

## Fake Lab Reports

**Companion Text:** I Lost My Sock, by Lin Jakary & Ryan Olson  
**Subject Area & Grade Level:** Science, 5<sup>th</sup> Grade

### *Objectives*

After this lesson, students will be able to:

- Define the steps of the scientific method
- Demonstrate understanding of experimental design
- Write a scientific lab report in proper format

### *Staging Activity*

Read the story once through without stopping. Then, ask students to reflect on the following question with a partner for a minute: “If we wanted to do an experiment about socks, on which attributes of socks could we experiment?” Suggest that students try to list 10-15 attributes of socks, such as permeability, ability to retain warmth, stretchiness, etc.

### *Core Activity*

The core activity of this lesson is a lecture. You can engage students throughout as much as possible with Socratic-style, or cloze (fill-in-the-blank) questioning.

Define the steps of the scientific method, and the general outline of a lab report, as follows:

1. State the purpose of the experiment in the form of a question,
2. Develop a hypothesis,
3. Design an experiment to test the hypothesis,
4. Conduct the experiment, and
5. Communicate the results of the experiment to answer the initial question.

Give the following example question: “How does the color of food affect what students choose to eat for lunch?” A hypothesis for this question could be: “If mashed potatoes are dyed four different colors—red, yellow, green, and blue—then red ones will be the most popular lunch choice among students.”

Tell students that designing an experiment has the following five sub-steps: identifying variables, identifying constants, identifying the control, writing the procedure, and gathering materials. Explain that “variable” means something that changes. In an experiment, there will always be two kinds of variables—the “independent variable,” which is something that you intentionally change, and the “dependent variable,” which changes in response to whatever you did. Suggest that for the example above, the independent variable would be the color of mashed potatoes, and the dependent variable would be the student lunch choices.

Define constants and controls as follows. Constants are things that are kept the same during the experiment, so in this case, they could be the grade level of students, the use of mashed potatoes



as the dyed food, and the timing of lunch. A control provides a standard against which to judge the experimental effects, so in this case, a control would be offering undyed mashed potatoes as a lunch choice as well, to ascertain the popularity of mashed potatoes in general, regardless of color.

Remind students that procedures should always be written clearly, and with as much detail as possible without being cumbersome. Explain that the idea is that you should be able to give your list of procedures and a pile of materials to someone wholly unfamiliar with the topic you are studying and that person should be able to conduct the experiment.

When an experiment is complete, hopefully the data collected will help to answer the initial question, or purpose, of the experiment. Explain that the conclusion at the end of a lab report should do four things: 1.) answer the purpose question, 2.) say whether or not the hypothesis was correct, 3.) give the actual data to support or refute the hypothesis, and 4.) suggest where scientists could go from here in continuing to explore this question.

An example conclusion to the experiment described above could be: “The most popular choice of mashed potatoes was the yellow ones. Therefore, my hypothesis was incorrect; I thought that red would be the most popular choice. Out of the 100 student choices recorded, 65 chose yellow, 23 chose red, 4 chose blue, 1 chose green, and 7 refused to choose mashed potatoes at all. Perhaps yellow was the most commonly chosen color because it is closest to potatoes’ natural color. A follow-up study could be conducted in which students are interviewed about how they decided which potatoes, if any, to choose. Perhaps this qualitative data could provide insight into how color plays a role in food choice.”

### ***Extension***

Tell students that they will work with their partner to create a fake lab report by choosing one of the attributes of socks from the list they created earlier, and designing an experiment around it. Lab reports should include:

- Purpose
- Hypothesis
- Clear statement of variables, constants, & control
- Procedures to be followed
- Materials needed
- Data (fake), usually presented in a table or a graph
- Conclusion

The report is fake in that the lab will not actually have been done, so therefore the results of the experiment will be made up. The point of the assignment is to demonstrate understanding of the steps of experimental design, and the proper format for a lab report, rather than to actually improve our understanding of the form or function of socks. Since the experiment will not actually need to be done, encourage students to think creatively about materials, set-up, and execution of the lab—have fun with it! Lab reports should be graded more liberally if this lesson is used as an introduction to the scientific method than if it is used as a review of such.

