Bay Area Scientists in Schools Presentation Plan

Lesson Name What's In A Color?
Presenter(s) Diana Guo, Yushan Kim, Amit Pathak, Joanna Rys, Augusto Tentori, Theresa Ulrich, Vai Umesh, Sophie Wong
Grade Level K
Standards Connection(s) Physical science: chromatography-color pigment separation. Colors are composed of primary colors.

Abstract: We will explore how all colors are composed of the primary colors: red, blue, and yellow. Students will use their powers of observation to draw some conclusions about why some colors are not what they seem.

Introduction and Demonstration: We will go over the primary colors and what colors they can combine to form. We will demonstrate the various color combinations with paint and a poster board.

Activity and Discussion: The class will be broken up into 4-5 groups. Each group will have water soluble markers, coffee filters, and cups. Students will predict which primary colors are in composite colors (e.g. black, purple, green, orange) and then test their prediction by coloring the filters. Each student will dip the filters in a cup filled with a half inch of water and watch the colors separate. When the filters dry, students can use them to construct a masterpiece to bring home.

Vocabulary/Definitions:
3 – 6 important (new) words

Primary colors: sets of colors that can be combined to make a useful range of colors
Chromatography: the process of separating colors
Prediction: a statement about the way things will happen in the future

Materials:
What you'll bring with you

Coffee filters – for color separation experiment
Water soluble markers – for coloring
Pipe cleaners – for art project in the end
Clear plastic cups – for dipping filters into
Poster board – for basic concept demonstration at the beginning

Classroom Set-up:
Student grouping, Power/Water, A/V, Light/Dark, set-up/clean-up time needed

An easel should be set up for demonstration.
Put students in 4-5 groups after the introduction and demonstration
Each cup should be filled with 0.5 inches of water.

Classroom Visit

1. Personal Introduction: **5 Minutes**

We study bioengineering at UC Berkeley. Bioengineering is where biology (study of life) meets engineering (using math and science to solve problems).

Topic Introduction: **5 Minutes**

Introduce the term primary colors: who knows which colors are called primary colors? Write it on the board.

Next, use poster board and paint to demonstrate what colors the primary colors can combine to make.

Introduce the term prediction and ask for students' predictions of color combinations.

2. Learning Experience(s): **35 Minutes**

Part 1:

In small groups, show students the colored markers. Ask them to predict what colors make up purple, black, orange, green

Part 2:

Next, give each student a marker and ask them to color on the filter paper. Fold the filter paper in half and then in half again and place it into the cup (filled with half inch water). Watch the colors separate and move up the filter. Ask students what colors they observe. Talk about why they see the different colors.

Part 3: Unfold the filter paper and place it on paper towels to dry. Once the filter is dry, give each student a pipe cleaner to make a fun craft project.

3. Wrap-up: Sharing Experiences and Building Connections **5 Minutes**

Review vocabulary words and go over the important questions.

Ask students: what happened? What did you see? How many primary colors make up green? (black? orange? etc.)

Why are there more of some colors than others? (different shades of color).

4. Close: **5 Minutes**

If time permits, include a demonstration of color diffusion on filter paper.

Mark one side of the filter paper with a primary color and mark the opposite side with another primary color.

Dip both edges in water.

Watch as the colors move towards each other and mix in the middle.

Ask questions: did the two primary colors combine to make the color you predicted?

TOTAL 55 Minutes

CRS
COMMUNITY RESOURCES FOR SCIENCE
practical support for great science teaching

1611 San Pablo Avenue, Suite 10 B
Berkeley, CA 94702
(510) 527-5212 | www.crscience.org

Follow-up – After Presentation

- candy separation: http://chemistry.about.com/od/chemistryexperiments/ht/candychroma.htm
- with leaves: http://chemistry.about.com/cs/howtos/ht/paperchroma.htm
- t-shirt design: http://www.life.illinois.edu/boast1/sciencelessons/chromatography.htm
- See your own rainbow – cut a slit in a piece of paper and look to see a rainbow
- Where else have you seen rainbows? (soap bubbles..)
- Spinning Color Wheels (see below)

Reading Connections:

- Take a Walk on a Rainbow: A First Look at Colors by Miriam Moss
http://www.goodreads.com/book/show/1590635.Take_a_Walk_on_a_Rainbow
- Color Dance by Ann Jonas
http://www.harpercollins.com/books/Color-Dance-Ann-Jonas/?isbn=9780688059903

Spinning Color Wheels

Materials:

- Pushpin
- Pencil eraser
- ruler
- scissors
- markers or crayons in all the ROY G BV colors: red, orange, yellow, green, blue, violet
- uncoated white paper plate (dessert or lunch size)

Activity Directions:

1. Trim the edge of the plate off to create a flat, white circle.
2. Divide the circle into 6 equal sections, using the ruler and a pencil.
3. Color each section a different ROY G BV color.
4. Pull the eraser out of the top of the pencil.
5. Color side up, stick the pushpin through the circle's center and into the eraser.
6. Holding the handle of the pushpin, spin the circle on a hard surface like a top.
7. What color(s) do you see? Does it matter which direction, or how fast, you spin the wheel? Does it matter what colors are next to each other?
8. Have you ever held a prism or crystal up to the light to create a rainbow? In this activity, you just reversed the process. When you combine all the colors, the appear white, or a yellow-ish-white like many light bulbs.