

Recycle! Make Your Own Paper

Being an artist isn't easy, especially an artist who uses only one medium. Your medium is paper. Paper is manufactured especially for you from a select group of trees. From the special paper, you have constructed colossal collages, ominous origami, and stupendous sculptures that are famous the world over.

Lately, your work has been boring and uninspired, and people are beginning to call you the Tree Taker instead of an artistic genius. To get back in their good graces, you need something different—something that will really WOW them.

Suddenly, you get an idea. Why not create handmade paper from used materials? By collecting old fibers, used paper, and plants of various colors, you can mix materials together to create truly unique sheets of paper.

Imagine the colors! Imagine the textures! Imagine all the trees that will be spared! You will go from being the Tree Taker to papermaker extraordinaire!

MATERIALS

- embroidery hoop 20–26 cm in diameter
- knee-high nylon stocking; no runs
- duct tape
- scissors
- 5 mL of cornstarch
- 500 mL cup
- scrap paper
- water
- roasting pan at least 10 cm deep
- long-handled spoon
- cotton balls
- 3–4 towels
- 3–4 sponges

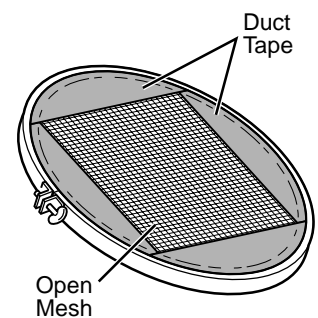


Objective

Recycle old paper to make new paper.

Tear It Up!

1. Separate the inner and outer parts of the embroidery hoop.
2. Put the inner hoop into the stocking. Avoid ripping the stocking!
3. When the hoop is completely covered, replace the outer hoop, and tighten the screw so that it fits snugly.
4. Place four pieces of duct tape along the edges of the hoop so that the center forms a rectangle, as shown. Congratulations! You have constructed a *papermaker*.
5. Add 5 mL of cornstarch to a 500 mL cup. Adding the cornstarch to the paper will prevent ink from bleeding. Shred paper into small pieces, and tightly pack it to fill the cup.
6. At the slurry station, carefully add 1 L of water to the blender. Add half of the contents of the cup to the blender, and securely place the lid on the blender. Your teacher will blend the mixture until it forms a smooth pulp called slurry. Carefully pour the pulp into a pan.
7. Repeat step 6 using the remainder of the cup's contents.
8. At the decoration station, choose various items to decorate your paper. Add them to your slurry, and blend the mixture with a spoon.



Recycle! Make Your Own Paper, continued

SAFETY ALERT!

Immediately clean up spilled water. Water on a floor is hazardous.

9. Separate the fibers of several cotton balls, and add them to the slurry to strengthen the paper. Stir the fibers into the slurry with a spoon until they are evenly distributed.
10. Use tape to label a towel with your name. Place the unfolded towel beside the pan. Hold the papermaker tape-side up. Scoop the papermaker into the slurry, and let it rest for a few minutes on the bottom of the pan. Fibers will settle on top of the papermaker.
11. Without tilting the papermaker, slowly lift it out of the pan. Let the water drain into the pan.
12. When the papermaker stops dripping, carefully flip it onto the towel so that the new paper lies between the papermaker and the towel.
13. Gently press on the nylon with the sponge, and rub the sponge along the back of the mesh to absorb the water. Remove the excess water to strengthen your paper and to help it dry quickly. When your sponge is full of water, wring the water into the pan.
14. Repeat step 13 until you can no longer remove water from the paper.
15. Carefully lift the papermaker off of your new paper sheet. Gently lift the towel with the paper on it, and move it to the drying area. Congratulations! You have made your own paper!
16. Repeat steps 10–15 for each group member.
17. Discard any unused pulp mixture into a compost pile or a container that your teacher has provided. **Do not** pour the slurry down the drain. Slurry clogs pipes.

HELPFUL HINT

If the paper rips, press the edges together with wet fingers.

Analyzing Your Papermaking Process

18. Paper is made of dried plant fibers. What happened to the fibers in each of the steps you followed?

The Fate of the Fibers

Action	What happened to the fibers?
Step 1: Added water and blended the scrap paper	
Step 2: Lifted the papermaker from the pan	
Step 3: Dried the paper	

Recycle! Make Your Own Paper, continued

19. How could this lab change to better conserve resources?

20. How does recycling paper help the environment?

21. How can making paper from fibrous, nonwoody plants help the environment?

DECORATING MATERIALS

- 3–4 sponges
- scissors
- bowl
- various natural pigments
- large feather
- water
- disposable gloves



HELPFUL HINT

Boiling the natural ingredients below left in water will make the corresponding pigment colors:

turmeric	orange
marigolds	yellow
onion peels	yellow
blueberries	blue
cranberries	red
raspberries	pink

Be an Artist!

22. Turn your paper into a work of art, such as a greeting card. Follow the steps below to add a little color to your paper. Your teacher will provide pigments made from fruits, vegetables, or spices.
23. Cut sponges into different shapes to form stamps.
24. Dip a stamp into a pigment. Press the stamp onto your sheet of paper. **Rinse your sponge before dipping it in another color.**
25. Dip the tip of a feather into the pigment, and use it as a pen to write a message or sign your masterpiece!
26. Let the pigment dry before handling your art.