Lesson 7 Experimenting with real gears, pulleys, switches, stripped down motor

Objectives: Students will have an opportunity to experiment with real world gears and pulleys.

Students get hands-on experience using several different types of switches. Students gain a better understanding of how they can use switches in their projects.

Knife switches (SPST, DPDT), other various small switches, batteries, alligator clips, lamps, motors, wiring diagram for wiring a DPDT switch so that a motor will spin in either direction.

Students will have an opportunity to see how a very simple motor works.

Materials: Miscellaneous gears, pulleys, mechanisms that use gears and pulleys, pegboard pieces at least 12 inches by 12 inches, long bolts (at least 2 inches) and matching nuts, rubber bands, elastic strips

Miscellaneous switches, electronic components used in previous lessons, circuit diagram for wiring a DPDT switch

Completed stripped down motor described at: http://www.exploratorium.edu/snacks/stripped_down_motor.html and printed page from website

Sponge:

Initial Discussion: Discuss logistics – students will experiment with materials at each station, writing at least one thing they learned in their notebooks at each station.

Discuss need to be respectful of materials, both in use and in clean-up.

Project: Students work in groups, spending 15 minutes at each station.

At gear/pulley station, students look at mechanisms with gears, try meshing loose gears, attach pulleys to pegboard with nuts and bolts, and try connecting pulleys with rubber bands and elastic strips.

At switch and motor station, students experiment with the stripped down motor and try making circuits with the various switches.

Vocabulary:

Final Discussion: Each student tells one thing that they wrote in their notebooks.

Clean up: Be sure that all materials are put away the way the students found them.

Home Connection: