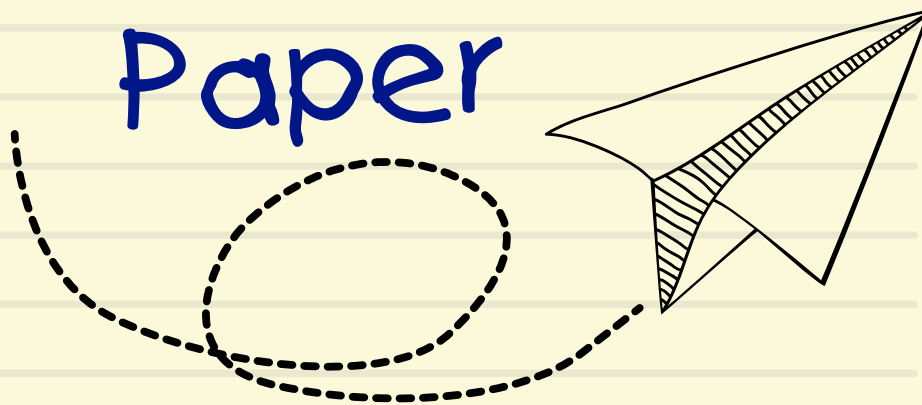
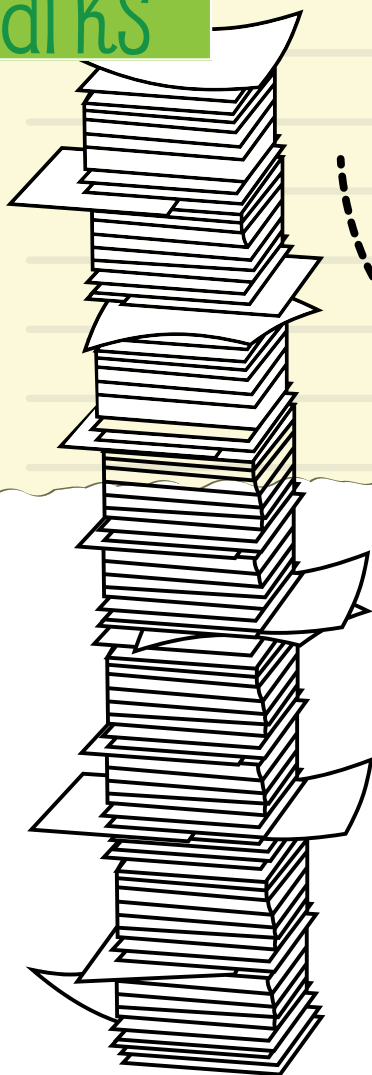
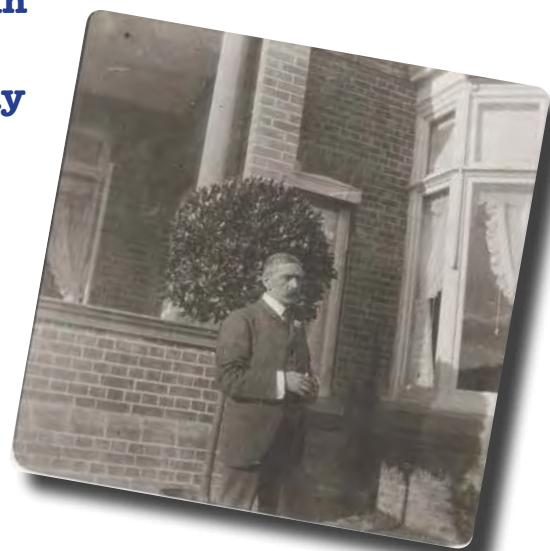


# Paper



Did you know that Dover was where **Conqueror**, one of the world's best-known brands of paper, was manufactured? Use the parks as a catalyst for an investigation into **the way paper was made**, make your own paper at school and write a poem inspired by paper. Visits to **Russell Gardens** and **Kearsney Abbey** can be done as stand-alone activities, consecutively in any order, or by two groups simultaneously.

Suitable for KS2



## Curriculum areas covered:



### History

Continuity and change  
Significant local  
people and events  
Understanding parliament



### Citizenship

Responsible  
behaviour



### Science

Develop  
conceptual  
understanding



### Geography

Interpret sources



### Art & Design and Design & Technology

Produce creative work,  
Explore prototypes and  
processes



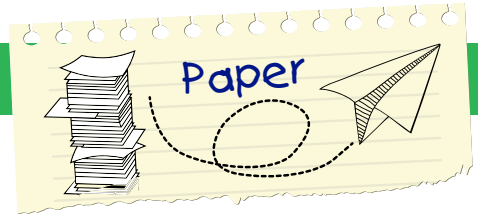
### English

Reading  
comprehension  
Composition  
Poetry



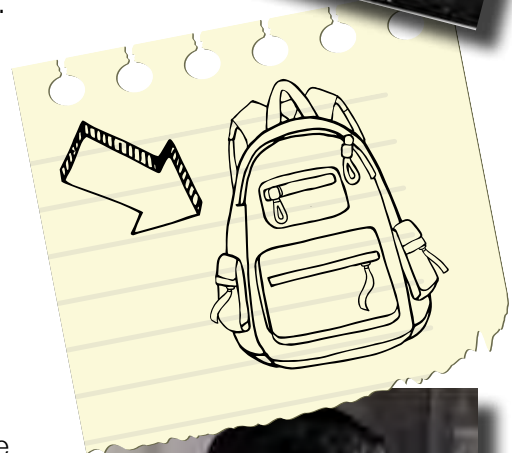
### Physical Education

Sustained  
activity



## Before your visit:

- Look at the biography of Edward Percy Barlow, paper manufacturer, who completed Kearsney Court, the house at the north end of Russell Gardens (see **Paper resource sheet 1** or online here).  
<http://www.kearsneyparks.co.uk/About-the-parks/People/Edward-Percy-Barlow.aspx>
- The **Paper resource sheet 1** also has a biography and photographs of his wife Alice, who was active in the Dover Women's Suffrage Society. This could be a focus for further study.
- Talk to the pupils about paper. Make a list of the things it is used for and talk about how it is made. This BBC video is a useful introduction:  
<http://www.bbc.co.uk/education/clips/z89g9j6>
- Talk about the history of paper making on the River Dour (see **Paper resource sheet 2** or online here).  
<http://www.discoverthedour.org/papermaking-in-dover.html>



## Where to go:

- Collect the **PUPILS' GREY RESOURCE RUCKSACKS**. You should (in any order) visit Russell Gardens (to look at the house and grounds) and the ruins of the paper mill at the eastern end of Kearsney Abbey.



## During the visit:

- Walk around Russell Gardens. Ask the children to imagine what it was like to live there when the gardens were laid out. You could ask them to look at the contemporary photographs in the **Time travellers resource sheet** and **My ideal garden: Thomas Mawson resource sheet 2** to identify what has changed.
- Go to Kearsney Abbey. Find the ruins of River Paper Mill at the far end of the park. Look at the instructions for siting a waterwheel (**Paper resource sheet 3**). Ask pupils where they think the mill pond and water wheel may have been (we are not sure exactly, so pupils should work on deduction and justify answers). Talk about what they know about how paper is manufactured, and why the mill was sited there.
- Collect some natural materials that could add texture or colour to paper manufactured back at school. You can use seedheads, petals, grass, leaves, bits of bark etc.





## After the visit:

- Make some paper back at school. **Paper resource sheet 4** provides a guide and there are many online instructions for incorporating natural materials. Younger children could make papier mâché or collages from recycled paper and natural materials collected in the park.
- Explain to pupils that paper also used to be made from cotton rags. Share the two clips of memories of people who worked in the Buckland Paper Mill ('Rag House and 'Dante's Inferno'), collected by Dover Arts Development. The first includes old photographs. Talk about the changes in working conditions between the two. <https://www.youtube.com/playlist?list=PL96081FBDB8255075>
- Share Folkestone poet Joseph Coelho's poem 'If all the world were paper' (**Paper resource sheet 5**) or listen to the poet reading it online here. <https://joseph-coelho.com/2013/10/15/if-all-the-world-were-paper-video/>
- Ask pupils to brainstorm ideas for a poem where the world was made of paper, or food, or metal, or toys etc. using a spider diagram with their theme (e.g. food) in the centre and ideas flowing from it. Use the diagram to build a poem, for example: 'If all the world were food/rivers would be melted chocolate/clouds would be mashed potato.'

## Resources during visit:

- Use on-site **GREY RESOURCE RUCKSACKS** for **Time travellers resource sheet** and **My ideal garden: Thomas Mawson resource sheet 2** for Russell Gardens, **Paper resource sheet 3** as well as clipboards and waterproof mats in case of rain.
- **School to supply:** writing materials (pens/pencils and paper), bags to collect materials for papermaking.

## Curriculum links:

### History:

- Gain and deploy a historically grounded understanding of abstract terms such as 'empire', 'civilisation', 'parliament' and 'peasantry'.
- Understand historical concepts such as continuity and change, cause and consequence, similarity, difference and

significance, and use them to make connections, draw contrasts, analyse trends, frame historically valid questions and create their own structured accounts, including written narratives and analyses.

### Citizenship:

- Develop an interest in, and commitment to, participation in volunteering as well as other forms of responsible activity, that they will take with them into adulthood.

### Science:

- Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer.

### Geography:

- Interpret a range of sources of geographical information, including maps, diagrams, globes, aerial photographs and Geographical Information Systems.

### Art & Design and

### Design & Technology:

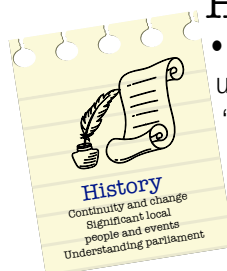
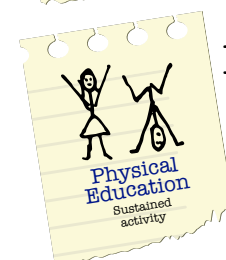
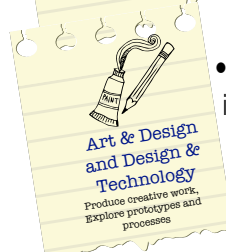
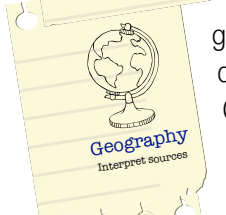
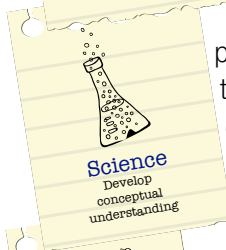
- Produce creative work, exploring their ideas and recording their experiences.
- Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users.

### English:

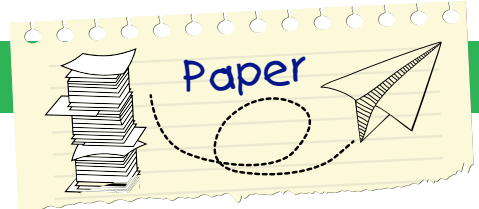
- Appreciate our rich and varied literary heritage.
- Comprehension (both listening and reading).
- Composition (articulating ideas and structuring them in speech and writing).

### Physical Education:

- Are physically active for sustained periods of time.
- Lead healthy, active lives.







# Resource Sheet 1 Edward and Alice Barlow



**Edward Barlow** (1855–1912) was the Chairman of Wiggins Teape, the paper making business based at the Buckland Mill in Dover.

Under Barlow's chairmanship, Wiggins Teape became one of the leading manufacturers of quality papers, including the renowned Conqueror brand. Barlow's idea was to

provide a high-quality watermarked paper for the masses, intended to look like handmade paper, but costing far less. Conqueror first rolled off the presses at Dover in 1880 and Wiggins Teape remained a major employer in the town until the closure of the Buckland Mill in 2000. Conqueror paper is still produced today.

Edward Barlow purchased the Kearsney Court house and estate (now Russell Gardens) in 1900 after he was appointed to run the Buckland Mill and wanted a fine house nearby for his family. He and his wife, Alice Mary Barlow, were to have two sons, Frank and Keith, and two daughters, Theodora and Barbara. He commissioned the renowned Edwardian landscape architect Thomas Mawson to design the gardens. With Barlow in charge, the Buckland Mill prospered. Within a decade, it was the largest manufacturing firm in Dover, with an output of about 70 tons of paper a week.

As a boss, Barlow was popular with workers and was known for providing support and assistance to his employees when they were in need. He actively encouraged the formation of a Work's Social Club and he supported the local cricket team and the local Ambulance brigade. Many of the workers at the paper mill were women and Barlow provided them with recreational and dining facilities.

Barlow was a Magistrate of the Cinque Ports and Vice-Commodore of the Royal Cinque Ports Yacht Club. On the day of his funeral in 1912, all the flags on the principal public buildings in Dover were flown at half-mast. The service, which was packed, took place at SS Peter & Paul Church, River, where he was also buried.

*As a starter for teaching about the women's suffrage movement, you may like to look at this clip from Mary Poppins: <https://www.youtube.com/watch?v=Kvk1NZDFvZU>*



**Alice Mary Barlow** (1860–1930) became a leading member and in time President of the Dover Women's Suffrage Society, and her daughter-in-law, Alice, became the Vice President.

The National Union of Women's Suffrage Societies (NUWSS) was founded in 1897. One of the women who attended the first meeting was Dr Annie Brunyate (1872-1937), Dover's first female doctor. She lived with her mother at 4 Effingham Crescent, where she had her surgery. The house was also the HQ of the Dover Suffrage Society.

The Dover Suffrage Society joined the NUWSS in 1909. At a public meeting at Dover Town Hall, Alice Barlow was elected President and her daughter-in-law, Alice, Vice President, with Dr Annie Brunyate as Honorary Secretary.

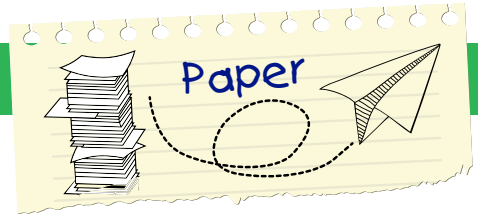
In addition to votes, the women demanded:

- Equality in wages.
- Equality in the work place, for instance the abolition of sweating system for women – it had already been abolished for men.
- The availability of technical training for women – trades unions had successfully legislated against this being available to women.
- Opening up the professions, such as the law, to women.

Following her husband's death in 1912, Alice took a less active role in the suffrage campaign. The house and gardens were sold and she moved to Denton, between Canterbury and Folkestone. She died in 1930.



*June 26th 1912 - Funeral of E. P. Barlow on a rainy day. It looks as though the school children were taken along.*



## Resource Sheet 2

### Papermaking in Dover



*River Paper Mill around 1900*

#### Papermaking in Dover

Of more than a dozen mills on the Dour, five were paper mills. The clean spring waters of the river offered both a power source for breaking up the paper pulp and a ready supply of suitable water for the wet phases of manufacture.

#### Buckland Paper Mill

The most important of the Dour's paper mills was Buckland Paper Mill. Corn mills are known to have been on this site since the earliest of times, but the earliest reference to a paper mill is in 1638. In the early 1700s it was owned by Thomas Ingram, who passed it to his sons Thomas and Ingram. Thomas built Buckland House in 1820, today the only part of the mill still standing intact. The mill burnt down in 1814, but was rebuilt and put up for sale.

In 1822 it was leased to George Dickinson. He installed steam engines and two paper making machines. Dickinson was bankrupt by 1838. In 1849 it was sold to Charles Ashdown, who ran the mill in partnership with Henry Hobday, manager of Snodland Mill. A fire in 1887 provided the opportunity to remodel the mill, which increased its production from two to twelve tons of paper a week. An important contract from London company Wiggins Teape was won to produce Conqueror paper, and in 1890 Wiggins Teape bought the mill to ensure a consistent supply of the paper.

Buckland Mill was hugely improved in the 1920s, doubling in size. Buckland Paper Mill became a major employer in the town. The conqueror brand of paper manufactured at the mill had a world-wide reputation for quality and is still made at another site today but, in 2000, in a bid to make company-wide economies, Buckland Paper Mill was closed.

#### River Paper Mill

Originally built as a corn mill, River Mill was sold to John Smith in 1689 as a "recently converted mill". The mill had many owners who had mixed fortunes - in 1756 it was sold to Thomas Radford. His journeyman (trainee), William Phipps, married Radford's daughter and bought the mill in 1780. By 1792 he was bankrupt, but recovered to build Crabble Paper Mill and re-lease River Mill.

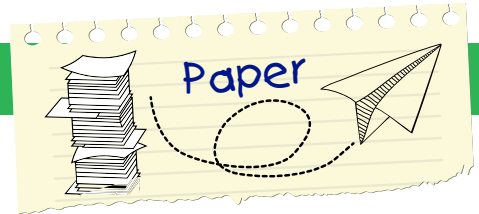
When William died in 1820, River Paper Mill passed to his son, Christopher, who installed new papermaking machinery - the work would have previously been done by hand. The mill passed to Christopher's nephew Filmer, when Christopher died in 1867 and he was also made bankrupt, but he was able to lease the mill back from the bank. It was sold in 1908 and finally closed in 1918.

The mill's chimney remained standing until 1928, but now all that is left are ruins - strong brick structures through and over which the waters of the Dour make waterfalls at the far extent of Kearsney Abbey.

See:

<http://www.discoverthedour.org/papermaking-in-dover.html>



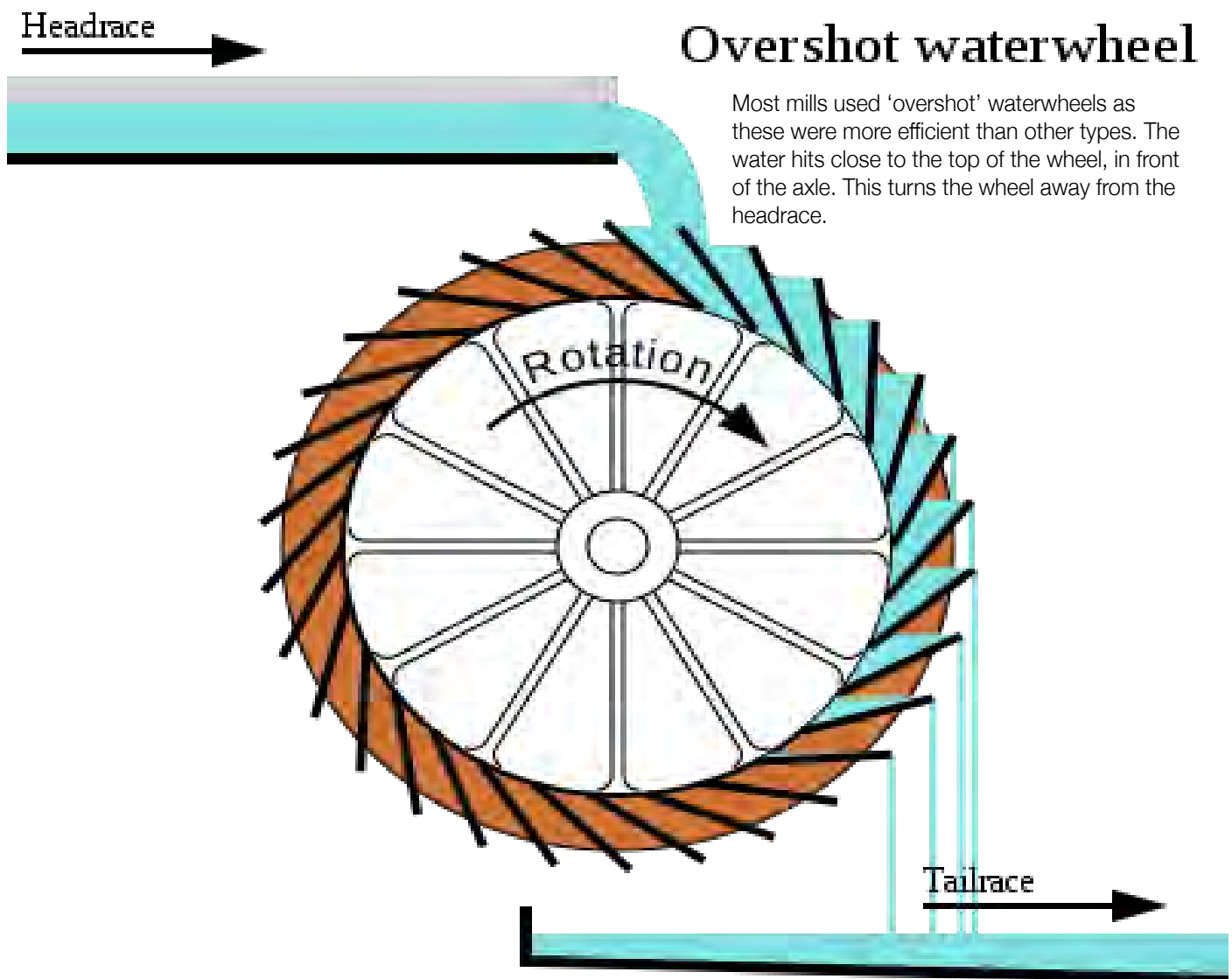


## Resource Sheet 3

### How a watermill works

The power that drives a watermill comes from water flowing down through a narrow channel (the mill race) and past a series of paddles mounted on a wheel. The pressure of the water on the paddles turns the wheel and the power can be transferred from the wheel's axle to drive the mill's machinery.

To keep the wheel turning whatever the state of the stream, water is stored in a mill pond at a higher level than the stream. This is created by a dam. If too much water is flowing into the mill pond the surplus will be channelled around the mill; the flows are controlled by sluices and gate.



## Overshot waterwheel

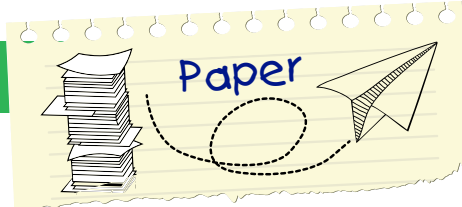
Most mills used 'overshot' waterwheels as these were more efficient than other types. The water hits close to the top of the wheel, in front of the axle. This turns the wheel away from the headrace.

Diagram of overshot water wheel showing headrace, tailrace, water and spillage.

By Malcolm Bowa.

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[https://commons.wikimedia.org/wiki/File:Overshot\\_waterwheel\\_simple.svg](https://commons.wikimedia.org/wiki/File:Overshot_waterwheel_simple.svg)



# Resource Sheet 4 (a) Papermaking in Dover

## Waste Watch

Change the world around you



## Paper Making

Facilitator's Notes KS2

**Practical activities, highlighting the environmental benefits of recycling.**

### Learning Objectives:

By the end of this session pupils will be able to:

- ▶ Demonstrate the process of recycling paper;
- ▶ Identify the raw materials used to make paper;
- ▶ Explain why it is better to recycle paper than to make it from virgin materials; and
- ▶ Experiment with colour and texture by adding additional materials during the paper making process.

### National Curriculum Links:

#### Geography KS2:

- ▶ knowledge and understanding of environmental change and sustainable development: and
- ▶ thematic study – waste in the school environment.

#### Science KS2:

- ▶ scientific enquiry – ideas & evidence in science: investigative skills & considering evidence; and
- ▶ materials & their properties - Grouping & Classifying Materials within an environmental context.
- ▶ QCA Unit 3C (Yr 3) characteristics of materials

#### English KS2:

- ▶ En1 Speaking & listening – speaking, listening, group discussion & interaction.

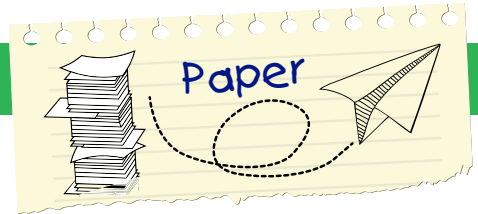
#### ICT KS2:

- ▶ Findings things out;
- ▶ Developing ideas & making things happen; and
- ▶ Exchanging & sharing information.

#### Design & Technology KS1:

- ▶ Developing, planning & communicating ideas: and
- ▶ Evaluating processes & products.





# Resource Sheet 4 (b) Papermaking in Dover



## Art & Design KS1:

- ▶ Investigating & making art, craft & design.
- ▶ knowledge & understanding.

## Citizenship & PSHE:

- ▶ Preparing to play an active role as citizens – discuss topical issues, sustainable resource use.

Cross Curricular: education for sustainable development.

## Preparation:

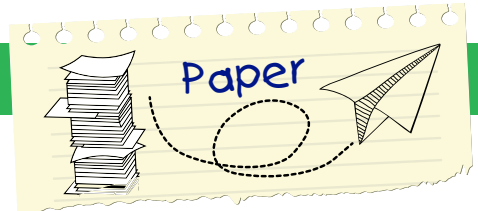
### Resources:

- ▶ Samples of different raw materials used to make paper: wood chippings, bamboo, cotton balls (used to make money) and shredded paper;
- ▶ J cloths (15 per group);
- ▶ Sponges (2 sponges per group);
- ▶ Newspaper (it is easier if the newspaper is cut into individual sheets) or computer paper;
- ▶ Plastic dust sheets to protect tables;
- ▶ Shredded paper or ripped up egg boxes/ newspaper/ paper;
- ▶ Washing up bowls or cat litter trays (enough for 1 per group);
- ▶ A source of water and jugs to transport it (1 jug per group is ideal);
- ▶ A potato masher or liquidiser \*;
- ▶ Two frames, one with a mesh covering for each group (You can buy paper making kits and frames. However, they can work out expensive when you are purchasing enough for a whole class and you can make your own. It is suggested that you have enough kits for each group of 3 – 4 pupils; and
- ▶ Additional materials for experiments, e.g. glitter, tea leaves, confetti, tissue paper or paint.

\* If a liquidiser is available it will simplify the pulping process, but it is not vital.

It is a good idea to make up some pulp and set up the paper making stations before the session to save time. You can talk through and demonstrate the pulp making process at the beginning of the session.





# Resource Sheet 4 (c) Papermaking in Dover



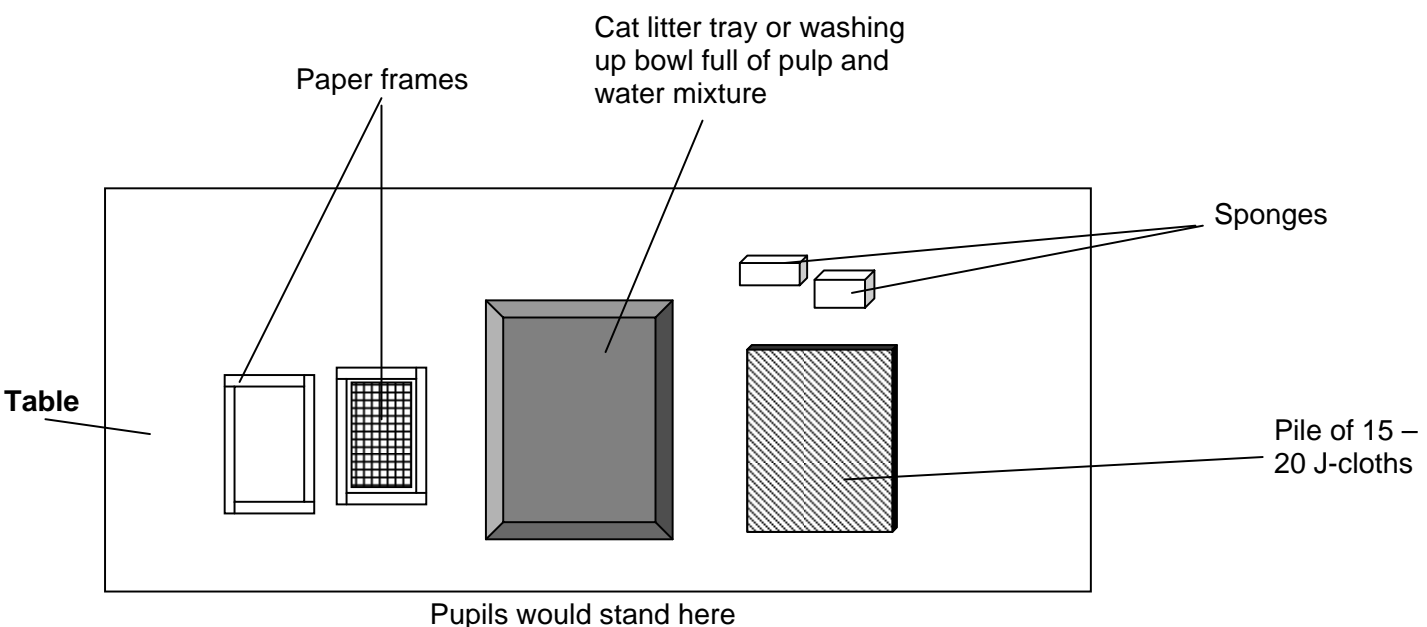
## Making pulp:

Soak the shredded / ripped up paper in warm water. This starts to swell and split apart the fibres. Liquidise or mash the soaked paper with a potato masher until the mixture becomes a 'thick soup' consistency. This is now ready to pour into the trays where more water should be added.

If you need to transport the pulp it is easier if you take the water out. This can be done by, straining through an old net curtain. The pulp can also be frozen. Don't leave with water over a long time as it will go mouldy.

## Setting up the paper making station:

Cover the tables with plastic sheets to protect.



Fill each tray half full with water. Keep the sheets of newspaper on a separate table - they tend to get wet if kept on the same table! The newspaper is used to transfer the paper on to for drying.



## Resource Sheet 4 (d) Papermaking in Dover



### Delivery:

- ▶ Gather pupils together on the floor and discuss the origins of paper. Pass around samples of the different raw materials used to make paper and discuss which material causes the least damage to the environment;
- ▶ Move pupils so they are sitting around a paper making station. Talk through the process of creating the pulp from the shredded paper, demonstrating the processes as you talk;
- ▶ Demonstrate how to use the equipment on the table to make recycled paper;
- ▶ Split the class into groups and allocate one group per table; and
- ▶ Talk through making the first piece all together.

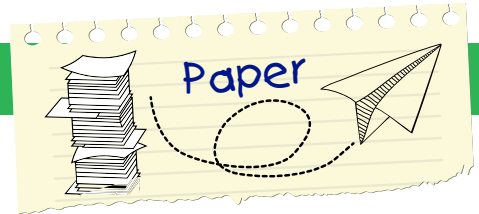
### Top Tips:

- ▶ If any parent helpers or classroom assistants are available, extra help is preferable;
- ▶ Give each person in the group a job to do during the making process, eg one person can dip the frames in, another can dab, another can fetch the newspaper;
- ▶ Tell the pupils to stay in the same order around the table and then move round for the next piece of paper, taking the job of the person whose place you have just moved in to;
- ▶ Don't allow pupils to move from their table unless they are the person fetching the newspaper; and
- ▶ After each person has had a go with the frames introduce the idea of experimenting with different materials for colour and texture.

### Experiments:

**Colour** – you can experiment by adding glitter, marbling inks, watercolour paint and other colouring agents at different stages of the process.

**Texture** – you can experiment by adding more pulp or water to the pulp mixture or by adding saw dust, liquidised leaves, bits of fabric, pot pourri, confetti etc. at different stages of the process. By liquidising the pulp mixture for different lengths of time, different coarsenesses of paper pulp are created. Ironing the paper after it is dry also changes the surface texture.



# Resource Sheet 4 (e) Papermaking in Dover



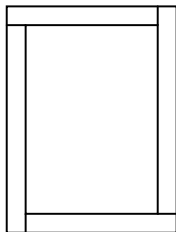
## Making Your Own kits

A5 size is the most effective and easy to use.

### Equipment:

To make 10 frames:

- ▶ 40 lengths of timber (approx. 2cm x 2cm thick) cut to 21cm;
  - ▶ 40 lengths of timber (approx. 2cm x 2cm thick) cut to 15cm (from your local DIY store – they normally provide a cutting service);
  - ▶ 3m<sup>2</sup> of nylon tight weave net curtain or wire mesh;
  - ▶ staple gun; and
  - ▶ gaffa tape.
1. Take two of the 21cm and two 15cm lengths of timber and arrange into an A5 sized frame as shown below (if you have time to varnish or wood stain the wood to seal it, your frames will last longer):



2. Staple the joins together using 3 – 5 staples per join on each side;
3. Cut a piece of net curtain to fit over the frame. This needs to be attached so that a taught mesh surface is achieved inside the frame. Use the staple guns to attach the net; and
4. Finish the frame off and protect the net attachment by covering the frame with gaffa tape. (10 of these frames with netting should be produced).

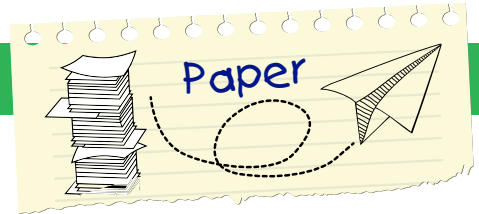
Repeat steps 1 & 2 to make 10 empty frames

If you're not going to file me, please recycle me.

## Waste Watch Education Network

# Resource Sheet 5

## Poem



### If all the world were paper by Joseph Coelho

If all the world were paper  
I would fold up my gran and take her everywhere I go.  
I would laminate my baby sister in bubble wrap  
and lay her to sleep in unbound fairy-tale book pages  
and should she get scared:  
Rip every fear,  
Shred every scream,  
Tear every tear.

If all the world were paper  
I would re-bind my grandfather,  
smooth out the dog-ears to all his stories,  
place his younger days in a zoetrope  
and flush the harrowing chapters  
down an ink-gurgling well.

If all the world were paper,  
kind deeds would be post-it notes  
that stuck to the door in ever growing trails,  
so we would always remember,  
friends would come with perforated lines  
so you could keep their best bits with you at all times.

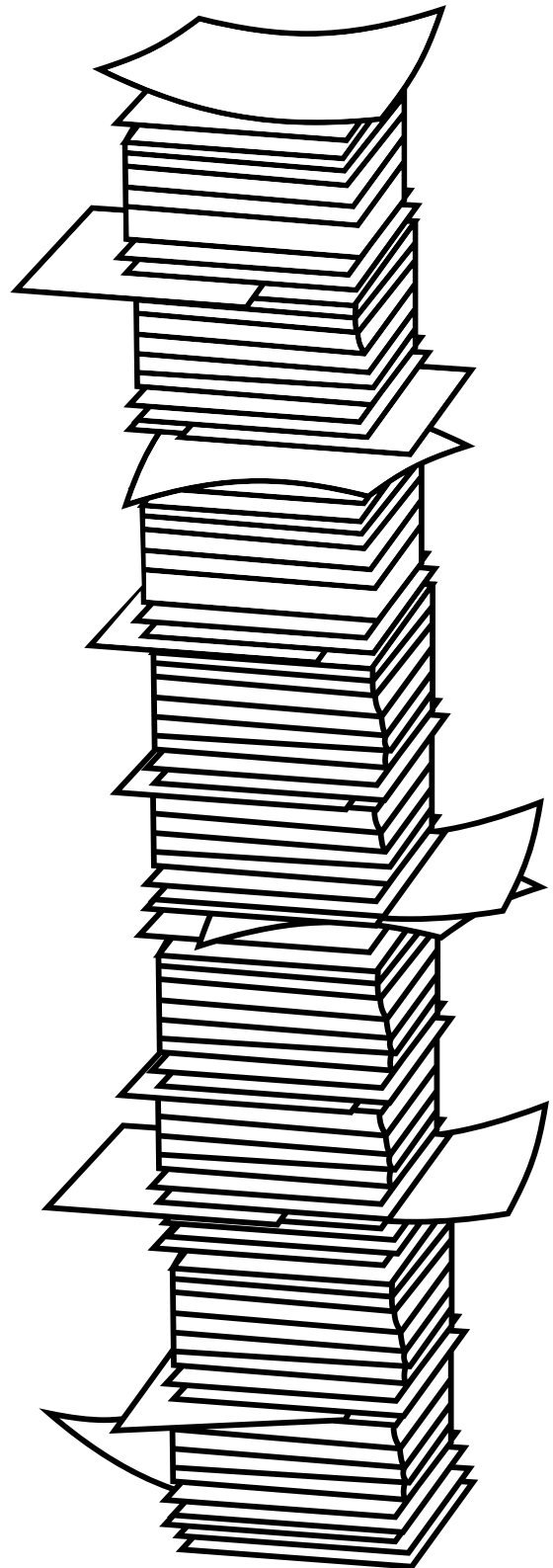
If all the world were paper,  
Christmas wrapping foil and birthday cards  
would follow you to school.

If all the world were paper  
dreams would be Braille  
so we could read them whilst we slept,  
nightmares would be shopping lists  
because shopping lists are so easy to forget.

If all the world were paper  
arguments would rustle before they started  
and could be put right with a little tape.

If all the world were paper  
we could paperclip families together,  
draw smiles on all the sad faces,  
rub out the tears,  
cover our homes in Tipex and start all over again.

All the world is not paper  
but whilst we can imagine it were  
we can recycle the rough times  
knowing we will never - ever fold.



© Joseph Coelho 2006, version published in *The Works 6*, Macmillan, Ed. Pie Corbett, 2007



# Resource Sheet - Kearsney Parks Sketch Map

