

Lesson 6 Secret Candy Safe

Note: This lesson was difficult for the students. No groups were completely successful. This project probably needs at least two class sessions to complete.

Objectives: Students work together to try to solve a non-trivial problem – how to make a switch that engages when a box is opened.

Students practice their design challenge skills while using concepts about electrical circuits that they learned in previous lessons.

Materials: For each group:
Box with lid (preferably with a lid that is attached on one end)
Buzzer
Battery
Copper wire

Other materials:
String, aluminum foil, paper clips, springs, tape, scissors,
miscellaneous materials from RAFT.

Sponge: How does a switch work?

Initial

Discussion: Discuss how a switch works.

Present the problem: Build a secret candy safe – a box with an alarm that sounds when the lid is opened. As an optional feature, include a method for disabling the alarm so that you can open the box without the alarm sounding.

How can you make a switch that closes when the box opens?

Project: Provide each group with a box, battery, buzzer, wires. Provide other materials on a resource table. Students draw their designs in their journals, build their designs, then test them. If their design doesn't work, they should make changes and try again. Students should be encouraged to improve their designs, even if they work.

Vocabulary:

Final

Discussion: Student groups present their projects to the other students in the class, explaining how their project works and showing the features.

Home

Connection: Students describe their projects to their families.

Credits: Based on an idea from
<http://pbskids.org/zoom/activities/sci/secretcandysafe.html>