Introduction to Lab Science - Grades K-2

Nebraska Science Standards
2.1.1.a Ask questions that relate to a science topic
2.1.1.d Describe objects, organisms, or events using pictures, words, and numbers
2.1.1.e Collect and record observations
2.1.1.f Use drawings and words to describe and share observations with others

Objective: The goal of these activities is to familiarize the students with basic laboratory equipment and safety and scientific terminology.

Activity Workshop

Materials (provided by CSM) for students:
** All students will receive a pair of gloves and goggles

- Temperature Activity
  - (3) Beakers: 500mL
  - (3-6) Thermometers
  - Food coloring: red, green, and blue
  - Paper towels
- Microscopes Activity
  - (3, or multiple sets of 3 depending on class size) Microscopes
  - A set of slides for each microscope: peacock feather, bumblebee leg, human blood
- Weight Activity
  - Scales
  - Jelly beans
  - Small paper cups

Discussion:

- Why is it important to study science?
  - Technology
    - Make advances in technology like computers, phones, ipods, etc
  - Astronomy
    - Understand about the moon, planets, and stars
  - Medicine
    - To find cures for diseases, to make us feel better when we are sick
- What kind of jobs can scientists have?
  - Doctor or nurse
  - Astrologist
  - Archaeologist

    - Meteorologist
- What do scientist wear? -- Let them draw on their worksheet to match what you talk about
    - Lab coats
    - Goggles
    - Gloves
    - Masks
- What kind of tools do scientist use? And what are they used for?
    - Microscopes: seeing really small things that we cannot see with just our eyes like cells and germs
    - Telescopes: seeing things that are really far away like planets and stars
    - Thermometers: measuring the temperature
    - Scales: measuring the weight of something
    - etc

Activity Description:

Students will be given a worksheet (Click Here or above Activity Workshop) to complete and have the opportunity to rotate between three stations. The microscope station allows students to observe samples of organisms as well as human blood. The temperature station provides an opportunity for students to use thermometers. Students will also learn about basic measuring using pipettes.

Microscopes:

Set up: The goal of the microscope activity is to have students hypothesize what they are looking at under each microscope. They will know that they will be looking at peacock feathers, bumblebee legs, and human blood. Set up each microscope with a slide. Turn the slide face down so the students cannot read the label. The will oftentimes cheat! :)

Things to remember: Before allowing students to use the microscopes, remind them that they only need their eyes to look- they should not be touching the microscope at any point in the activity. Do not let them slides the microscopes across the table.

Procedure:

1. Have them take turns looking under each microscope.
2. Ask them what they think is under each microscope.
3. Ask them what their favorite one is.
4. Have them draw and match on their worksheet

** A common question from students is, how do the “things” get inside the microscope. If this question is asked explain to them that there are slides which help us to view something under the microscope. Remind them that microscopes are used to view really small things. Scientists take small pieces from really big things and put them into the slides. For example, to view the peacock feather a

scientist took a small piece of the feather from a big peacock. The little bumblebee leg came from a bigger bumblebee, and the small drop of human blood came from a human.

Temperature:

Set up: Fill the 3 beakers with different temperatures of water: hot/warm, ice cold, and room temperature. Add food coloring to each beaker. Avoid coloring the hot/warm water red and the ice cold water blue. Students should rely on the reading of the thermometer rather than the generalizations of red=hot and blue=cold. Set thermometers on the table with a paper towel, not in the beakers.

Procedure:

1. Let each student have his/her own thermometer for the activity- they may need to share.
2. Have them put the thermometer in the first beaker and encourage them to notice the red line moving up or down.
3. Ask them the temperature of the water.
4. Repeat for the remaining beakers.
5. Once the procedure is finished, have the students place the thermometers on the paper towel. This will allow the thermometers reset to room temperature.
6. Have the students complete their worksheet

Weight:

Set up: This activity involves weighing jelly beans and making a chart

Procedure:

1. Explain how to use the scales
    - Explain and demonstrate how a cup can be "tared" out and the importance of doing this so they get an accurate reading
2. Allow the students to pick out 3 colors of jelly beans --they may need to update the worksheet colors depending on seasonal availability
3. Have them place 10 jelly beans of 1 color into the cup and record the weight on their worksheet
4. Repeat this step with the next color using 15 jelly beans
5. Repeat this step again with the last color using 20 jelly beans
6. Once they have gathered all this data they will record their observations on the worksheet's chart. EXPLAIN to them how to do this as it is likely they will not know on their own