Experimental Design II: The Four Questions Strategy

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.”)

Choose a topic you are interested in doing experiments on: ________________________, and then write the topic in the blanks to questions 1-4. **We will do Drops of Liquid on a Coin.**

1. What materials are readily available for conducting experiments on _______________________.
   List materials available to conduct experiments on the topic.

2. How does/do ______________________ act?
   Use verbs to describe how liquid dropped onto a coin behaves.

3. How can I CHANGE the set of ______________________ materials to affect the action?
   Choose several items from question 1 that you could change. Put each item at the head of a column. Below, list several ways you could change each item.

4. How can I MEASURE or describe the response of ______________________ to the change?
   Choose one of the “acts” responses from question 2. Write it down and underline it. Underneath, write down one or more ways you could measure the action. You may repeat this for several of the “acts.”

   Circle one of the “acts” in question 2, one of the “changes” in question 3, and one of the “measurements” in question 4. Congratulations! You have completed the outline of your experimental design!

   **Experimental Design**

   **Title:**  The effect of   _IV_ (from 3 on page 1)  on   _DV_ (from 4 on page 1).

   **Hypothesis:**  Any one of these three...
   If I  _change to make_   the  _independent variable_   then  _change predicted_.
   If the  _independent variable_   affects the  _dependent variable_   then  _change predicted_.
   If the  _IV_   is increased/decreased then the  _DV_   will increase/decrease/stay the same.

   **Independent Variable:**  The item you circled in question 3 on page 1.

   **Dependent Variable:**  The “measure” item you circled in question 4 on page 1.

   **Constants:**  Everything you wrote down in question 3 on page 1, except for the one item you circled and chose as your independent variable.
Procedures for Conducting an Experiment on:

___________________________________

Fill in the blank with your title from page 2. Refer to your independent and dependent variables. List the steps you will take to change your independent variable, and how you will measure your dependent variable.

A lengthy, complex experimental procedure is not necessarily a good one!

A simple, to-the-point experiment that provides a clear result may be better than a complex experiment that provides confusing results!