

BristleBots

WHAT: Bristlebots are made of a vibration motor, battery, toothbrush, and foam tape. The robot is brought to life by completing a simple circuit between the battery and motor.

YOUR CHALLENGE:

Use the materials provided to design your own bristlebot Rio Olympics mascot bot.

- Can you make a switch?
- Can you redesign your bot to move faster, slower, straight, or in circles?
- Design a bot using pipe cleaners for legs?

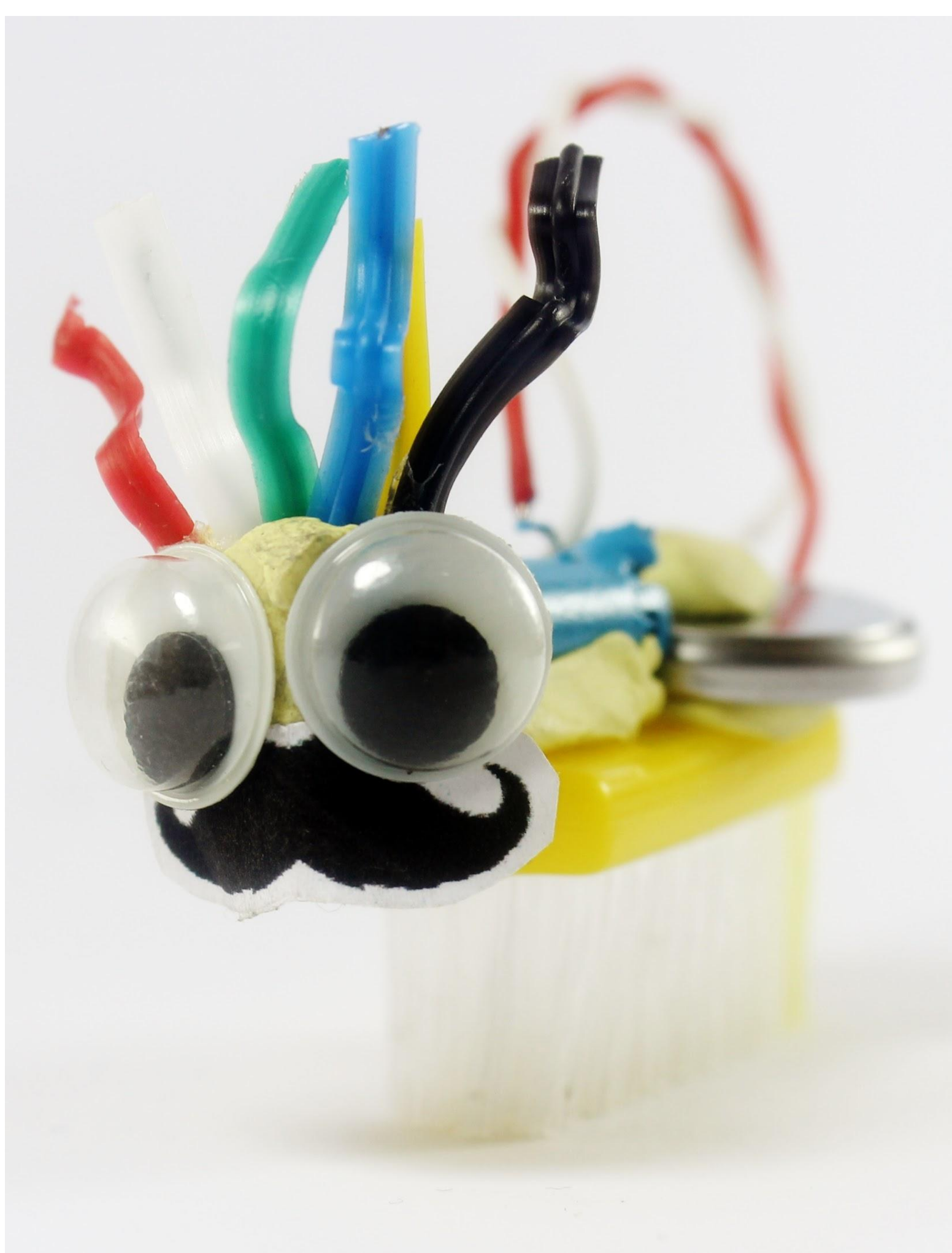


BristleBot

Hints...



Notice one side of the battery is positive and one side is negative.



Paper Circuits

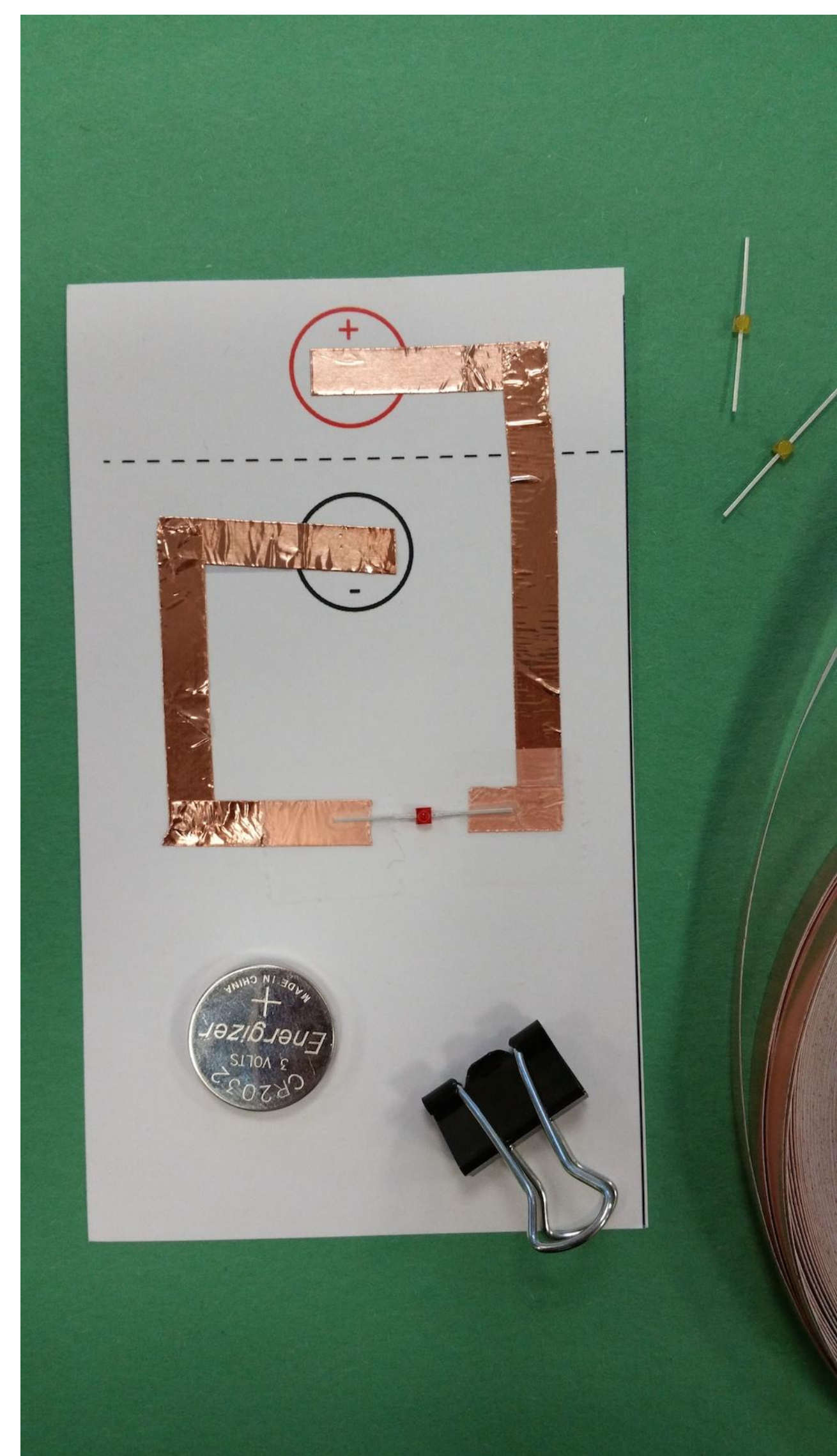
WHAT: Paper circuits are self-designed simple or complex circuits made of cardstock, copper tape, a 3V battery, and LEDs.

ELEMENTARY CHALLENGE (FOR TODAY):

Design a paper circuit using one (1) LEDs to help bring a poem or illustration to life.

CAN YOU BUILD:

- A circuit that can be used in more than one poem or illustration?
- A circuit that can be turned on and off using a different switch than the battery clip?



FUTURE IDEAS FOR MIDDLE/HIGH SCHOOL EXTENSION:

Design a paper circuit using more than one LED to help bring a poem or illustration to life.

CAN YOU BUILD:

- A parallel circuit with more than one LED?
- A series circuit with more than one LED?
- A parallel circuit by swapping out your 3v coin cell for 2 AA 1.5v batteries? What changes do you notice?

(Teacher Note: Ohms Law & a resistor are needed to solve this challenge.)

littleBits

Mystery Boxes

WHAT: littleBits are small electronic components that snap together with magnets to create a circuit. littleBits kits include components such as power, sensors (inputs), sound/lights/numbers (outputs) and a whole bunch more.

ELEMENTARY CHALLENGE (TODAY):

Open your mystery box to reveal the challenge. Use a combination of littleBits and recyclables to design a solution to your challenge.

CAN YOU:

- Creatively integrate a switch (on/off) function?
- Change the speed of your motion or the volume/frequency of your sound?
- Design a unique and compelling housing that creatively represents your challenge?



FUTURE IDEAS FOR MIDDLE/HIGH SCHOOL EXTENSION:

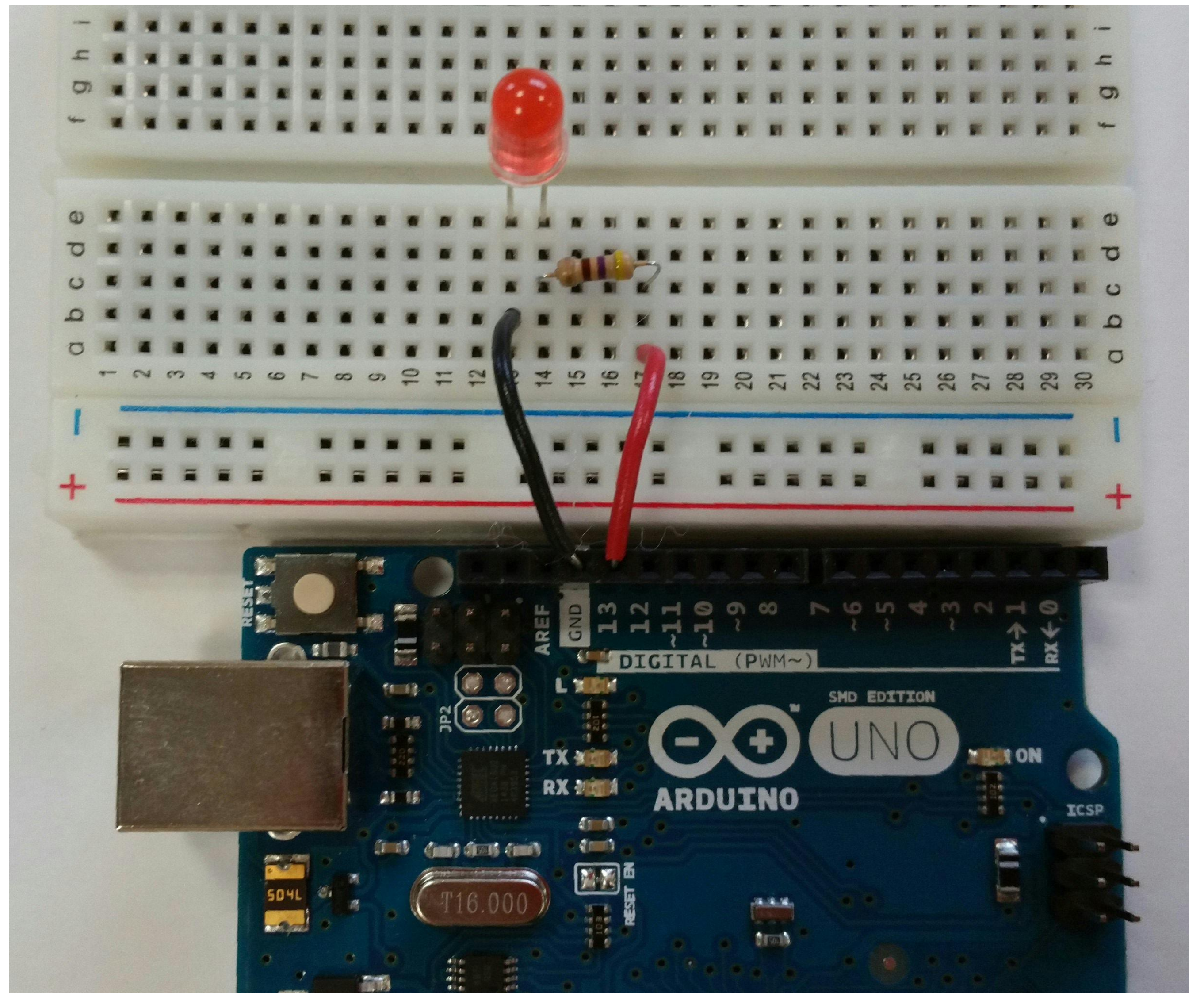
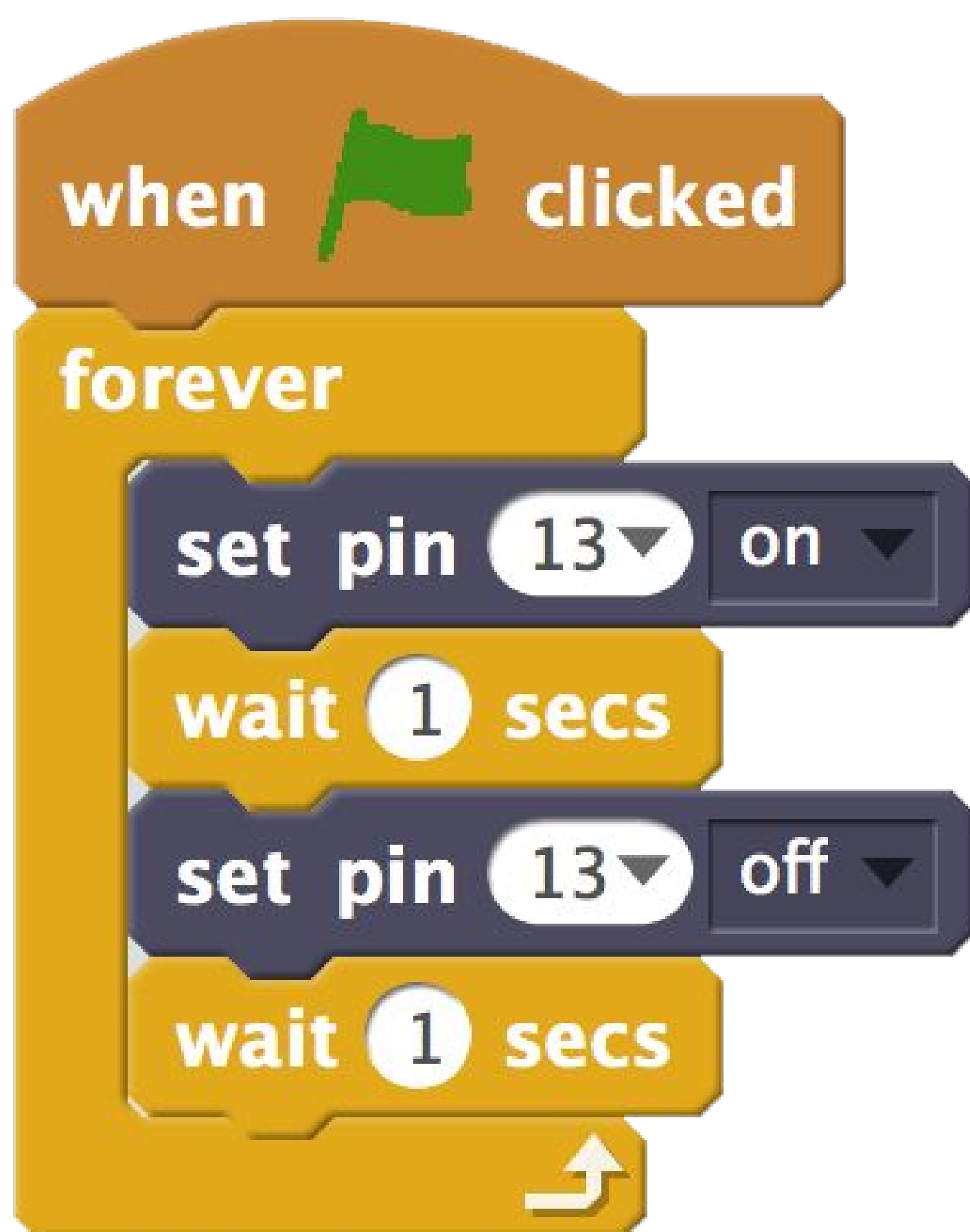
CAN YOU DESIGN A BOT THAT:

- Solves a real world problem?
- Uses a laser (not natural light) to turn on/off remotely?
- Uses the Wireless Transmitter Bit to moderate speed and volume?

LED Clouds

CHALLENGE:

Make an LED cloud complete with flashing lights and sound effects.



CAN YOU:

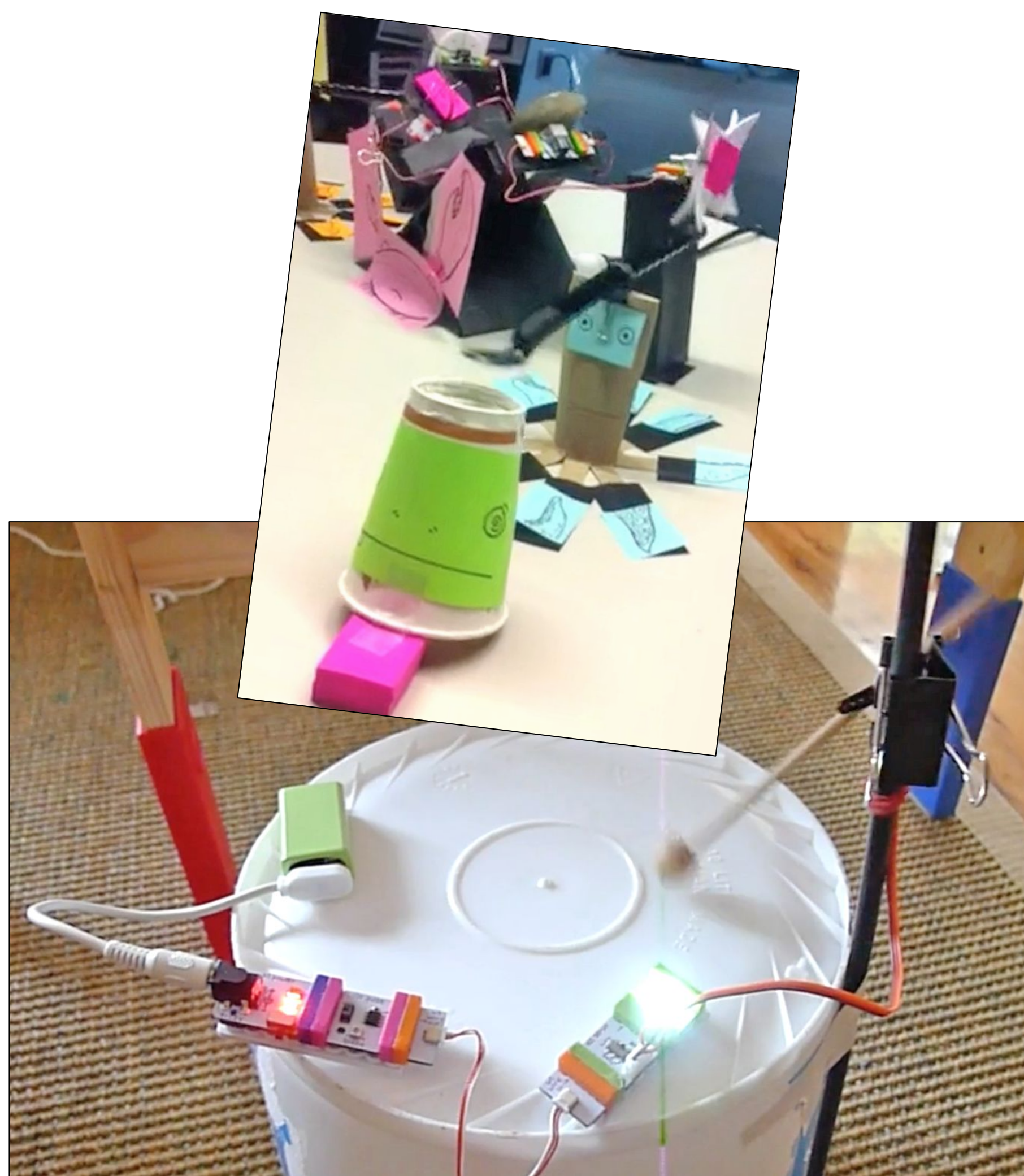
- Make your cloud light up?
- Record a sound effect for thunder?
- Use multiple LEDs to give your cloud a unique lightning effect?



Party Machine

Challenges:

1. Can you build a party sound machine that includes: a drum, a microphone, and some kind of spinning component?
2. What kind of designs or characters can you create for your party machine?
3. What extra bits and beats can you add to your design?



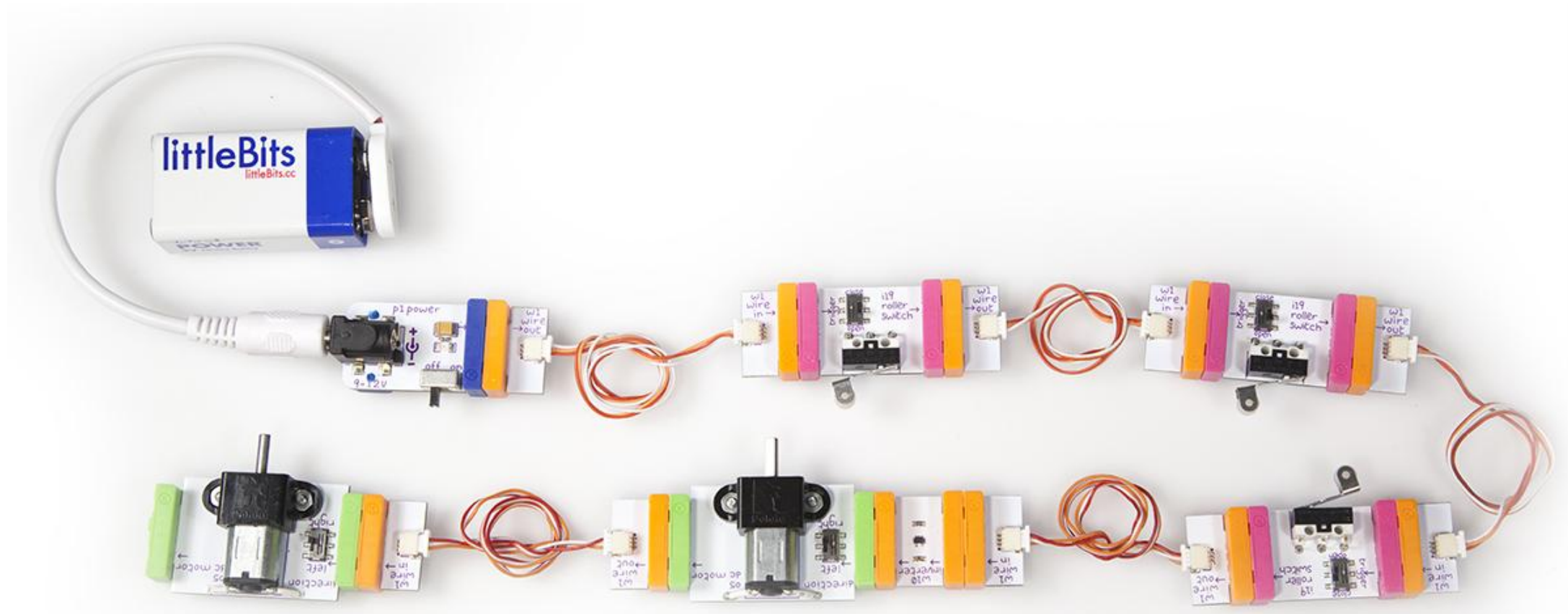
littleBits Mystery Box

These flyers are designed to be cut at perforation, rolled up, and placed in a box.

Pull A Prank

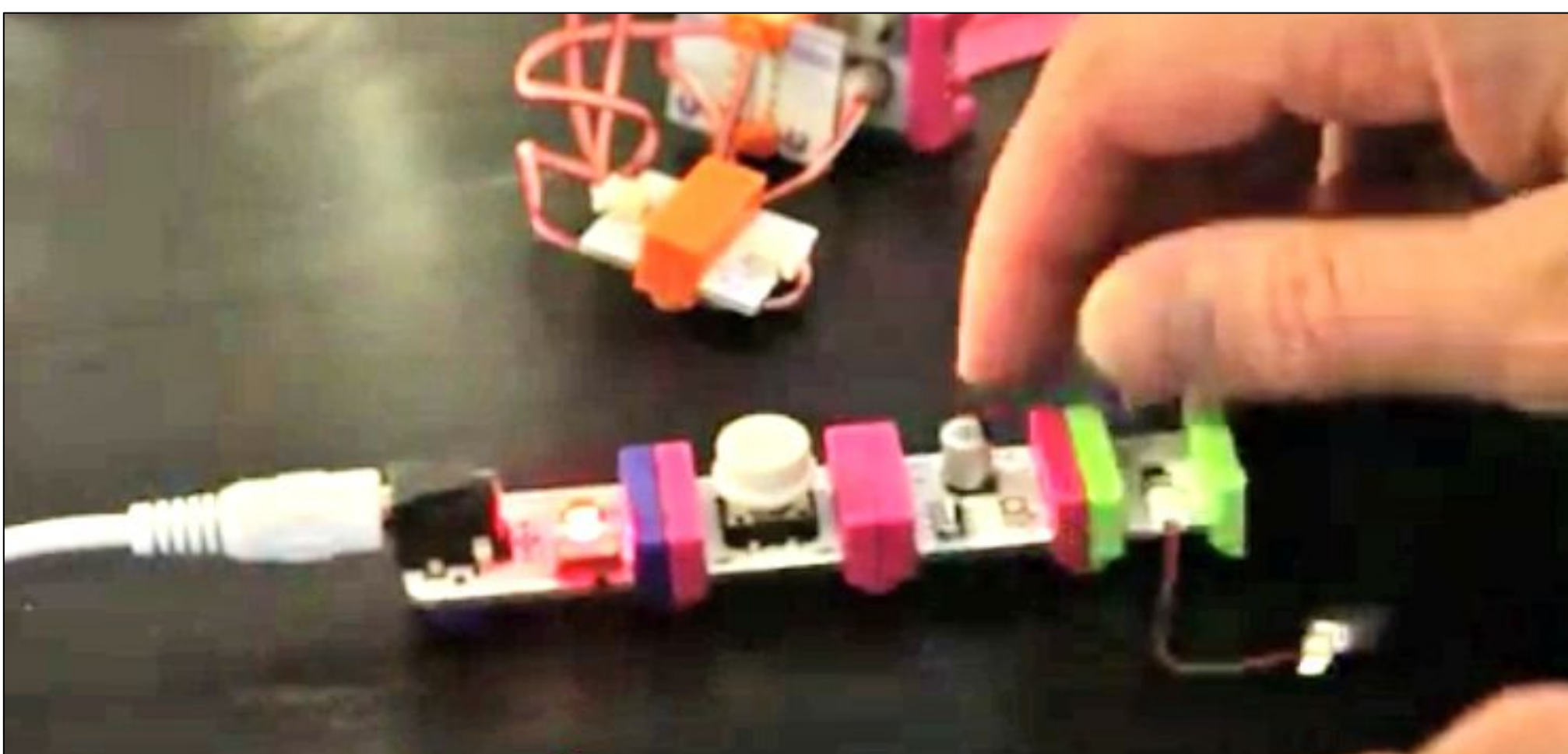
Challenges:

1. Can you design a prank to annoy your teacher or friend sitting at least 2 feet away?
2. How can you camouflage your design so that your victim does not suspect anything.
3. What bits can you add to make your prank even more surprising, scary?



littleBits Mystery Box

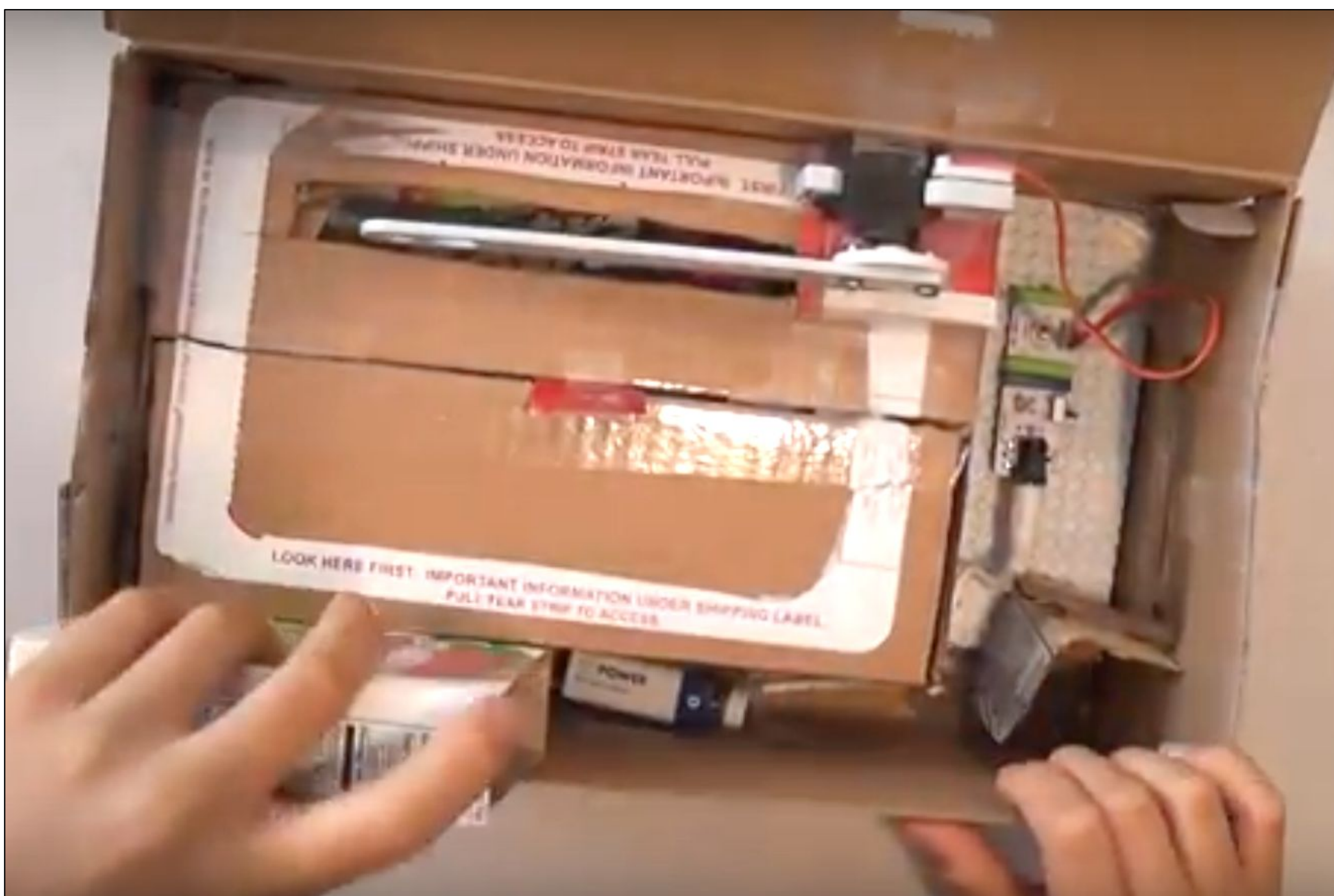
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Spy Box

Challenges:

1. Can you design a spy box to keep your valuables safe against snooping family members?
2. How can you camouflage the outside your box so that people leave it alone?
3. What bits can you add to make your box to add to the scare factor?



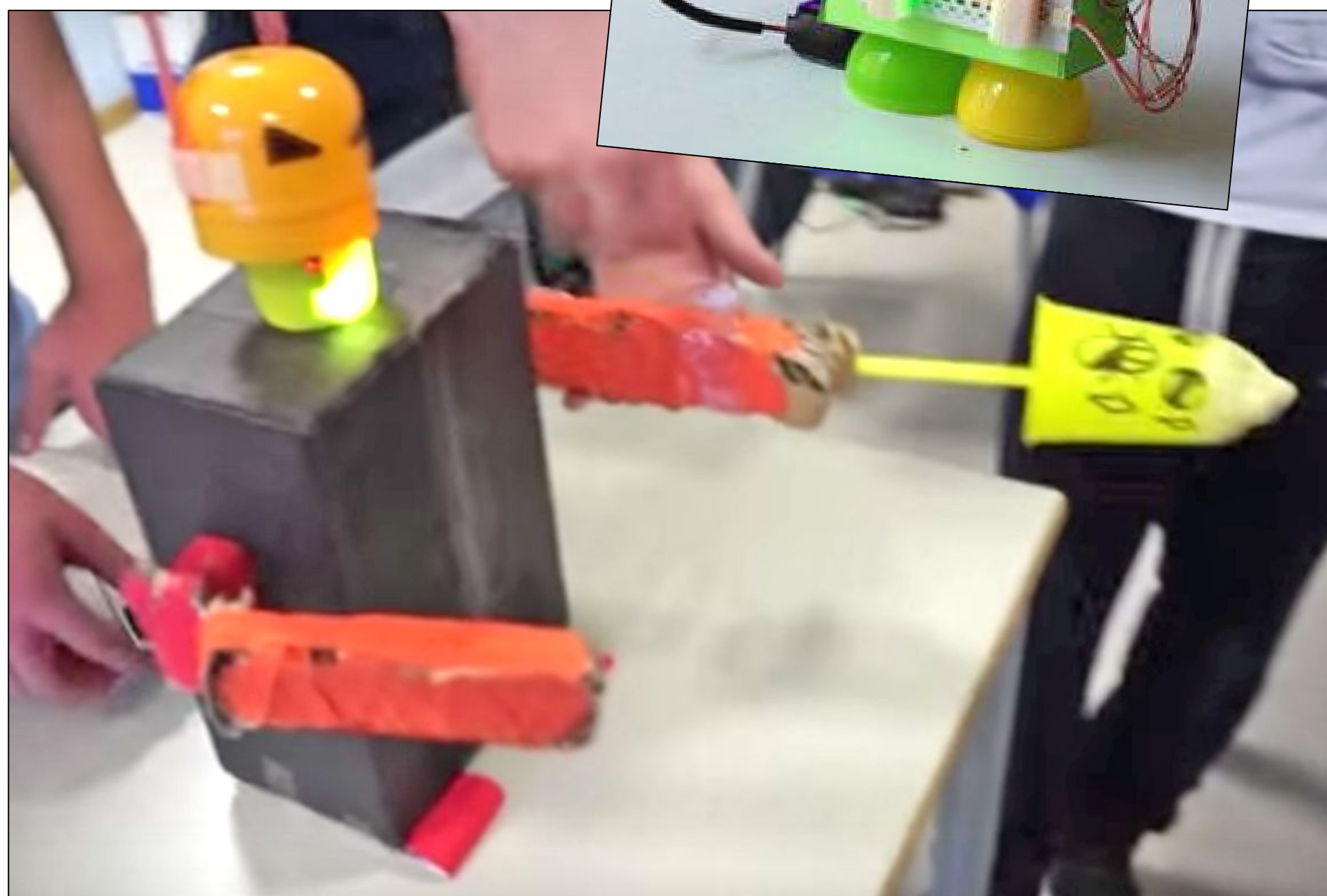
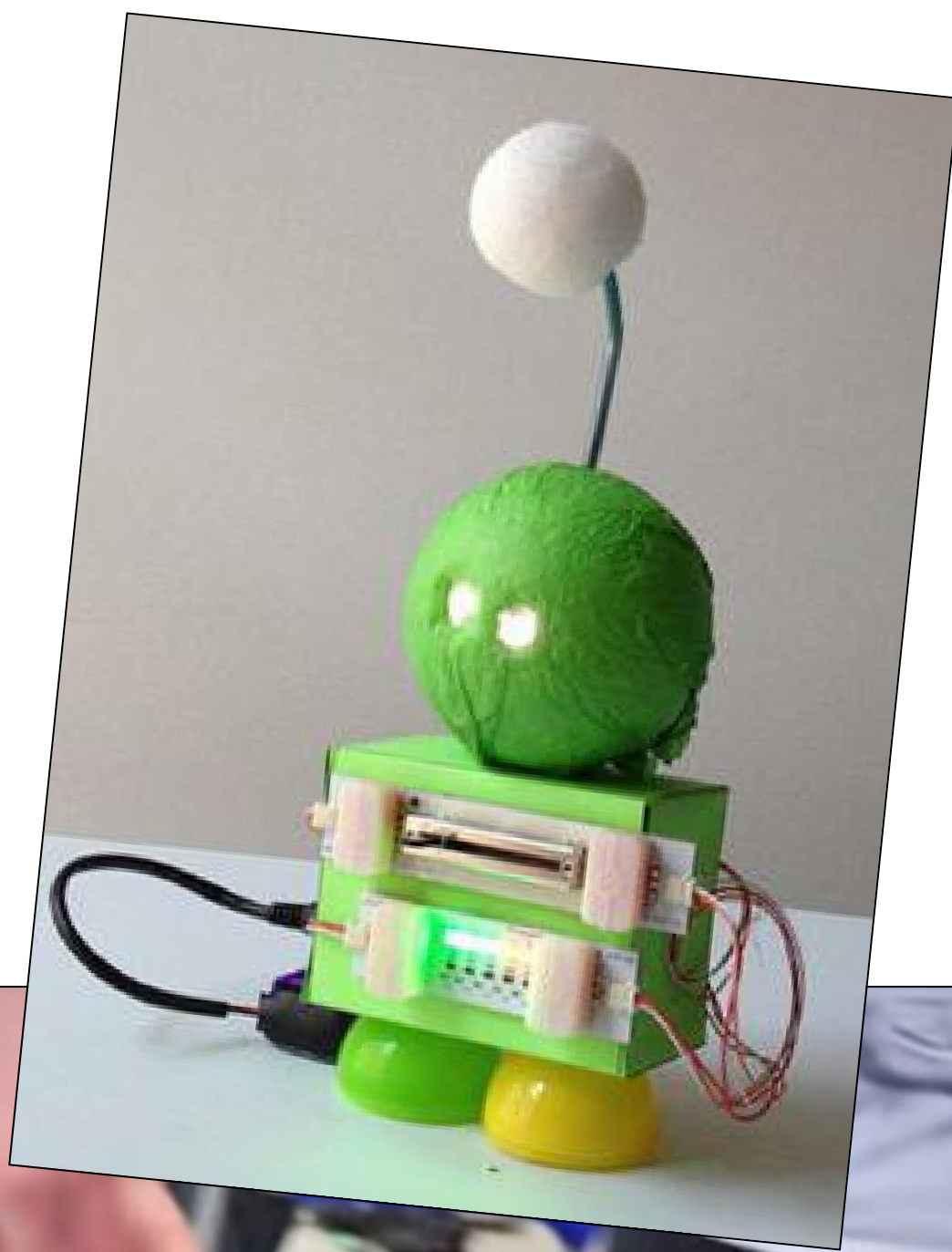
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Box Monster

Challenges:

1. Can you design an interactive monster out of recyclables?
2. What sensors can you add to trigger your monsters actions?
3. What bits can you add to your monster's scare factor?



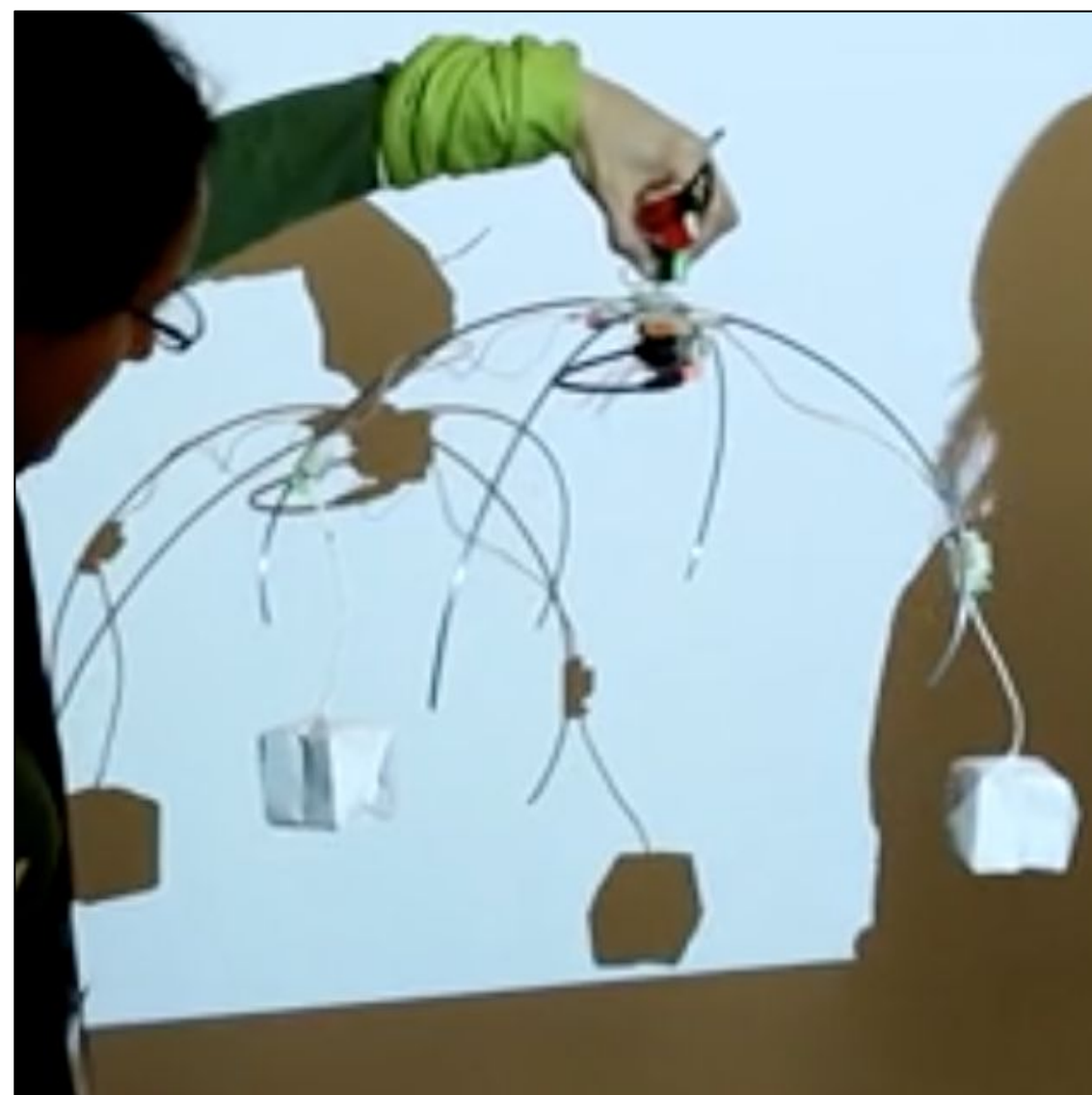
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Interactive Mobile

Challenges:

1. Can you design a mobile that is triggered by a sensor?
2. Can you design an arm or structure so that it spins freely?
3. What other bits can you add to your design to make it more engaging?



littleBits Mystery Box

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