

Be A Scientist: Experimental Guidelines

Basic Guidelines:

- Must do a hands-on experiment (no surveys)
- Results must be measurable (i.e. length, weight, distance, time, temp.)
- Experiment must be feasible within time frame (2-3 class sessions)
- Experiment must utilize reasonable tools and materials (either items we already have, or items that we can easily find and that are relatively inexpensive)
- Experiment should change only one variable

Experiments with Human Participants

- Participants must do so voluntarily
- Participants must have full understanding of what will be asked of them during the experimental procedure
- Remember that participants have their own experiments to do. Therefore, no requests should require much time.
- No ingesting, tasting, or smelling substances, except those commonly available (For example: apple slices)
- Data collected from human participants must be kept private (you should NOT be able to link a specific data point with a specific person)

Experiments with Chemicals

- When working with chemicals, proper lab safety equipment must be worn at all times (e.g. safety goggles, lab coats, gloves)
- Student must include proper disposal of chemicals within their experimental design
- Whenever possible students should attempt to prevent waste and minimize the potential for accidents
- **Students are NOT allowed to work with hazardous chemicals**
 - Mentors should check Safety Data Sheet Information at <http://www.ucsds.com/> if they are unsure about the potential hazards of a chemical. ***Remember, exposures have NOT been properly assessed for children and the classroom has not been approved for use of hazardous chemicals.***

Experiments with Fire

- In rare cases, experiments involving a flame or very contained fire may be approved. In addition to approval by the teacher, CRS, and the UC Berkeley Faculty Advisor, this requires Principal approval.
- The fire alarms are very sensitive in BUSD science classrooms and even a minimal flame can set them off. Therefore, if approved, we will request that the fire alarm be turned off in that classroom & class period.
- The student must specify in their experimental design how to contain any flammable substances and the fire/flame.
- **The mentor must test the experiment on their own time before it is approved to ensure the experiment is safe and contained**
- The student and mentor must also be aware of available fire safety measures (e.g. fire extinguisher and the appropriate control for the type of fire/flame that is utilized)
- The student and mentor must wear appropriate protective equipment (e.g. the blue flame-resistant lab coat and goggles)
- The experiment should be performed in an area that is removed from other students to minimize risk
- The mentor must oversee the entire experiment and so might need to arrange for another mentor to help their other students during this time

Experiments with Animals

- **There is NO experimentation with animals in the classroom**

Experiments with Plants

- Due to time and logistical constraints, students should not do plant experiments that look at growth of a plant (i.e. growing a seedling)
- Acceptable plant experiments would include investigations on seed germination (i.e. how different light/temperature/etc. conditions affect germination) or on an established plant (i.e. looking at leaf transpiration).

Experiments with Food

- Candy is not allowed for eating. Candy should only be used if the student is actually investigating a particular property of the candy (i.e. melting point)
- Investigations on the connection between smell and taste are acceptable, but careful attention must be paid to the foods selected for peer subjects to taste:
 - No artificial flavors (hard to distinguish even without nose plug and blindfold)
 - Texture/shape/feel of the various food items must be similar so that foods cannot be distinguished solely based on how they feel
 - Foods must be safe and appropriate (i.e. no nuts, no hot sauce, no chili peppers, etc.)