

## **Selected Laboratory Experiments for Elementary Education Major or Other Non Biology Majors**

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Selected laboratory exercises were presented from a course specifically designed for Elementary Education majors. Many students who have chosen primary school teaching as a career goal lack confidence in science. The primary focus of the laboratories is to provide students with the opportunity to increase their science process skills. Providing a forum for the exchange of ideas is a common thread running throughout the course.

One of the labs we do is an experiment which tests what effect a certain factor has on oral bacteria. The primary focus of this exercise is experimental design. Students are provided with sterile Luria broth agar plates and sterile Q-tips. An assortment of oral hygiene products such as different types of mouthwash, sugar and sugarless gum, toothpaste and dental floss are provided. Working in groups of four, students generate their own question and design their experiment. As they work out the details of this very simple project, they have to make many decisions. Questions such as, how do we standardize the sampling, how often do we sample, and how do we assess our results, are just a few examples.

Once each group has designed their experiment, they present their project proposal to the rest of the lab group. Based upon feedback from the class, the individual groups then revise their designs and set up their experiments. After completing their project each group gives a brief presentation to the lab. Included in this summary is a section on how they would modify their experimental design and what would be their next question.

Other exercises, designed to foster creative thinking and integrate science into other areas, include designing a board game of the human circulatory system, and writing imaginary interviews between a prokaryote and a eukaryote cell. Additional information is available upon request.