

The Scientific Method

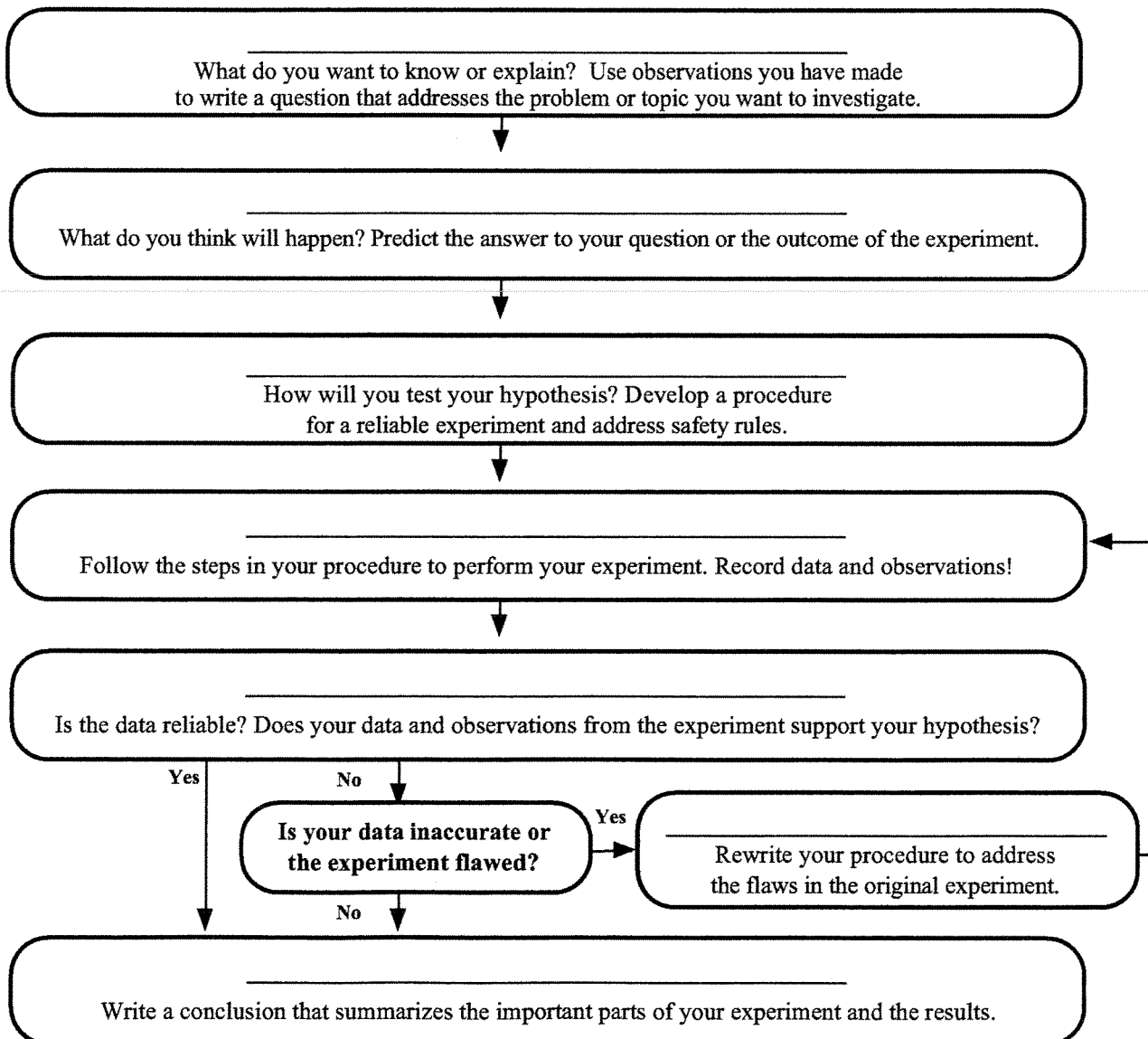
"It's how we do" – every scientist ever.

The **scientific method** is a process that scientists follow in order to answer questions about the world around us.

Big deal. WHY should I follow this so-called "process"?

- It ensures that your experiment will actually answer your question.
- It shows the world how you obtained your results.
- It allows other scientists to recreate your experiment to support/disprove your conclusions.
- It allows other scientists to build & extend on your research.

Okay, that makes sense. So HOW is it done?



COMPONENTS OF AN EXPERIMENT

VARIABLES

_____ : the variable that is manipulated by the investigator, i.e. what you change to see the effect(s) on other variables.

e.x.

_____ : The variable that changes as a result of the independent variable. It is the usually the factor being measured by the investigator.

e.x.

_____ : These are the variables that are kept constant in all treatments so that any results can be connected solely to the effects of the independent variable.

e.x.

GROUPS

Experimental Group: A.k.a. the “test group”. The group that is experiencing a change to the independent variable.

Control Group: The group where the independent variable isn’t changed (e.x. giving a group a placebo instead of actual medicine). The results of the control group are compared to the results of the experimental group to see if changing the independent variable has any actual (measurable) effect on the dependent variable.

Let’s look at **Patty Power** on the Spongebob Experiment Handout for an example of this...