STOMP Lesson Plan: Healey
Mondays 10:20 – 11:20

Natalie Varner and Yasmin Desouza

Lesson 1: Monday October 26
Introductory to Engineering
Introductory to the idea of "Going Green" and Sustainability
Activity: Have students use Lego's to build something that would help the environment
Main idea: Get students introduced to team projects and Lego's, have students start thinking about different ways to help improve the environment
Materials: Lego Kits

Lesson 2: Monday November 2
Runoff from Development
Activity: Show rain water on vegetation vs. hard surfaces and demonstrate how hard/impermeable surfaces create runoff and can lead to flooding.
Main idea: Development gets rid of vegetation, which are permeable surfaces, and are replaced by impermeable surfaces such as roads, roofs, parking lots. Use food dye to help students understand how the pollutants get into the river
Materials: Water, bucket to pour water, large flat rock (impermeable surface), dirt (permeable surface), grate to place dirt on, pipe to act as river, bucket to catch water from "river," food dye

Lesson 3: Monday November 9
Wind Turbine
http://www.ezonemag.net/wind/worksheets/make_a_wind_turbine.pdf
Activity: Create a wind mill and have a fan blow on it to act as the wind
Main idea: Wind can be used to power electricity. Use different size turbines to see how different lengths and widths are effective.
Materials: fan to act as wind, wooden skewer, paper fastener, construction paper, bendy straw, hole punch

Lesson 4: Monday November 16
Recycling
http://hubpages.com/hub/How-to-Make-Paper---An-Illustrated-Step-by-Step-Guide
Activity: Bring in old scraps of paper and have students create a new, full sheet of paper
Main idea: paper can be recycled, even the little scraps can be useful
Materials: old scraps of paper, sponge, window/nylon screening, wood frame, plastic tub, blender, paper blotters, glitter/leaves/moss/Halloween decorations, deckle, rolling pen, hair dryer/microwave, rags

Lesson 5: Monday November 23
Air Pollution

http://www.teachengineering.com/view_lesson.php?url=http://www.teachengineering.org/collection/cub_/lessons/cub_enveng/cub_enveng_lesson07.xml
http://www.teachengineering.com/view_activity.php?url=http://www.teachengineering.org/collection/cub_/activities/cub_air/cub_air_lesson10_activity2.xml
Activity: Show how balloons can be charged and pick up pepper
Main Idea: Air can be cleaned using electrostatic precipitators
Materials: ground black pepper, white paper, balloons

Lesson 6: Monday November 30
Lesson 7: Monday December 7
Main Project (2 weeks)
Activity: Make a piggy bank out of recycled material
Main idea: Get students thinking about how they can make something useful out of "trash." Have specific specifications that the piggy bank must meet (must have slot to drop money, must be able to open to get money out…)
Materials: random pieces of plastic, paper, bottles…

Or

Water Pollution
http://www.teachengineering.com/view_lesson.php?url=http://www.teachengineering.org/collection/cub_/lessons/cub_environ/cub_environ_lesson06.xml
http://www.teachengineering.com/view_activity.php?url=http://www.teachengineering.com/collection/cub_/activities/cub_environ/cub_environ_lesson06_activity2.xml#contents
http://www.teachengineering.com/view_activity.php?url=http://www.teachengineering.com/collection/cub_/activities/cub_environ/cub_environ_lesson06_activity1.xml
Activity: Test different filtration methods and see the effect of polluted water
Main Idea: Polluted water can harm the environment and filtration can clean the water
Materials: Data Collection Worksheet set, 2-liter bottle cut in half horizontally, 3-inch square of mesh (fine nylon screen, fine cheese-cloth, etc.), 1 rubber band, 1 spoon or other stirring utensil (chopsticks work well), Filter materials, Measuring cups, 2 large jugs/jars for mixing/storing "Polluted Water", "Polluted Water", For demonstration (one time set-up/use), large, clear jar (large mayonnaise or pickle jars with wide mouths work well), 1 white or light-colored, thin sponge (cut in half), 1 eyedropper, Water, Sand (enough to fill jar about 1/2 of the way), 2 cups gravel (enough for approximately a 1" layer), Red food coloring , Pollutants, 2 white carnations, 2 6" strips of masking tape, Scissors, 2 different colors of food coloring (groups may share), Teaspoon and tablespoon measuring spoons (or have several of each for groups to share)