

Recommendations for further study

Things that make an experiment more reliable include: having a control group, large sample size, can be repeated, and testing only one variable at a time.

In your letter to Dr. Trudeau you will need to identify the strengths and weaknesses of his experiment. You will also want to suggest a more specific experiment focusing on one of the variables from the initial experiment. You will design that experiment using the attached design matrix and attach that to your letter.

- 1) **Title of experiment** = What are we trying to figure out?
 - a. Ex: “The effect of the independent variable on the dependent variable in the organisms being tested”
- 2) **Hypothesis** = What you predict will happen during the experiment (hypotheses are predictions based upon both research and observations)
 - a. Ex: “If you do this, then this will happen.”
- 3) **Independent variable** = What you are testing
 - a. This is the only difference between your groups
 - [Note: you can only test one independent variable at a time]
 - b. Control group = doesn't get exposed to the independent variable (this is the group exposed to normal conditions)
 - c. Experimental groups that have different amounts of the independent variable
- 4) **Dependent variable** = What you are measuring
 - a. Dependent variable = DATA
- 5) **Procedures** = How will you measure your independent variable?
 - a. Describe the setup
 - b. State what you will measure and HOW you will measure it.
- 6) **Controlled factors** = things that it is important to keep the same during the experiment (**everything** except the variable being tested must be **treated equally**)

When designing an experiment use the attached design matrix as a guide to make sure you've included and you understand the major parts of a controlled experiment.

Experimental Design Matrix

Title of the experiment:			
Hypothesis:			
Independent Variable: The variable being tested			
Description of independent variable in each group	Control group		
# of repeated trials			
Dependent Variable: The thing being measured			
Procedures: (describe the set up and state what you will measure and how)			
Controlled Factors (things that will be the same for all groups)			