Making Paint

This craft explores the properties of a colloid as you make your own paint. You will learn how paint is made, and then you will be making your own paint and using this paint to create a picture. You are also encouraged to experiment with mixing the different pigments to explore primary and secondary colors.

While today most artists buy their own paint, at one time painters had to make their own paint. There was no paint for sale. Today, some painters are faithful to this tradition. By making their own paint, artists can produce the exact colors they want, and the consistency of paint they want -- thick or thin.

Paint is a special kind of substance. Paint is special because it is made of tiny particles of color which float in a liquid instead of dissolving in it. What happens when you take sugar (or salt) and mix it with water? (Try this!) Do you see any of the sugar or salt floating around? Scientists say that sugar and salt are soluble in water since they completely dissolve. The dissolved mixture is called a solution.

Some substances are different. For example, take a look at a bottle of Italian Salad Dressing. You will see some seasonings and other particles floating around. They don’t dissolve. Instead, each of these particles is suspended in the oil and vinegar but still visible. This is called a suspension.
One special kind of suspension is called an *emulsion*. An emulsion happens when a watery liquid is mixed with an oily, fatty, waxy or resinous liquid in such a way that the oily liquid is suspended in tiny droplets in the watery liquid. Milk is an example of an emulsion. In whole milk, butterfat is suspended in the watery “skim milk” liquid in microscopic droplets.

Paint is a special kind of emulsion called a *colloid*. Colored microscopic particles are suspended in an oily liquid (*emulsifier*) such as oil, liquid egg yolk, or even glue. When emulsions are spread out in a flat thin layer, like paint on a surface, the oily, sticky emulsifier is able to harden. Since the particles suspended in the paint (*pigment*) are colored, the dried colloid is colorful.

Back in the early 1400’s most painters used paint made by grinding up bits of earth and minerals and mixing it with egg yolk and water to make a paste. This paint was a colloid because bits of color or pigment were suspended in egg yolk, the emulsifier, which was suspended in water. This type of paint was called egg tempera.

Leonardo Da Vinci was one of the first painters to make oil paints. He made them by mixing colored powders into linseed oil and then mixing the linseed oil with water. Oil paint is a colloid because tiny bits of pigment are suspended in the oil which is then suspended in the water. Acrylic paints are also a colloid. In acrylic paints, pigment is suspended in a liquid plastic called acrylic, the emulsifier, which is then suspended in water.
Part A: Let’s Make Paint!

To make your own paint, get a partner and gather the following supplies:

**Standard Equipment needed**

1. paintbrushes 2. 1 popsicle stick
3. paint container 4. paper or object to paint
5. hammer 6. small dixie cups
7. 1 tablespoon white glue 8. 2 freezer style resealable baggies
9. teaspoon 10. paper towels
11. large stick colored chalk

**Making Paint:**

1. Place one ziploc bag inside the other

2. Place 1 large stick of colored chalk into the inner baggie and close both bags.

3. Using the hammer, break the chalk into a fine powder. You want to make the powder as smooth as possible. It will be harder to break up the small chunks once you have taken the chalk out of the baggie. Your paint will end up lumpy if you do not break up the chalk fine enough.

4. Pour the powder into a clean paint container -- if desired mix your powder with some of another color to experiment with the colors you can make.

5. Add 1 teaspoon of water to the container
6. Using a popsicle stick, mix the chalk powder and the water until you have a fine paste. The smoother the paste, the smoother your paint will be.

7. Add 1 tablespoon of white glue to the paint container

8. Add water slowly until you have paint the consistency you desire. It will probably take about 3 tablespoons.

Discussion:

Why is the paint you made a colloid?

What material is suspended in the water?

What colors were you able to make by mixing pigments?

Part B: Let’s Paint!

The fun continues. Use your imagination and the paint you made and that made by other members of the group to make your own masterpiece. Everyone should grab a brush and start creating!