



a WOW Lab

**BLUEPRINT**

Recycled Paper

## Inquiry Approaches

### Initial Inquiry

What materials are traditionally used to make paper?

Trees, machines, plants, used paper and water are all commonly used.

What materials can be used to make paper?

It is possible to make paper out of newspaper, office waste, celery, mangoes and banana peels.

### Experimental Procedure Inquiry

Why do the pieces of paper need to soak before the pulp can be extracted?

Soaking softens the paper and helps to release the fibres.

Why do the celery pieces need to be boiled with water and bleach before the pulp can be extracted?

Celery is a raw material that has not yet been processed, and therefore more effort is required to release the fibres. Heating helps to soften the celery, allowing the fibres to be liberated. To ensure that the celery does not rot, bleach is added to the mixture.

Can you explain how cutting the paper or the celery stalks into smaller pieces is an important part of the papermaking procedure?

Cutting the material into smaller pieces increases the surface area, allowing water to soak into the material faster.

### In-Depth Inquiry

What are the similarities and the differences between the recycled newsprint and the celery paper?

A similarity between recycled newsprint and celery paper is that both primarily consist of cellulose. Recycled paper is dark in colour as a result of the newsprint ink, whereas celery paper is green in colour. Celery paper is also thicker than recycled newspaper due to its larger fibres, which also cause the paper to curl more.

Can you explain reasons for using recycled paper instead of new paper?

Recycled papers, such as newsprint, toilet paper and packaging materials, are made from waste. Depending on the complexity of the paper collection and clean-up, it may take less energy to make recycled paper than to make paper from scratch. Recycled papers are typically intended for short-term use because the fibres are not as strong. It makes sense to use waste products for papers that don't need to be very high quality, but where quality is needed, using wood from trees to make the papers is more appropriate, especially if an eco-friendly approach to tree harvesting is used.