



Recycled Paper Making Lending Kit

Acknowledgements

The Recycled Paper Making Lending Kit was developed by West Lothian Council Waste Service for schools and nurseries to learn how paper is made, what natural resources are required to make paper and why recycling paper is beneficial to the environment.



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Overview

The Recycled Paper Making Lending Kit comprises of:

- This teaching resource
- 2 x Invicta Education Full Cycle Cards: Wood
- Paper Waste Facts
- All equipment required to carry out the paper making
- 1 x set of laminated instructions

By the end of the Paper Making pupils should be able to:

- List what resources are required to make virgin paper and recycled paper
- Describe the paper making process
- Determine what they can do at home and in school to reduce, reuse and recycle paper

Links to Eco-Schools

The table below shows how the Paper Making lessons meet aspects of a range of Eco-School topics.

ECO-SCHOOL TOPICS		PAPER MAKING	
Litter			
Waste Minimisation	Identification of paper waste types and volumes generated at home and school	Resources needed for virgin paper/ recycled paper	Environmental Impacts of sending paper to landfill
School Grounds	Paper R,R,R, pledges	Paper making photographs and displays	
Biodiversity	Harvesting of trees		
Energy	Energy used in paper production		
Water	Water used in paper production		
Sustaining Our World	Resources needed for virgin paper/ recycled paper	Environmental Impacts of sending paper to landfill	

Paper making equipment:

There is enough equipment for a full class of 33, however, the equipment can be divided if classes are smaller.

33 x sets of frames (33 mesh and 33 open)

9 x basins (4 pupils per basin)

17 x trays (2 pupils per tray)

33 x drying cloths (1 per pupil)

9 x permanent markers (one per group)

2 x dry wipe markers

33 x sponges (1 per pupil)

1 x sieve

1 x hand blender

1 x set of laminated instructions

Lesson 1-Paper making video and game

Lesson 1 Plan

(50 minutes allowing for discussion)

LEVEL:		LESSON FOCUS:	
ALL AGES		PAPER MAKING PROCESS	
Learning Intensions:		Success Criteria:	
We are watching a paper making video		I can describe what resources and equipment are required to make paper	
We are arranging the paper making cards in the right order		I can arrange the paper making cards in the right order to show the paper making process	
We are discussing paper waste facts		I have learned some paper waste facts	
Suggested Resources:			
Teacher's Notes			
2 x Invicta Education Full Cycle Cards: Wood			
2 x packs of paper waste facts			
Activities:			
Activity 1- Pupils and teacher to watch paper making video (10 minutes)			
Activity 2 - Pupils and teachers to arrange the Full Cycle Cards to show the paper making process (30 minutes)			
Activity 3 - Pupils and teachers to look at the paper waste facts (10 minutes)			

Teacher's Notes

Paper Making Video:

A link for the paper making video will be available the West Lothian Council Waste Education (Schools and Nurseries) web page www.westlothian.gov.uk/article/4890/Waste-Education or from a West Lothian Council Waste Officer. The video may change due to availability.

Please allow 10 minutes for the pupils to watch the video and ask any questions.

Paper Making Game:

- 1) Divide the pupils into two groups and give each group a set of the Invicta Full Cycle Cards for Wood. Keep the cards face up so that pupils cannot see the numbers on the back of the cards.
- 2) Ask each group to describe what is on each card and then ask the groups to arrange the cards in the correct order.
- 3) Once the pupils have arranged the cards into the order they think is correct, ask them to explain why they chose this order.
- 4) Ask them to write the order on each card in the space provided with a dry wipe marker e.g. 1, 2, 3 or A, B, C.
- 5) Display the cards in the correct order where both groups can see them. Discuss the process.
- 6) On the blank card, ask the pupils to use a dry wipe marker to write/draw some items that can be made from new or recycled paper e.g. newspaper, post-it notes, toilet roll tubes, egg cartons, cereal packets.

The correct order for the cards is:

1. To make paper, a tree (NATURAL RESOURCE) is selected, cut down and taken to the saw mill.
2. At the saw mill the tree is cut into logs and then sawn into planks of timber/wood.
3. The off cuts of wood are chipped or ground into small pieces ready for the paper making process.
4. The small chips of wood are added to large water tanks to be washed, treated, soaked and mashed into pulp to release the fibres in the wood.
5. The mashed wood pulp is strained through a fine sieve to collect the pulp and drain the water away.
6. When all the water has drained away and the pulp begins to dry, the fibres within it begin to bond together to form paper, which can be transferred onto a drying mat.
7. When the paper has partially dried it can be peeled away from the drying mat.
8. When completely dry, a brand new sheet of paper remains (FINISHED PRODUCT).

9. The new sheet of paper can be written on, drawn on, used in books, newspapers and many other products.
10. Used waste paper can be recycled.
11. The used/waste paper is collected in large quantities and taken to a paper recycling plant.
12. Recycling at the plant begins with sorting the paper. The paper is washed, treated and soaked in water. It is then mashed into pulp to release the fibres. The recycled pulp is sieved, dried and then rolled into large rolls ready for re-use.
13. The recycled paper can be transported and used again in the manufacture of packaging, cardboards, toilet rolls, newspaper and other items.

Paper Waste Facts:

- 1) Divide pupils into two groups and give each group a pack of Paper Waste Facts.
- 2) Ask the groups to read through the facts and choose four of their favourite facts to read out to the class.
- 3) A follow up activity could include making posters with the Paper Waste Facts to display around the school to encourage pupils to reduce, reuse and recycle paper waste.

Lesson 2-Paper making exercise

Lesson 2 Plan

(45 minutes including 10 minutes clean up time)

LEVEL: ALL AGES		LESSON FOCUS: HEALTH AND SAFETY AND PAPER MAKING PROCESS	
Learning Intensions: We are listening to paper making instructions We are talking about health and safety and being introduced to equipment We are running through paper making procedures and delegation of tasks		Success Criteria: I can describe what resources and equipment are required to make paper I can follow paper making instructions I can use equipment safely and effectively I can work safely and follow health and safety procedures I can produce a page of recycled paper	
Suggested Resources: Teacher's Notes 1x Set of laminated Instructions Equipment			
Activities: Activity 1- Pupils and teachers to read through health and safety procedures (5 minutes) Activity 2 - Pupils and teachers to follow paper making instructions to make 1 sheet of recycled paper per pupil (30 minutes) Clean up (10 minutes)			

Teacher's Notes

Please refer to the Paper Making Instructions.

Preparing for the activity:

- 1) Weigh out the shredded paper and soak in the basin the night before you wish to make the paper.
- 2) Use the blender to pulp the paper. Please note that pupils **MUST NOT** operate the blenders.
- 3) Read over the health and safety documents provided with the Lending Kit. Please note, these documents are for reference only and teachers should adhere to school health and safety policies and procedures.
- 4) Discuss the health and safety considerations with pupils.
- 5) Choose a suitable location for the Recycled Paper Making activity. It is best to choose an area with a wipe clean floor and plenty of space, such as a dinner hall or GP room as the activity can get a bit wet and messy. Tables will also need to be provided. A sink nearby is also required so pulp can be sieved and drained away with ease. Pupils can get a bit wet during the activity so either provide waterproof overalls or advise pupils to bring a change of clothing, especially in colder weather. Watches, bracelets and rings should be removed, long sleeves should be rolled up and long hair should be tied back.
- 6) Divide pupils into groups. We recommend four pupils per basin. The Lending Kit contains enough equipment for 33 pupils.
- 7) Follow the instructions for making each sheet of paper.

Clean up:

- 1) Please wash down all of the frames to remove paper pulp.
- 2) Squeeze out any sponges and cloths and remove as much pulp as possible.
- 3) Pulp that has not been used can be stored in the fridge for up to a week or frozen for future use. If you do not wish to keep the pulp, please strain the pulp using the sieve. The strained paper pulp can then be disposed of within the refuse bins and sieved water can be disposed of down the sink.