

FROM PULP TO PAPER

Recycle scraps to make your own paper

What you'll need:

- Scrap paper, such as old photocopies
- Dried plant materials such as flowers, leaves or grass (optional)
- Stapler or tacks
- Weatherproof duct tape
- 2 wooden picture frames of the same size
- Nylon window screening or other fine mesh
- 2 kitchen towels
- 1 old bath towel
- Plastic wash basin or small plastic storage bin
- Blender
- Sponge

Prepare:

1. Remove the glass and backing of both picture frames. You only need the frames for this activity. Keep in mind that your paper will be the same size as your frames, so be sure to choose a size that's suitable. Your picture frames will also need to fit into your plastic bin.
2. Staple or tack a piece of nylon window screening or other fine mesh to the back of one of your frames. (Nylon pantyhose will work, but this material wears down easily and will need to be replaced after one or two sheets of paper.) Make sure your screening is tightly attached so that it's nice and flat. Cut off the excess screening, then tape the exposed edges down with duct tape. Once you're finished, set your frames aside.
3. Gather your scrap paper. Choose paper that has no staples or other fasteners attached to it. Old photocopies with little print and no pictures are perfect for this activity. You can even use coloured construction paper or add some gift tissue paper if you'd like your new paper to be colourful! Once you have collected your scrap paper, tear it into small pieces (roughly 2 cm x 2 cm squares—about the size of a toonie).
4. Time to get the blender out—but don't forget to ask for permission first! Fill your blender halfway with warm water, then add a handful of your scrap paper. Secure the lid tightly and blend at a moderate speed until the paper is fully mixed with the water. If your pulp mixture isn't blending smoothly, unplug the blender and remove some paper or add more water, then try again.
5. Lay your old bath towel out on the table or countertop, then lay a kitchen tea towel over it. This will be your assembly workstation.
6. Fill a plastic bin, such as a small storage bin, wash basin or recycling bin, with 5-6 cm of warm water.



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Assemble:

1. Pour the pulp mixture from your blender into the plastic bin. The more of the pulp mixture you add, the thicker your paper will be. If you would like to add an artistic touch to your paper, you can also add some bits of natural materials like dried flowers, leaves or grass during this step.
2. It's time to use your picture frames. Place the frame with the screen attached, which will act as your paper *mould*, screen-side up on the table. Then, place the other frame on top it. The second frame is known as the *deckle*: a removable "fence" used in papermaking.
3. Stir the pulp mixture in your plastic bin to distribute the fibres evenly throughout the water.
4. Using both hands, lift the mould and deckle and dip them into the bin. The screen should be facing up, and the deckle should be held firmly against it. Scoop up some of the pulp mixture with the mould, then gently tip it back and forth over the plastic bin to spread the fibres evenly over the screen. If there are gaps, or if the fibres are spread too thinly on the screen, add more pulp and try again.
5. Once the water has drained through the screen, set the mould down on the table and carefully remove the deckle. The newly formed piece of paper should be resting on the screen.

Remove:

1. To remove the paper from the screen, gently lay the screen down on the kitchen towel with the paper facing down. Use a sponge to soak up any excess water from the back of the screen.
2. Hold the kitchen towel down on the table while gently lifting the screen. You can do this on your own, but it might be best to ask for help with this step. Start by slowly lifting one edge of the mould. The paper should stick to the cloth below it; if it doesn't, put the mould back down, use the sponge to blot more water from the paper, then try again. Slowly pull the mould off the paper and leave the paper on the kitchen towel.
3. Leave the paper on the kitchen towel to dry overnight.

4. After the paper has dried, remove it from the cloth by gently pulling on either side of the cloth to stretch it—this will help loosen the paper from the cloth. Gently peel the paper off. *Voilà*, paper!

Clean Up:

1. Collect the leftover pulp in a strainer. To avoid blocking the sink, you should also rinse your papermaking tools over the strainer. You can either compost the strained pulp or put it in a plastic bag in the freezer for your next papermaking session—just don't pour it down the sink!

What is paper, anyway?

Paper is created from the fibres of plants, which are made of cellulose: a molecule that forms the walls of plant cells. You can see these fibres if you look closely at the torn edge of a piece of paper.

Cellulose molecules are attracted to each other by *van der Waals forces*, which act like glue to hold the fibres of your paper together. As your paper dries, water evaporates from between the fibres, allowing them to stick together more firmly.

