

Seed Germination Research Project Pre/Post Test

1. What types of activities do scientists (e.g., biologists, chemists, physicists, earth scientists) do to learn about the natural world? Discuss how scientists (biologists, chemists, earth scientists) do their work.
  
2. How do scientists decide what and how to investigate? Describe all the factors you think influence the work of scientists. Be as specific as possible.
  
3. A person interested in birds looked at hundreds of different types of birds who eat different types of food. He noticed that birds who eat similar types of food, tended to have similar shaped beaks. For example, birds who eat hard shelled nuts have short, strong beaks, and birds who eat insects from tide pools have long, slim beaks. He concluded that there is a relationship between beak shape and the type of food birds eat.
  - a. Do you consider this person's investigation to be scientific? Please explain why or why not.
  
  - b. Do you consider this person's investigation to be an experiment? Please explain why or why not.
  
  - c. Do you think that scientific investigations can follow more than one method? Describe two investigations that follow different methods? Explain how the methods differ and how they can still be considered scientific.
  
4. If several scientists, working independently, ask the **same question** and follow the **same procedures** to collect data, will they necessarily come to the same conclusions? Explain why or why not.

5. If several scientists, working independently, ask the **same question** and follow **different procedures** to collect data, will they necessarily come to the same conclusions? Explain why or why not.
  
6. Does your response to #5 change if the scientists are **working together**? Explain.
  
7. Does your response to #6 change if the scientists are **working together** ? Explain.
  
8. What does the word “data” mean in science?
  
9. What is involved in data analysis?
  
10. Is “data” the same or different from “evidence?” Explain.
  
11. Please give an example of how soil microbes influence other organisms in their ecosystems.
  
12. Explain how the various components of an ecosystem can influence other components of the ecosystem.
  
13. Please give an example of scientists contribute to theories through their research.

14. How do you feel that the seed germination experiment helped you to gain a better understanding of the scientific process?

15. Please rate your attitude toward pursuing a career/majoring in science with 1 being the lowest and 10 being the highest (explain your reasoning):

16. What do you feel was the most beneficial aspect of the entire research project? Explain.