Biology

MILK KALEIDOSCOPE

Objectives:

This lesson can be adapted to any grade level. The main objective is for student to understand why we use dish washing liquid to wash our soiled eating utensils.

Materials Needed:

1. Container with flat bottom (baking sheet).
2. Milk.
3. Food coloring.
4. Dish washing detergent.

(Note:a plastic petri dish may be substituted for the baking sheet).

Strategy:

1. Pour the milk into the container until the bottom is completely covered.
2. Observe.
3. Sprinkle a drop of each food color on the milk.
4. Observe.
5. Add a few drops of detergent in the middle of the largest blob of color and watch what happens.

Explanation:

Milk contains drops of fat, which do not mix with the water-soluble food coloring. The Cohesive force between milk molecules allow the food coloring to hold its dropped shape. Whenever the dish washing liquid touches the milk it breaks up the drops of fat which the spread out, allowing the food coloring and milk to mix.

COOKIE CELL

Objectives:

To inform students about cell structures and functions and to let them create their own cookie cell.

Materials Needed:

1. Large sugar cookies (one per student)
2. Cake decorating frosting (at least 4 different colors)
3. Cake decorating candies (at least 3 different kinds)

Activity:

Review plant and animal cells, organelles, and organelle functions with students. Explain to students that they will be making their own “cell” cookie. Each student has to choose 6 organelles to create on his/her cookie using the frosting and/or decorations provided.

Examples: yellow frosting can be added to the top of the cell cookie to represent the cytoplasm of the cell. The outside of the cookie can be considered the cell membrane. A thin line of green frosting applied at the rim of the cookie in a square fashion can represent the cell wall of a plant cell. A large circle of colored frosting can represent the nucleus. Small round candies can be considered the ribosomes. Students can then eat their cell cookies!

Nature scavenger hunt

My activity is a nature scavenger hunt. Weather permitting it will be in the botanic garden. My goals are to have the children identify some native Virginia species of plants and some animals. I will give each child a hand-out of certain things I want them to find, and they will then be given time to look around and find them. I'll put them in groups of 3 or 4 so as not to overwhelm them. A prize is given to any group who finds all of the items on my scavenger hunt.

Chemistry

We are doing crystal formation on a small piece of paper. For this we need the following

Epsom salt (1 packet)
Small bowls
Sponge
Black construction paper
Card stock (approximately 8 cm by 8 cm)
25 pairs of scissors
Plastic cups (8-10 oz)
Corn Starch (for a different activity I have mentioned below)
Lot of water

This is what the kids will be doing:

* They'll first make a heart or star stencil with the card stock
* They'll place the stencil on black paper
* They'll use a sponge to dab solution (Epsom salt solution that we will have prepared) on the black paper through the stencil
* Now we will have to wait around 15 minutes for the water to evaporate and crystals to form

In this 15 minutes we will give them cornstarch and water mixture to play with.

Egg Drop Experiment

Description of Activity:
For the egg drop booth, the 25 kids will be divided into the 8 groups (7 groups of 3 kids and 1 group of 4 kids). Each group will be given 8 pieces of plain paper, 50 straws, 2 meters of tape, and 1 egg. The kids are supposed to construct a contraption that would prevent the egg from breaking as the height from which it is dropped increases by 5 to 10 feet each time. The egg must be able to be removed from the contraption for inspection. The testing will be done in stages. Those groups whose egg survives the 1st height will continue onto the next height and so on until either only 1 group remains or we hit the greatest height. The winner will be the group whose egg is not broken when dropped from the greatest height. The groups will have 20 minutes of building time and 5 minutes for testing.

List of Materials:
• 320 sheets of plain paper
• 2000 straws (bendable or non-bendable)
• 40 eggs (maybe get a couple more, just in case but I don’t know, I'm going to remind them to be careful with it)
• 80 m tape

Environmental Club

This is the list of science day supplies:

125 pipe cleaners
125 sandwich bags
2 rolls masking tape
a few sharpies
a large bag of birdseed
10 jumbo containers of peanut butter
50 plastic knives

Quiz Show

We have a power point setup with the prepared questions/answers similar to the overall jeopardy setup. For each group of 25 students, we will make five groups competing against each other and they will be using the Eggspert answering system to answer their questions. We will record the running score on the board.

Earthquake Tables

See website

Education booth

See website