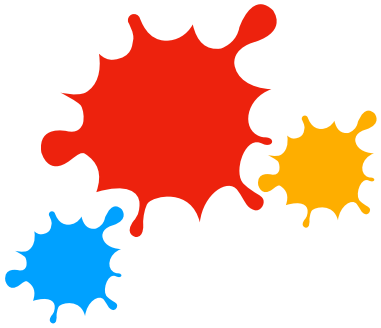
Somewhere Over the Rainbow

Color refers to the narrow range of light wavelength that humans can see. Using paint or dye, colors can mix together to create other colors. Let's explore all of the colors we can create!

Materials:



- 3 pitchers
- 3 squeeze bottles, alternatively: 3 pipettes
- Ice cube trays
- Extra bucket/tub for waste water
- Food coloring - red, yellow, blue

Preparation:

- Set out towel/tablecloth to absorb any spills. Create pitchers of colored water (one red, one blue, one yellow) to use as reserve. Fill each squeeze bottle with one color of water from the reserve. Set out ice cube trays for participants.

Try This:

1. Mix different colors of water in the ice cube tray, adding one color at a time.
2. Observe how the water changes when different colors are mixed together.
3. Challenge yourself to make a gradient of one color or a rainbow.
4. When the tray is full, dump the water into a dump tub or bucket.

Want to Know More?

The color of an object is determined by the wavelength of light that reflects back to our eyes. Red, yellow, and blue are called the primary colors because they can be mixed together in different combinations to make all other colors. Most simply, mixing two primary colors will make the secondary colors - green, orange, and purple. When pigment or dye mixes it is called subtractive color mixing. This means that colors get darker as they are mixed together, because fewer wavelengths are left to reflect back to your eye. However, light acts in the opposite way when mixed. When light mixes we call it additive color mixing because the color of light gets paler. The white light we see from light bulbs, is a mixture of all of the colors of the rainbow.

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Facilitator Guide

Learning Objectives:

- Colors can be mixed together to make new colors.
- The primary colors can be mixed in different combinations to make the secondary colors.
- The hue of a resulting color will be affected by the amounts of each color used to make it.

Leading Questions:

- How can you mix the water to make purple water?
- How can you mix the water to make green water?
- How can you mix the water to make orange water?
- Can you make any other colors by mixing two or more colors?
- Can you make a gradient of one color?
- How do you make a color lighter or darker?

Hospital Accommodations:

- This activity works best in a common area or outdoor space.
- Add in a squeeze bottle of clear water to see how it affects the color.

Key Words:

Color - refers to the property of objects which emit or reflect certain wavelengths of light, as sensed by the eye.

Color Theory - the study of color mixing and the effects of different color combinations.

Primary Colors - Red, yellow, and blue. These colors can be mixed to make all other colors of pigment.

Secondary Colors - Green, purple, and orange. These colors are created by mixing two primary colors.

Tertiary Colors - Colors created by mixing one primary color with one secondary color.

Gradient - a color progression that slowly transitions from one color to another or from a dark shade of a color to a lighter shade of the color.

Photoreceptor - a specialized cell found in the eye which translates wavelengths of light to electrical signals sent to the brain. Cone-shaped photoreceptors help distinguish different colors and rod-shaped photoreceptors help to see in dim light.