UGSRF Assignment #2: Thinking about Research Design

If this is your first opportunity to do laboratory research, you may be asked to think not only about how to do one experiment but how to plan a whole series of experiments. What leads from one experiment to another? Is there a logic in this or do you just look at your current findings and then figure out what to do next?

In this assignment, you will read, think, and discuss how a series of experiments can be structured and how our scientific understanding of a concept can advance systematically (rather than haphazardly).

You will complete four tasks for this assignment:

Step 1: Read the attached 1964 paper by John R. Platt (attached), entitled, "Strong inference: Certain systematic methods of scientific thinking may produce much more rapid progress than others."

Step 2: Open the attached Word document, save it to your computer, and answer the questions about the Platt article. Return the completed document via email by **Friday, June 19**.

Step 3: Read a recent (2007) paper by Sara M. Hiebert (attached) entitled, "The strong-inference protocol: Not just for grant proposals." This article discusses how Dr. Heibert teaches her students to use the strong inference protocol in designing and developing experiments. (Note: You can skip the section on "Classroom Implementation" but don't forget to read the Appendix that contains an example.)

Step 4: During June (**DEADLINE: June 29**), you will discuss with your fellow UGSRFs how using the strong-inference protocol (as described in Hiebert's article) could benefit your research project this summer. Specifically:

a) Post your reply to this question on the listserv: "Do you think using the strong-inference protocol, especially describing outcomes and interpretations, could benefit your project this summer? Explain your answer."

b) Respond to at least two other UGSRFs about their posting…do you agree? Could you make a suggestion to them?