

Biology Non-Traditional Instruction (Snow Day) Lessons: Experiment Scenarios

Instructions: On your own paper, write down the following:

- A) independent variable** (hint..what the researcher changes on purpose)
- B) dependent variable** (hint...gets measured, changes because of independent variable)
- C) constants** (hint...things kept the same to make sure there is only one thing being tested)
- D) control group** (hint...group that is used for comparison)
- E) experimental group** (hint...group the independent variable is applied to)

DAY 6**Scenario 1**

Chris wanted to test the effect of diet pills on how tall the tomato plants in his garden would grow. He took two pots, filled them with dirt from the same bag, and planted four tomato plants in each. He watered one planter with tap water, and he watered the other planter with tap water mixed with dissolved diet pills. The plants were in the same location to ensure they got the same amount of sunlight, and the water was measured so that each pot received the same amount of water. He measured their height at the end of each week for eight weeks, and averaged the height of the four plants in each pot. He then graphed the results to show how the diet pills affected the height of the plants.

Scenario 2

A study was created to test the effects of jazz on people's sleep patterns. The hypothesis of the experiment was that if people listened to jazz music as they fall asleep, they will sleep for longer periods of time. For the experiment, 2 groups of people were created. One group was placed in a quiet room where they went to sleep and they were timed on how long they slept. The other group was placed in a room where jazz music played softly as they began to sleep and played throughout the night. As each group awoke, their sleep times were monitored.

DAY 7**Scenario 3**

Scientists observed that white mice that were fed seeds appeared to grow more than mice fed the regular diet of leafy green and yellow vegetables. The scientists hypothesized that the protein in the seed was responsible for the growth. They designed an experiment to test this hypothesis. They divided 200 mice of the same age, size, health, and sex into two groups of 100 mice each. The mice were kept under identical conditions for 90 days. One group was given the normal low protein diet. The other group was given new high protein diet. The mass of each mouse was recorded weekly for 90 days.

Scenario 4

Sara and Michael tested electromagnets to see if the size of wire they used would make the magnets stronger. They selected 6 steel nails of the same size to make the magnets. Using 6 different sizes of insulated wire, they put 50 turns around each nail. Then each nail was hooked to 2 D cell batteries to make electromagnets. The strength of each magnet was tested by counting the number of paper clips which could be picked up by the electromagnet.

DAY 8

Scenario 5

Brittany wanted to find out which wheels were best for her skateboard. She purchased 4 sets of new wheels of different brands. She and a friend set up a slalom on her driveway. Brittany rode through the course 5 times on each set of wheels. Her friend timed her with a stopwatch and recorded the times. They then averaged the times for each wheel.

Scenario 6

Suzie Q wants to know the effect of different colors of light on the growth of plants. She believes that plants can survive best in white light. She buys 5 ferns of the same species, which are all approximately the same age and height. She places one in white light, one in blue light, one in green light, one in red light and one in the closet. All of the ferns are planted in Miracle-Grow and given 20 mL of water once a day for 2 weeks. After the two weeks, Suzie observes the plants and makes measurements.

DAY 9

Scenario 7

An experiment was designed to investigate the effect of Kool-Aid on the behavior of 5-year-old children. Two populations of 5-year-old children were selected randomly. Both populations of children were placed in the same room (one group at a time) and asked to remain seated while they watched the same 20-minute video on airplanes. Researchers monitored the children's behavior through 2-way mirrors. The children in population one each drank 8 ounces of cherry Kool-Aid 30 minutes prior to having their behavior monitored. The children in population two were given nothing to drink prior to the experiment.

Scenario 8

The Byrnes High School AP Biology class conducted an experiment to determine the effects of Wal-Mart brand plant food on grass growth. Two plots of grass located in the same yard were used. Both plots received 10 hours of sunlight per day, one inch of water per week, and were maintained at 28 C for a period of 30 days. Once every seven days, plot A received 3 grams of a Wal-Mart brand plant food dissolved in that day's water supply. Plot B did not receive any plant food throughout the experiment.

DAY 10

Scenario 9

To determine the effect sewage spillage in the Reedy River had on local fish populations, the Reedy River Environmental Coalition counted the number of dead fish found downstream of the spillage each day for ten days. They also counted the number of dead fish found upstream from the spillage each day for ten days. It is assumed that fish populations in both areas live in water of the same temperature and pH, and that they receive the same amount of pesticide runoff and industrial waste. It is also assumed that the sewage always ran downstream from the spillage since the current is so strong in that direction

Scenario 10

Betty Sue had a new pair of shoes. Betty Sue always seemed to ruin her shoes within two months. Betty Sue had heard of a new product called Scuff-B-Gone which was supposed to keep your shoes looking brand new for up to 6 months. Betty Sue decided to apply the Scuff-B-Gone to only the left shoe of her new shoes. She wore her new pair of shoes for two months. At the end of the two months, she compared the two shoes to see if the left shoe with Scuff-B-Gone looked any better than the right shoe without Scuff-B-Gone.