



Snippets of Science from Fermilab

LS 1 Elaborate

IT'S ALL IN THE DETAILS!

Challenge: Use your questions about your living thing to help you know what variables (factors, conditions) you need to study. This determines what information (data) you will record. Create a chart, graph, log sheet, or some other way that will help you record your data.

Goal: Based on your question, identify a variable that may help you answer your question. This could be time, temperature, volume, or distance. Use the variable to create a chart, log sheet, graph, calendar, or other way to collect and record your observations.

Fermilab Connection: Ecologists, naturalists, teachers, educators and students record tremendous amounts of data about animals, insects, birds, plants, trees and ecosystems at Fermilab. This data includes many variables such as date, location, specie, weather condition, time of day and more. Physicists record frequency, charge, mass, number of particles, energy and more to study particles.

Preparation

What are Scientific Variables? Christopher Brunson
<https://www.youtube.com/watch?v=0A55QRyJHPM>

What are Independent and Dependent Variables? Graphing Tutorial, National Center for Educational Statistics
https://nces.ed.gov/nceskids/help/user_guide/graph/variables.asp

Procedure

1. Write down some questions that you would like to try to answer.
2. Decide what factors (variables) will help you answer your question. Time may be one factor. Do you need to observe at different times of day? How many days should you observe? Use the factors to decide what data you will collect as you observe.
3. Create a graph, table, chart, observation calendar or log sheet based on your variables.
4. Record your data.

GRADE LEVEL
Grades 3–8 with modifications

MATERIALS

- Log Sheet
- Paper and pencil
- Optional
 - ⇒ Magnifier
 - ⇒ Binoculars
 - ⇒ Recording device

Discussion Questions:

1. Did you observe something about your living thing that you did not anticipate? Do you want to add this to your observation log?
2. What have you learned through your observations that you did not know before?
3. How might you redesign this investigation and the way in which you learn about nature to record your data?
4. How can you use the graph, log or chart to help you communicate what you have learned to others?