



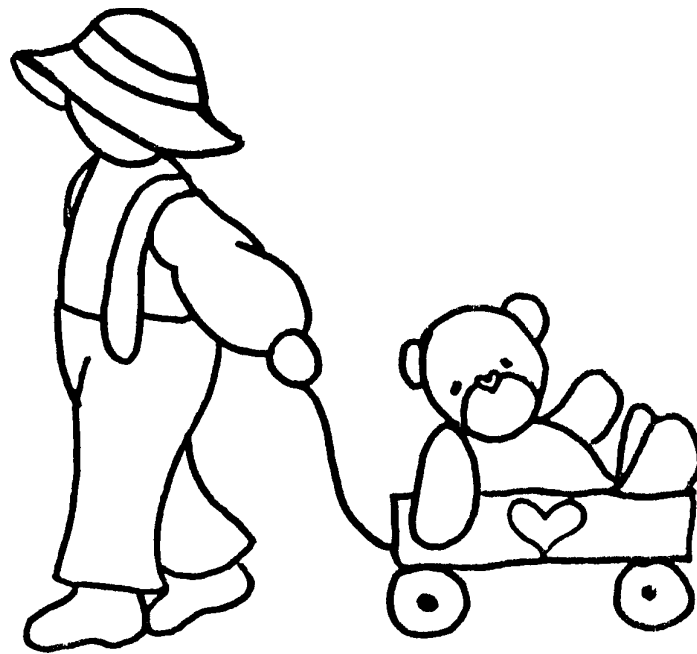
Applied Science

Our Technological World



FIRST GRADE

BUILT ENVIRONMENT



3 WEEKS
LESSON PLANS AND
ACTIVITIES

**APPLIED SCIENCE
OVERVIEW OF FIRST GRADE
SCIENCE AND MATH**

WEEK 1.

PRE: *Discovering the importance of observation.*

LAB: *Comparing different magnifiers.*

POST: *Observing through a hand lens.*

WEEK 2.

PRE: *Measuring objects.*

LAB: *Weighing and measuring students.*

POST: *Investigating the use of a balance.*

WEEK 3.

PRE: *Investigating human senses.*

LAB: *Discovering the sense of sight and touch.*

POST: *Exploring the senses of taste, smell and hearing.*



PHYSICS

WEEK 4.

PRE: *Discovering how light moves.*

LAB: *Distinguishing refraction and reflection.*

POST: *Comparing different type of equipment that uses lenses.*

WEEK 5.

PRE: *Exploring motion.*

LAB: *Investigating how objects move.*

POST: *Comparing the human body to a machine.*

TECHNOLOGY

WEEK 6.

PRE: *Exploring how machines work.*

LAB: *Comparing simple machines in the kitchen.*

POST: *Investigating how simple machines are used in our society.*

WEEK 7.

PRE: *Exploring pulleys, wedges and levers.*

LAB: *Comparing and contrasting different tools.*

POST: *Exploring inventions.*

BUILT ENVIRONMENT

WEEK 8.

PRE: *Discovering the major types of garbage.*

LAB: *Collecting and measuring trash.*

POST: *Exploring how humans affect their environment.*

APPLIED SCIENCE - BUILT ENVIRONMENT (1)

PRE LAB

Students use a worksheet to describe solid waste.

OBJECTIVES:

1. Discovering the major types of garbage.
2. Exploring how we dispose of solid wastes.

VOCABULARY:

burning
dump
landfill
recovery

MATERIALS:

worksheet

BACKGROUND:



Students have learned that technology created many modern conveniences. However, with more advanced technology and more products, additional garbage is created. This unit illustrates where our garbage goes. We will focus on solid waste. Solid waste is any useless, unwanted, or discarded material that is not a liquid or a gas.

The major types of garbage are: paper, glass, metal, plastics, and rubber. Over 90% of all solid wastes are deposited on or under land. The most common methods of disposing solid wastes are: open dumps, landfill, and burning.

Refuse is collected either manually or mechanically by a service provided by cities. In some large cities like New York, taxes pay for the service. In many cities the service is paid for by individuals. The refuse is then taken to a disposal site which includes open dumps, landfills, burning dumps, or recovery dump site.

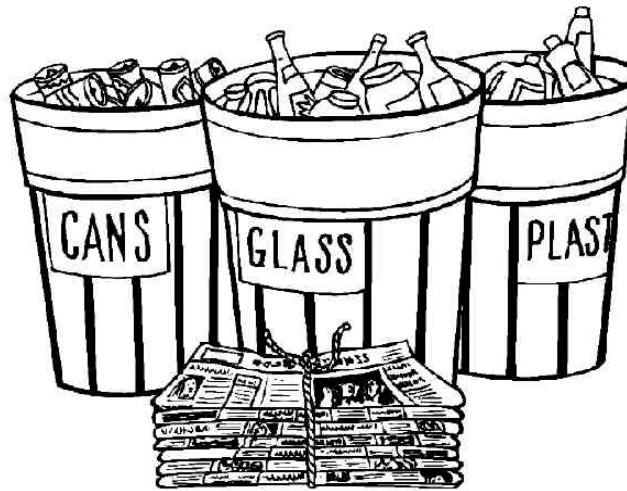
In open dumps, everything is dumped directly on land and left uncovered. Landfills are where wastes are spread in layers then compacted and covered with a fresh layer of soil each day. Burning dumps are where garbage is simply dumped and burned. Recovery dumps are where recycled materials are separated out from the rest and then taken elsewhere to be processed into useful products once again.

Many cities are running out of landfill space, and have begun to transport refuse to areas of sparsely inhabited areas.

PROCEDURE:

1. Ask students to describe SOLID WASTE by giving you examples. Point out that one man's garbage can be another man's treasure. Use examples of aluminum cans, paper, or glass. In the U.S. scrap metals are a big business.
2. Use photos from magazines that show solid waste not being properly discarded.
3. Ask students where local garbage goes. If you don't know, call city hall or look in the telephone directory.

WHAT IS SOLID WASTE?



APPLIED SCIENCE - BUILT ENVIRONMENT (1)

LAB

Students will measure solid waste.

OBJECTIVES:

1. Collecting and measuring trash.
2. Categorizing trash.

VOCABULARY:

glass
metal
paper
plastics
rubber



MATERIALS:

bucket balance
trash (will differ from classroom to classroom)
worksheet

BACKGROUND:

Packaging in the American society is sometimes more expensive than the product itself. Young children who are brought up in a culture that discards everything do not think about throwing things away when they may be useful. Packaging of small toys lure a child to urge their parents to buy the products.

If you are an average American, you generate about 4.3 pounds of solid trash per day or 200 million tons of trash. Over 70% of the trash could be recycled, but Americans tend to throw objects away, adding the tonnage to landfills throughout the United States. About 86 percent of U.S. landfills are leaking toxic materials into lakes, streams, and aquifers. Once groundwater is contaminated, it is extremely expensive and difficult, sometimes even impossible, to clean it up.

PROCEDURE:

1. In the previous discussion, you have talked about the major types of garbage. In this lab, students will save their garbage for a predetermined time (which you will assign). Have the students measure how much garbage they have in each category. This can be a homework assignment, as long as you are strict about the rules you want followed. (They might bring in used toilet paper, if you are not careful!)

2. After they categorize the garbage, measure the amount and record on a data sheet as follows. Units will depend on the type of balance, whether kilograms or pounds.

	PAPER	GLASS	METAL	PLASTICS	RUBBER
Joe	1 kg	1 kg	0	1	0
Mary					
Sharon					

3. After you tabulate the student's garbage, total the amounts. If you have other classes doing this lab, compare charts. The students will probably be amazed at how much garbage is actually thrown away.

APPLIED SCIENCE - BUILT ENVIRONMENT (1) LAB

CLASS					
NAME OF STUDENT	PAPER	GLASS	METAL	PLASTICS	RUBBER
TOTAL:					

APPLIED SCIENCE - BUILT ENVIRONMENT (1)

POST LAB

Students use a worksheet to think about garbage.

OBJECTIVES:

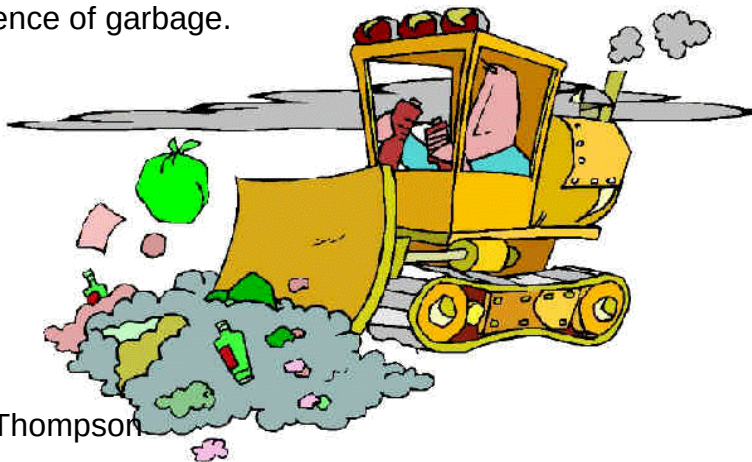
1. Exploring how humans affect their environment.
2. Investigating the consequence of garbage.

VOCABULARY:

garbage
urban

MATERIALS:

crayons
worksheet
The Paper Bag Prince by C. Thompson



BACKGROUND:

Humans can alter their surroundings. Some people change their world to enjoy their surroundings while others do not have the technology to change it. The United States is one of the most technologically equipped societies. With success, one usually produces too much garbage. Our country throws out more garbage in just one day than any other nation on Earth. Americans have built an environment, but must learn to keep it clean.

PROCEDURE:

1. Garbage is a problem in urban areas and people need to develop ways to control their garbage. After coloring this picture, discuss ways we can dispose of garbage correctly. Ask students the consequences of improper garbage disposal. Is all garbage the same? What happens when a toxic chemical is mixed with garbage? This is dangerous because people can unknowingly get hurt. What kind of garbage can cause diseases and what kind will merely be unsightly and create a smelly mess?

2. Ask students to describe areas they think might be damaging the environment. Also ask how they would correct the situation. Emphasize that garbage is a problem for all citizens in a society and that we must take care of our environment.



3. While the students are coloring their worksheet you may want to read them *The Paper Bag Prince*, which explores how garbage can make an area not attractive. You can use the beautiful illustration to help students color their own worksheet.

APPLIED SCIENCE - BUILT ENVIRONMENT (1) POST

