RAFT IDEAS

Topics: Color, Perception, Vision

Materials List

- ✓ Paint chip samples (2 samples each of several shades of the same color)
- ✓ Box or other barrier

This activity can be used to teach:

- Light and Vision (CA Science Standards: Grade 7, 6.e and 6.b)
- Light and Color (CA Science Standards: Grade 3, 2.c, 2.d)
- Color as an Art Element and Principles of Design (CA Visual Arts Standards, Artistic Perception, Grades K-5, 1.0)

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No, The Other Blue One

The Paint Chip Challenge

Ever had the blues? What shade of blue was it? All blues are not created equal. Explore the world of color, with its many shades, in this simple and fun exercise.

To Do and Notice

1. In an area hidden by the barrier, choose at least 5 paint chips and place them in any order of choice. (Note: Choose more paint chips to make the exercise more challenging. Use fewer paint chips to make the exercise easier for younger students.)
2. Use only words to try to describe the paint chip order to another student or students so that other students can recreate the order.
3. When finished, remove the barrier and see the results.
4. Discuss the exercise with other students. Was it easier to describe the colors or try to choose? Was the exercise easier for some students than others?

The Content Behind the Activity

As any designer, physicist, or biologist will tell you, color is not as straightforward as we learned in pre-school. Subtle differences in color attributes result in a huge range of potential perceptions. Every color has 3 distinct attributes:

- **Hue** relates to light wavelengths (frequencies). "Blue" or "green" are examples of hues. Combinations of wavelengths yield a large number of hue possibilities.
- **Saturation:** Whole paint chip samples illustrate the attribute of saturation. Each paint chip shows sample colors of the same hue with varying saturations. The lighter shade on the paint chip is less saturated, or contains less pigment, than the darker, or "deeper", shade.
- **Brightness** involves ambient light and surface reflectivity.

Objects reflect and absorb specific wavelengths of light due to their composition. We see an object when reflected or emitted light enters the eye. The retina at the back of the eye houses millions of light sensitive cells: rods (120 million) and cones (6 to 7 million). Rods sense contrast in black and white, while cones sense color. The cones have 3 dominant sensitivities: red, blue, and green (primary colors of light). Conventional television and computer monitors combine the primary colors with varying intensities to produce over 16 million colors!

For students creating or analyzing works of art, color is one of the 6 elements of art and principles of design: color, line, shape, form, texture, and space.

Taking it Further

Use a magnifier to examine television monitors and printed material to discover how mixtures of light or pigments can produce a vast array of colors.

Web Resources (Visit www.raft.net/more for how-to videos and more ideas!)
More information on color and vision can be found at: http://hyperphysics.phy-astr.gsu.edu/hbase/vision/visioncon.html#c1

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Instructions by RAFT Education Department