Experimental Design II: The Four Questions Technique

Adapted and modified from experimental design using the Four Question Strategy (Cothron, Giese, and Rezba, *Students and Research*, 2000). (Web: [http://www.kendallhunt.com](http://www.kendallhunt.com), search for “Cothron.”). You don’t necessarily have to answer the questions in the order given here!

Choose something to experiment on (e.g., batteries): ______________.

1. What do/does ___________ do? (Fill in the blank with your “something.”) Write down several verbs. Circle one that describes a behavior you would like to investigate today.

2. How could we measure or observe the ____________ of ______________ (the something)? The verb you used to answer question 1 goes in the first blank. List several ways to measure or observe the behavior.

3. What materials could we use to conduct experiments on ______________? List materials or objects in our classroom that you could use to affect the behavior of ______________.

4. How could we change our materials or our actions to affect the behavior of ______________? Pick one thing to change.

List your independent variable, dependent variable, question, and hypothesis:
- **IV**: the one thing picked in question 4
- **DV**: the thing in question 2 that you are going to observe or measure
- **Constants**: everything in question 4 that we are not changing

**Testable Question**: Any reasonable testable question that identifies what will be tested or measured, will generate quantifiable data, and has a control or comparison inherent in the question. To be safe, include the effect of the DV on the IV in the question.

**Testable Hypothesis**: Any reasonable hypothesis based on the testable question or statement of a problem that predicts an effect, or the lack of effect, of the independent variable on the dependent variable. To be safe, include the effect of the DV on the IV in the hypothesis.

Get together in your group and determine a simple procedure that you could use to test your hypothesis. Carry out the experiment, make a data table or graph (or both, if appropriate), and record your conclusions.
Conclusion Questions

1. What was the purpose of this experiment?

2. What were the major findings?

3. Was the research hypothesis supported by the data? Give evidence.

4. What possible explanations can you offer for the findings?

5. Can you suggest recommendations for further study and for improving the experiment?