

Taming the Paper Tiger, a unit on paper and the environment

Paper accounts for 40% of the waste stream. Reducing, reusing, and recycling paper can therefore make an enormous difference to our environment. This unit helps students understand this important issue, while also working on math, literacy, and science skills.



Lesson 1: Paper Matters

Take the Tiger by the Tail

Objective: recognize that paper is a significant source of environmental pollution

Materials: plastic food service gloves, recycled boxes, simple counters

K-2 Activity: Be an urban archaeologist!

- Provide plastic gloves for students completing this activity.
- Prepare three boxes (recycle packing boxes) labeled PAPER, PLASTIC, and OTHER.
- Have students ask permission to be urban archaeologists in the school office or in a classroom. They will take the wastebasket at the end of a day and sort the contents into the three boxes.
- Weigh the boxes and/or measure the height of the contents. (Measuring the height will only provide a useful comparison if the boxes are the same width and depth.)
- Make a chart comparing the three boxes.

3-6 Activity: Do the math!

- Give students math manipulatives, such as beans, pennies, or counters. Make sure each student (or pair of students) has 100 counters.
- Present the Math Facts [link to PDF of p.2] list, using a projector.
- Discuss the facts. During the discussion, have students use their manipulatives to show the facts. For example, students can count out 40 items to show the 40% of the solid waste stream that's made up of paper.
- Challenge students to create a graphic representation of one of the facts. Use the backs of old worksheets, a drawing or modeling program on the computer, recycled containers, or marker boards.
- Have students label their representations clearly, and create a bulletin board or class display.





Lesson II: Paper Monitors (two day activity)

Hold That Tiger

Objective: identify practical changes that could be made in classroom or school

Materials: paper, crayons, craft sticks, glue, bowl of water, piece of screen (such as window screening)



K-2 Activity: Don't throw it away!

- Let students enjoy coloring the tiger.
- Say, "Don't throw it away!" Use the coloring paper to make a puppet. Cut the tiger from the coloring page and glue it to a craft stick. Gather up the rest of the paper.
- Say, "Don't throw it away!" Cut a strip from the remaining paper and color the back as well as the front to make a bookmark for reading chapter books. Gather up the rest of the paper.
- Say, "Don't throw it away!" Cut the paper into small squares and use them with a glue stick to create a mosaic on the back of an old worksheet. Gather the rest of the paper.
- Say, "Don't throw it away!" Put all the tiny scraps of paper into a bowl of water overnight. The next day, gather them up and push them evenly onto the screen. (This step is easier if you can mix the wet paper up in a blender first, but it can be done by hand.) Let it dry. Remove the sheet of recycled paper from the screen and let it dry completely. You now have a new sheet of paper. Talk with students about how paper is recycled just like this, but with machines that make it smooth like other kinds of paper. Show students the "recycled" symbols from paper bought and used at your school or home. Discuss how your class reused and recycled the coloring papers to avoid waste.

3-6 Activity: Is this paper needed?

- For a period of two days, ask students to monitor all paper use in the classroom. The first day, just keep a tally of all paper used in class: handouts, notes, letters, messages sent to the office, bulletins sent home, worksheets, packaging for snacks or juice boxes, sacks, etc. Write the total number of pieces of paper used.
- On the second day, stop before using any paper and consider whether it's essential or not. Every time a piece of paper is about to be used, discuss whether there is a paper-free alternative. Some possible alternatives to get you started on your brainstorming:
 - Use a computer projector or overhead projector for assignments.
 - Do group work on the board instead of individual work.
 - Complete writing assignments on the classroom computer.
 - Project quiz questions and have students use the back of an old paper to write the answers. Cut each sheet into halves or quarters and give students just what they need.
 - Use email or a cell phone instead of sending a note.
- Compare the amount of paper used on the first and second days. Discuss what changes the class would be willing to keep making, and which seemed too hard.
- Brainstorm ways to extend your class's paper-saving efforts to the school or the community.



Lesson III: Taming the Tiger

The story of “The Tiger’s Whisker” is told in many different countries, including China, the birthplace of paper. In the story, a woman wants something important. Sometimes it’s the love of her husband, or of her stepchild. Sometimes it’s someone’s health. In any case, the woman asks a wise man to make a special potion for her. The wise man agrees, but explains that he needs a tiger’s whisker as an essential ingredient. The woman goes to see the tiger every day, gradually moving closer and getting the tiger’s trust until at last she is able to pluck a whisker.

When she takes the whisker to the wise man, he tells her that she can now get what she wants by her own efforts. Her patience, skill and kindness are all she needs. Just like the woman in the story, we may wish there were a magic potion to solve the environmental problems of our world. In fact, we can make small changes ourselves, and solve the problem together, even though it seems like a big problem.

People at our schools may not respond well to demands that they cut down on paper use, when they’re accustomed to having unlimited paper. They may not like the idea of carrying refillable containers instead of items in paper wrappers. But small, gradual changes, encouraged rather than demanded, can add up to a big difference.

Read and discuss “The Tiger’s Whisker” together. Let students use their tiger puppets from the “Don’t Throw It Away!” activity to act out the story.

Other resources:

<http://www.gogreeninitiative.org/PDF/PlanningGuide.pdf>
Go Green Initiative for schools

<http://www.greenflagschools.org/Paper.pdf>
Fact sheet from the Natural Resources Defense Council

Onsharp and SmartPay are committed to environmental responsibility.

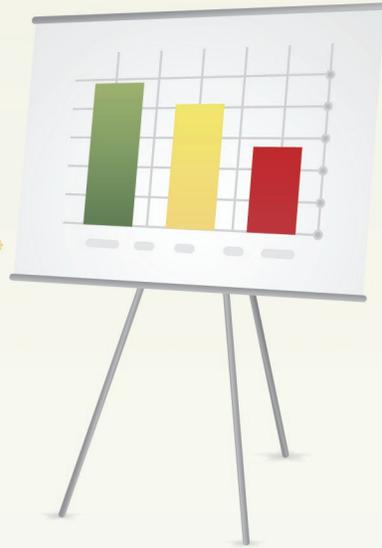
As a class, brainstorm the changes your class or school could make to reduce the effect of your paper use on the environment. Here are some ideas to get you started:

- Accept online payments instead of checks for tuition, lunches and supplies.
- Use recycled paper.
- Communicate with parents electronically instead of on paper.
- Work to help all students and parents have internet access.
- Try alternatives to worksheets.
- Switch from disposable to reusable items whenever possible.
- Use the backs of sheets of paper for writing notes and taking messages.
- Print handouts on both sides of a sheet.
- Print two to a page and cut the pages in half.
- Recycle whatever paper you have to use.
- Plant enough trees to replace the amount of paper your school uses each year.

Sort the ideas into things you can do now and things to save for later. Choose one or two initiatives to take on as a school.

Approach the project with patience and kindness, and be amazed at how much you can accomplish!





Math Facts

1. On average, every person in the world uses 48 KG of paper each year.
2. North America uses 34% of all the paper used worldwide.
3. Of all industries, papermaking uses the largest amount of water per pound of finished product.
4. In 2008, 57.4% of the paper used in the U.S. was recovered for recycling.
5. That's about 55 million tons of paper, or approximately 360 pounds for every person in America.
6. The average American uses more than 748 pounds of paper per year.
7. The US uses 25% of the world's paper products.
8. Recycling 54 KG of newspaper will save one tree.
9. The International Institute for Environment and Development estimates that 95% of the information in a typical office is kept on paper, usually in addition to computer storage.
10. The paper industry is the third largest consumer of fossil fuels like oil in the world.
11. Every ton of recycled paper saves about 17 trees.
12. Recycling paper uses 60% less energy than making paper from wood.
13. 34% of our trash is packaging.
14. Paper makes up about 40% of the solid waste produced in American towns.
15. About 35% of all the trees cut in the U.S. go into making paper.
16. Americans throw away about 40 million tons of paper that could be recycled.
17. Recycling one ton of paper saves 682.5 gallons of oil, 7,000 gallons of water, and 3.3 cubic yards of landfill space.
18. Paper producers are the third largest user of chlorine, a toxic chemical.
19. Recycling paper reduces dangerous chemicals going into the air by 28%.
20. Only about 30% of the wood used to make paper is from trees grown as crops for that purpose.





The Tiger's Whisker

Once upon a time a man and a woman lived happily together. Then a war came to their country, and the man went to fight for his country. When he came back, he was sad and bad-tempered.

The woman felt sad, too. She went to see a wise man in the village.

"We used to be very happy," she said, "but now my husband is so sad! What can I do to make him happy again? Can you give me a magic potion?"

"I can give you a magic potion, but I need a very special ingredient," said the wise man. "You must bring me the whisker of a tiger."

The woman was very scared, but she agreed.

There was a tiger in the jungle near her home. Each day she stepped a little closer to the tiger. She moved slowly toward the tiger, a little nearer each day, until at last the tiger allowed her to get so close that she was able to pull out on whisker. She ran back to the wise man with the tiger's whisker.

"Now," said the woman, "you can make the potion for me."

"Now," said the wise man, you have no need of a magic potion. If you can, through your own patient kindness, tame the tiger enough to take a whisker from him, then you can make you husband feel happy again with your own patient kindness."

The woman understood that she didn't need a magic potion. She went home to her husband, and in time the man and his wife became happy again.



Color the Tiger.
Give him a jungle to live in.

