you think making good observations and asking good questions is an important part of being a scientist?

Extension - having students draw their observations and write their answers to the prompt may help to assess their understanding of the assignment. Formatting their observations and questions into a circle helps to reinforce the idea that scientific observation and questioning is an iterative practice. "Wheels of Time and Place" uses circular journaling for a variety of purposes and may give some inspiration on how to structure an art and science project connected with this

lesson. Here is an example of a simple template and one 4th grade example of using a "wheel" to record their observations and question.





Resources

1. Powerpoint presentation
2. Dr. Qing Li's book: *The Japanese Art and Science of Shinrin-Yoku: Forest Bathing, How Trees Can Help You Find Health and Happiness*
3. I Notice, I Wonder, It Reminds Me Of - Beetles Project
4. *Your Guide to Forest Bathing: Experience the Healing Power of Nature* by M Amos Clifford
5. Time article on the benefits of forest bathing: https://time.com/5259602/japanese-forest-bathing/
6. Dr. Razani's talk about the healing power of nature: https://www.youtube.com/watch?v=0uk0QriYYws
7. The practice of forest therapy:
8. https://www.natureandforesttherapy.org/about/the-practice-of-forest-therapy
9. Quadrats and Questions lesson from the Cary Institute: https://www.caryinstitute.org/eco-inquiry/teaching-materials/schoolyard-ecology/school-ecosystem-investigations/quadrats-and
10. Partners in Place, LLC. Wheels of Time and Place

Standards

Science Learning Standards

P-2nd grade

2. Interdependent Relationships in Ecosystems

2-LS4-1. Make Observations of plants and animals to compare the diversity of life in different habitats

ELA:

KW6, 1W6, 2W6. Develop questions and participate in shared research and explorations to answer questions and to build knowledge.

3-5th grade

3. Inheritance and Variation of Traits: Life Cycles and Traits

3-LS3-2.Use evidence to support the explanation that traits can be influenced by the environment

ELA:

3W6, 4W6, 5W6. Conduct research to answer questions, including self-generated questions, and to build knowledge through investigating multiple aspects of a topic