

**#3639**

# **PAPER**

Grade Levels: 4-8  
24 minutes

OAKLEAF PRODUCTIONS 1998

## **DESCRIPTION**

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How is paper made? Who invented it? What did people write on before paper? Ms. Jennings' class reviews the history of paper, some other writing materials, and visits a mill to see paper being made. Emphasizes that more trees are planted than are cut for paper. Also promotes recycling.

## **ACADEMIC STANDARDS**

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### **Subject Area: Science**

- ◆ Standard: Understands and knows how to analyze chronological relationships
  - Benchmark: Knows that an organism's patterns of behavior are related to the nature of that organism's environment (e.g., kinds and numbers of other organisms present, availability of food and resources, physical characteristics of the environment)
  - Benchmark: Knows that all organisms (including humans) cause changes in their environments, and these changes can be beneficial or detrimental
  - Benchmark: Knows that changes in the environment can have different effects on different organisms (e.g., some organisms move in, others move out; some organisms survive and reproduce, others die)

### **Subject Area: Historical Understanding**

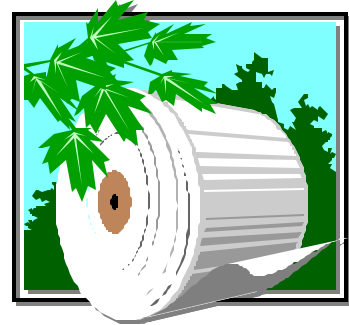
- ◆ Standard: Understands and knows how to analyze chronological relationships and patterns
  - Benchmark: Knows how to construct time lines in significant historical developments that mark at evenly spaced intervals the years, decades, and centuries
  - Benchmark: Knows how to identify patterns of change and continuity in the history of the community, state, and nation, and in the lives of people of various cultures from times long ago until today

## **DISCUSSION QUESTIONS**

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1. Name some of the reasons trees aren't just chopped down.
2. Name some of the materials used to write on before paper was invented.

3. What is the name of the machine that cuts up the tree bark into small pieces?
4. What does the digester do?
5. What is the Fourdrinier and what does it do?
6. Why do we keep a little water in the paper as we are making it?
7. Why do we need to recycle? What can we do to recycle?



## SUMMARY

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Before paper was invented, people used many different materials to write on. For example, stones were scratched on, animal skins were written on and in ancient Egypt they used dried papyrus leaves to write on.

History has it that in 105 A.D., a Chinese man named Ts'ai Lun, discovered the first known paper by watching wasps make their nests. He watched the wasps as they chewed up small pieces of wood, soften it with their saliva and shape it into tiny holes to lay their eggs in. He noticed as the nests dried, they became strong. He made his first paper by crushing the wood and mixing it with water to make a liquid pulp and then he spread it on a piece of cloth to dry.

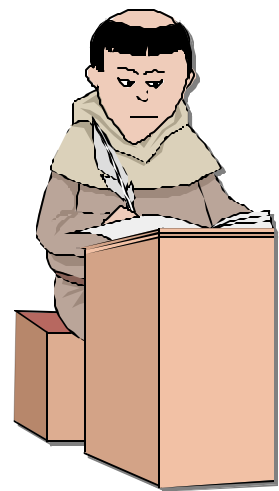
The Chinese were able to keep their recipe for paper a secret for over six hundred years. During a war in 751 A.D., some Chinese papermakers were taken prisoner and the secret got out. The secret traveled to Arabia and soon the kings of the Arab Empire had the finest libraries. They also sent messages on tiny slips of paper fixed on the legs of carrier pigeons.

In the Middle Ages, when the Arabs conquered Spain, they brought paper with them. Very soon, the idea of paper books caught on and merchants traded with the Arabs to buy paper. Eventually, the Europeans learned how to make their own paper by using rags. A whole new industry grew. Not only did we now have papermakers, we had ragmen. The ragmen traveled from village to village, buying up old rags and in turn, sold them to the paper mills, the first paper factories.

While paper was becoming readily available, books were still rare, expensive and slowly written by hand. It wasn't until the year 1450 that Gutenberg invented the printing press. Now, books could be printed quickly and easily.

In the mid 1800s, rags were the main source of papermaking. Although early Chinese papermakers used both cloth and wood, European papermakers did not seem to realize that wood could be used to make paper. As more and more people began to read, the papermakers found themselves running short of rags.

Early in the 1700s a French naturalist Rene Antoine de Reamur, like Ts'ai Lun, had observed that wasps build paper nests out of wood. Like Ts'ai Lun, he began to realize that paper could be made using the same basic process as wasps did. He began experimenting with wood pulp.



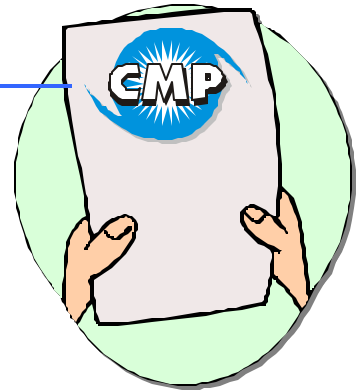
In 1798, a machine for making paper in an endless sheet had been patented by a Frenchman, named Nicholas Robert. The Fourdrinier brothers later developed this machine, which is still used.

Today, we have new challenges. The demand for paper increases with the spread of education and the growth of industry and new homes. Now, the paper industry must look to new supplies or recycled paper and to managed care of our forest.

## **RELATED RESOURCES**

### **Captioned Media Program**

- How Paper Is Made #3047
- Maskmaking With Paper #3269
- Pencils and a TV Show #3641
- Pulp and Paper #3164
- Writing: Uses and Importance #3423



### **World Wide Web**



The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid-safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **BEAKMAN AND JAX**

<http://www.beakman.com/paper/paper.html>

Learn how to make recycled paper following these easy-to-understand directions. Then, visit <http://www.beakman.com/cgi-bin/index.cgi> to see how your name looks when written in hieroglyphics.

- **THE PULP AND PAPER INFORMATION CENTRE (UK)**

<http://www.ppic.org.uk/>

View the papermaking process in picture detail; learn about recycling and the environment. Many accessible visuals with an easy-to-navigate clickable menu. Go to the links page for a wide selection of fabulous related sites.

- **PAPYRUS: GIFT OF THE NILE**

<http://menic.utexas.edu/menic/cmec/out/papyrus/papyrus.html>

From the University of Texas, detailed background information about gathering this plant and turning it into a writing surface. Sequenced in a visual essay with lots and lots of closeup photographs!