
Environmental Scientist

Overview:

This lesson and activity are designed to give students hands-on experience collecting and recording observable environmental data.

Grade: 4

TEKS

Scientific processes
4.2(B, C, E)
4.4 (A)
Science Concepts
4.5 (A)

Literature

Peach and Blue

Vocabulary

Environment
Ecosystem
Observation
Celsius
Conclusion
Living Organism
Non-Living Organism

Materials

Discovery Book
Compass
Thermometer
Field Guides

Look with Your Eyes

Classroom Activity

1. Begin this activity by playing the game "What Changed." Explained to your students they have 2 minutes to observe your appearance. Turn around or walk out of the room and change 5 items.
2. Stand in front of the class and ask the class to observe and identify 5 items that changed. Repeat the process 3 or 4 times. Discuss your students' observations.
3. This activity engages *all* learners and gets across the concept of observation skills. Discuss with your students how observation skills are helpful on a day-to-day basis. List their ideas on the overhead.
4. Discuss with your students how scientists use observation skills on the job. For example, Biologists use observation skills to collect environmental data and draw conclusions about current environmental research projects.
5. Explain to your students that the class will collect environmental data like an environmental scientist. On the overhead write the following criteria.

Weather Data

Date: Day-Month-Year

Time: (use the 24-hour clock)

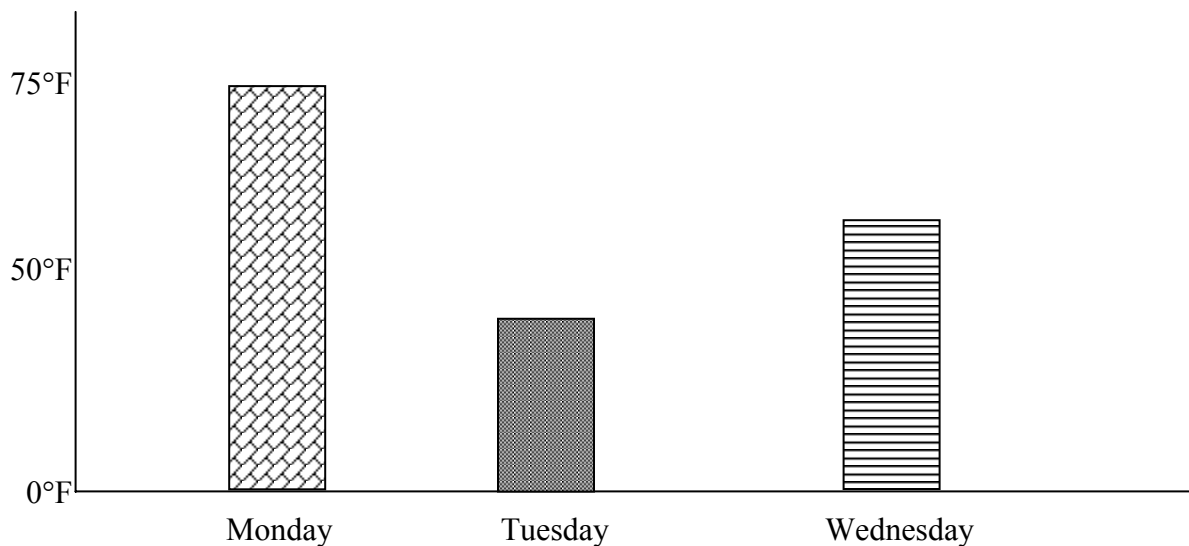
Weather: Clear Cloudy Overcast Raining (Circle One)

Air Temperature: (use both °C and °F)

Wind: (Which direction is the wind coming from?)

6. Have your students collect weather data each morning. Make a transparency of the "Weather Data" form and use for the first couple of weeks. Students will soon internalize the process and you can remove the "Weather Data" transparency. After the first week, students will have enough data to begin creating charts and graphs.
7. On the overhead, use the first week's weather data and construct a bar graph. Have your students follow along as you construct the graph. This activity will give your students a better understanding of graphs and how numerical data is converted into a visual model. Use the example below as a model for your students.

Monday	Tuesday	Wednesday
75°F	48°F	58°F



8. Collect weather data each week and have your students produce a graph every Friday. If your campus has a Computer Lab, ask your Computer Teacher to incorporate your students' weather data observations into a lesson on Excel.
9. Read Sarah Kilborn's book *Peach and Blue* to your class. Lead your class in a discussion about the point of view of both Peach and Blue. How are people like Peach and Blue? Peach sees so much more than Blue. Why?
10. Prior to visiting the Eastman Nature and Wildlife Habitat Center, take your class on a virtual tour of the Eastman nature trail at <http://www.eastman.com/EastmanOutdoors/trail.htm>. The trail guide developed by Dr. Eric Taylor will give your students an opportunity to learn about the many different trees along the Eastman nature trail. How many of the Eastman Trees are located in your School's backyard?

11. Conduct an environmental survey around your school. Use the Discovery Books to record your class' observations. Point out to your students the importance of using the same data collection procedures. Save this data and compare and contrast with your data collected while at the Eastman Nature and Wildlife Habitat Center.

12. Close the classroom section of "Look with Your Eyes" by discussing with your students the following questions.

- Why are accurate environmental records important?
- Why is it important to use a standard data collection procedure?
- How does "recorded" data help us better understand our environment?
- How do environmental scientists use observable environmental data?
- What other careers depend on observation skills as part of their job description?

In the Field

Look with Your Eyes

1. Prior to leaving your school make sure you have the following items.
 - Discovery Books
 - Ziploc Baggies (1 gallon size)
 - Pencils (inexpensive mechanical pencils are excellent)
 - Compass
 - Thermometer
 - Water
 - First Aid Kit
 - Sack Lunch or light snack
 - Camera
 - Backpack
2. Before getting on the trail, remind students their observations and data collected will be used back in the classroom to create charts and graphs of their observations.
3. Set your behavior expectations before leaving the parking lot. Explain how students are to behave along the trail and in small groups. State specifically what behaviors you want to see along the trail. Remind students the higher their voices are the less likely they will see wildlife along the trail.
4. Distribute Discovery Books to students and record weather data observations. Teachers a gallon size ziploc baggie make an excellent container for pencils and Discovery Books during lunch or at the end of the day.
5. Walk through the gate and follow the trail. Remember to go slow and listen to your students' observations along the trail.
6. If you have enough adult supervision, divide your class into two groups. Have each group go in opposite directions along the trail. This will help reduce the noise level and also give your students an opportunity to share their observations when the class comes together at the halfway point. This is a good opportunity reinforce the idea that scientists share data too.

Post Eastman Activities

Look with Your Eyes

- Ask your students to discuss their experiences while at the Eastman Nature and Wildlife Habitat Center. Did any of your students have a "Peach" experience?
- Write a narrative about their experiences at the Eastman Nature and Wildlife Habitat Center.
- Have your students create charts and graphs of the data they collected while at the Eastman Nature and Wildlife Habitat Center. Compare the Eastman data with the data collected at your school. Have your students draw conclusions about their observations.
- Have your students write a narrative about their experience at the Eastman Nature and Wildlife Habitat Center.
- Invite a Biologist to visit your classroom and discuss the importance of observation skills.
- Students create an "Environmental Report" based on their Discovery Book observations.
- Write a Haiku about their observations at the Eastman Nature and Wildlife Habitat Center.
- Create bar graphs at home or in the Computer Lab. Use the data collected in the field to compare and contrast your school's environmental observations with that of the Eastman Nature and Wildlife Habitat Center 's.
- Where's Waldo is an excellent and fun activity to reinforce observation skills. A recent study found that people that can easily find Waldo make good Biologists.
- Student produced books about their observations.
- Maintain an Environmental Journal for 1 school year.

Weather Data

Date: _____ Time: _____

Location: _____

Present Weather: _____
(Clear, Cloudy, Overcast or Raining)

Air Temperature: _____ Celsius

Air Temperature: _____ Fahrenheit

Wind: _____
(Which direction is the wind coming from?)

Resources

Publications

Peach and Blue by Sarah Kilborne

Sunship Earth by Steve Van Matre

Teaching in the Outdoors by Hammerman

Field Guide for the Eastman Nature Trail by Eric L. Taylor, Ph.D

Web Pages

Texas Forestry Association

<http://www.texasforestry.org/education.htm>

Acorn Naturalists

<http://www.acornnaturalists.com/store/>

Common East Texas Trees, Shrubs, and Vines

<http://www.eastman.com/EastmanOutdoors/trail.htm>

National Wildlife Federation

<http://www.nwf.org/kids/>

Southwestern Association of Naturalists

<http://www.biosurvey.ou.edu/swan/swaneng.htm>

Texas Education Agency

<http://www.tea.state.tx.us/>

Texas Forest Service

<http://txforestservation.tamu.edu/>

Tree Finder and Leaf Identification Guide

<http://mbgnet.mobot.org/sets/temp/index.htm>

Basics of Tree ID

<http://www.fw.vt.edu/dendro/forsite/ldtree.htm>