

Prolific pigment

Create your own unique color!

Summary:

Throughout history, people have used pigment to express themselves. How do you make a pigment and what could you use it for? What kind of paint can you create using pigments found at home?

Guiding Questions:

What are pigments?

Where do pigments come from?

What could you use pigments for?

Experience Goals:

- Explore how pigments are made and used.
- Make your own pigment and turn it into paint.

Supplies:

- Pigment Info Sheet
- Fresh or Freeze-dried Blueberries (pigment material)
- Water (binding material)
- Coloring sheet (page 5)
- Paintbrush and paint cup
- Mortar and Pestle (or another grinding tool, like a bowl and large spoon)
- A space you can get messy in!

Steps:

1. Explore Pigments
 - a. Explore the Pigment Info Sheet to learn about pigment and how it is used.
 - b. Think about what could create pigment in your home. Is there anything in your kitchen? How about colorful plants outside?
 - c. We will use blueberries to make our color! You can find the recipe in Step 3. What other colors could you create? What would you paint with them?
2. Make Your Pigment
 - a. Gather your pigment material. Usually a pigment used in painting will be powdered, but can also be in juice form. Crushed up freeze dried fruits like blueberries make for an excellent pigment powder!
 - b. Grind or mash up your pigment material. If using fresh blueberries, mash them then strain out the juice using a kitchen strainer. With frozen or freeze dried blueberries, use a mortar and pestle (or similar items like a bowl and large spoon) to grind them into a fine powder.
3. Create Your own Paint!
 - a. Different kinds of paints have different ingredients, though most follow a similar pattern. All paints have a pigment for the color, and a binding material (or binder) to help the color to stick onto the paper.
 - b. Get a small bowl of water to use as a binding material.
 - c. Add your pigment to your binding material in a 1:1 ratio. For example, 1 tablespoon of crushed blueberries or blueberry juice to 1 tablespoon of water.

Steps: continued

- d. Mix your pigment and binding material together until your pigment is completely dissolved.
- e. Try out your paint! Paint the Blue Morpho butterfly picture on page 4, or let your own inspiration take hold and paint whatever you dream up!

Extensions:

Make other colors! Can you find things in your home to create other colors? Look for things you can grind up, or have an adult help to find common powders in the kitchen (turmeric powder, paprika, cinnamon, coffee, or cocoa powder can also work).

With adult supervision, common kitchen items like onion peels and spinach can be boiled to extract their pigments. Use your new paints on coloring sheets you have at home.

What other kinds of paints could you make? Try different binding materials- for example, use a bit of linseed oil to make an oil paint or egg yolks to make a tempera paint. If you use water as a binding material, adding gum arabic or a drop of honey to the water might help the paint stick better and last longer.

Get creative! Be inspired by the everyday objects around you and their variety of colorful pigments. Create a multicolored painting with various types of pigment.

Have a pigment art show. Display your work in person or online, and invite family and friends to view it. Explain to them how you created your paint with pigment.

Pigment

What is pigment?

Pigment is a material that makes color. They can be made out of natural substances (flowers and minerals) or created by chemicals.

How is pigment used?

Pigments are all around you! People use pigment to create colorful paint. We also use it to color food, to dye fabrics, and to make cosmetics. What colors do you see around you that are made from pigment?

Can you find pigment in nature?

Yes! Green plants get their color from a pigment called chlorophyll, which also allows plants to photosynthesize. Carotenoids are another pigment that gives carrots and pumpkins their orange color. These are just a few examples of the pigments found in nature!

Why is blue pigment special?

Blue pigment is hard to create!

There is not much blue pigment in nature. Robin eggs are one of the few natural items with blue pigment. Other animals, like the Morpho Butterfly, appear blue because light bounces off tiny structures in their wings in a way where only the blue light hits our eyes. If you move the wing around, it will shift colors!

Blue pigment is difficult to make, but people have been doing it for 5,000 years! Egyptian blue was created by heating up blue minerals with limestone and sand. Field Museum researchers made important discoveries in how Maya blue was created - by heating the dye from the indigo plant and a special type of clay. Learn more in our Maya Blue and You activity!

Paint this blue butterfly!

Now that you've created your paint, try using it to color the picture below.



Blue Morpho Butterfly
(*Morpho anaxibia*)