

In this project you will design an observational study and an experiment to answer a research question.

Instructions: Make a poster to represent your observational study and your experiment.

Things to ponder and to represent in your poster or presentation:

1) Observational study:

- What is the research question?
- What is the population? What is the variable?
- Will you be working with categorical or quantitative data?
- How will you produce your data: survey? Observation? Other?
- If you are surveying, what question(s) will you ask in the survey? If you are observing, what are you measuring or recording?
- How will you randomly select your sample?

2) Experiment:

- What is the research question?
- What are the explanatory and response variables? Is the response variable categorical or quantitative?
- How will the response variable be measured or observed?
- What a potential confounding variable? How will you control the effect of this variable on the responses?
- How will you use random assignment?

Choose one of the research questions below or write your own.

1) Which paintball is the best one: Valken Infinity or Wrek Elite?

A paintball has an outer shell made of gelatin and it is filled with a water-based paint. A high-quality paintball is tough and durable and will not break inside the paintball gun when struck by the firing pin. But it will break when it hits its target. High-quality paintballs are also spherical without dimples or swellings. Paintballs deteriorate with age. Fresh paintballs should bounce and remain intact on the 1st or 2nd bounce when dropped from a 6-foot height.

2) Which diaper is better: Pampers Swaddlers or Huggies Snug & Dry?

What makes a good baby diaper? Absorbency, leakage control, fit, strength of the adhesive tab, environmental impact (decomposition rate), other?

- 3) Does embedded tutoring improve students' grades in a college math class?

Embedded tutoring is an intervention in which a peer tutor attends the class and provides support for students. It works best when the class is interactive as opposed to a lecture format.

- 4) Is there a halo effect in college professors' treatment of students?

The halo effect is a type of cognitive bias in which our overall impression of a person influences how we feel and think about his or her character or abilities. Essentially, your overall impression of a person ("He is nice!") impacts your evaluations of that person's specific traits ("He is also smart!"). The opposite effect is also true. Negative feelings about one characteristic lead to negative impressions of an individual's other features.