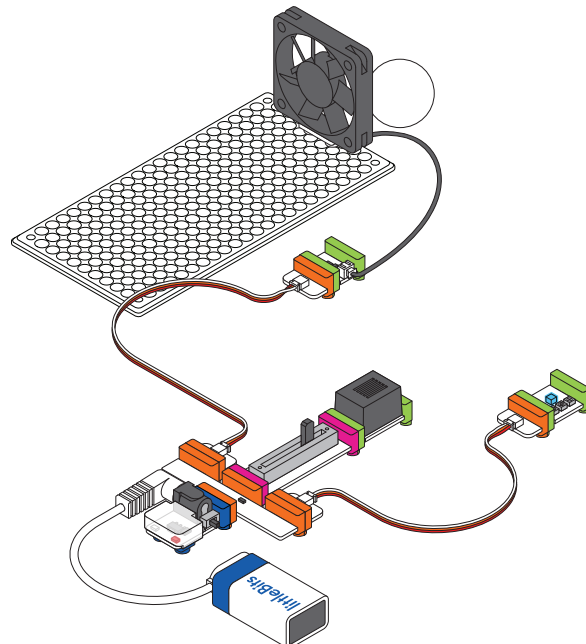


littleBits

ENERGY TRANSFER



GUIDED

DESIGN CHALLENGE

Design a littleBits circuit to demonstrate different forms of energy.



WRITE

EXPLORE

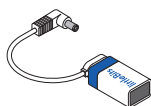
- Complete Writing Box #1.



CREATE

CREATE

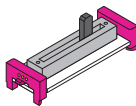
1. Gather your invention tools.



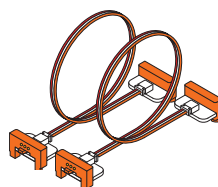
a1 battery & cable



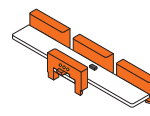
p4 power



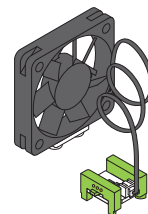
i5 slide dimmer



w1 wire (x2)



w17 fork



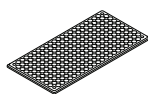
o13 fan



o3 RGB LED



o6 buzzer

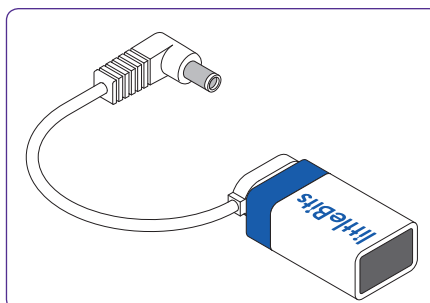
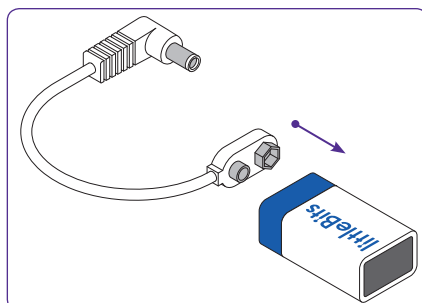


a30 mounting board

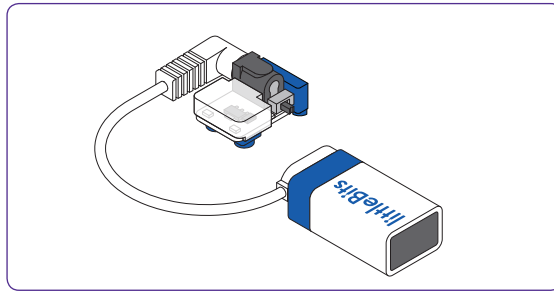
Other materials:

- 1.5 inch styrofoam ball
- Optional: Tissue paper

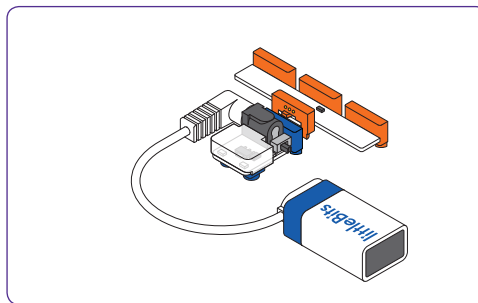
2. Attach the battery cable to the battery.



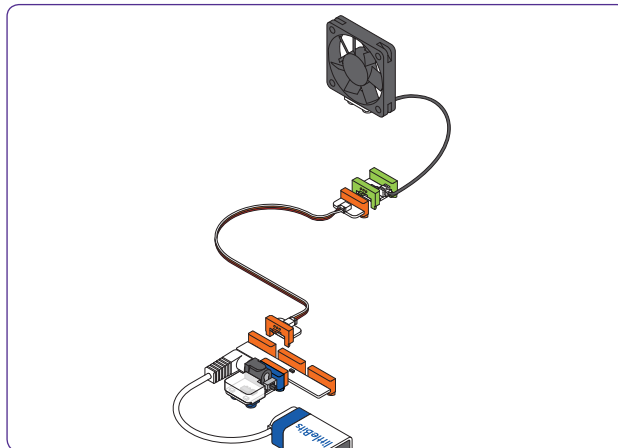
- 3.** Attach the p4 power Bit to the battery cable assembly.



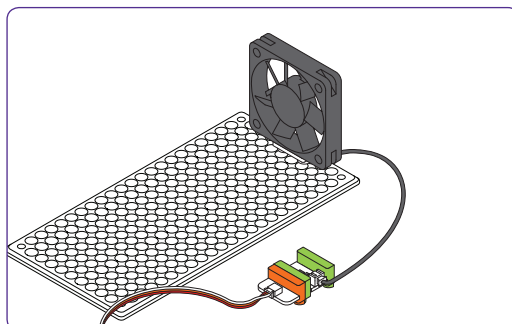
- 4.** Snap a fork Bit to the power Bit.



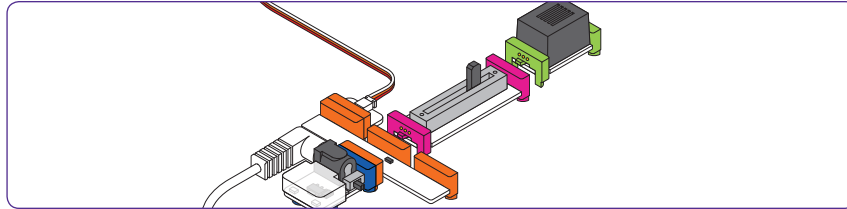
- 5.** On the first bitsnap of the fork, connect a wire + fan Bit.



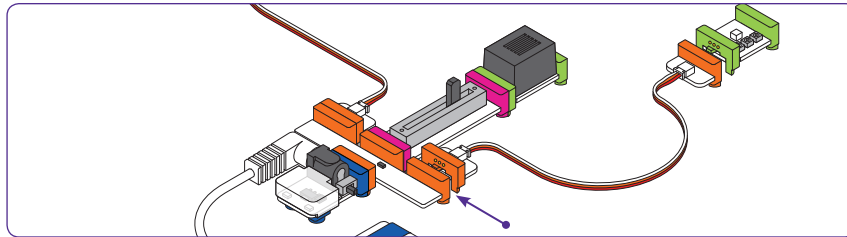
- 6.** To help the fan stay upright, press the feet on the fan Bit into one end of the mounting board.



7. On the second bitsnap of the fork, connect the slide dimmer + buzzer.



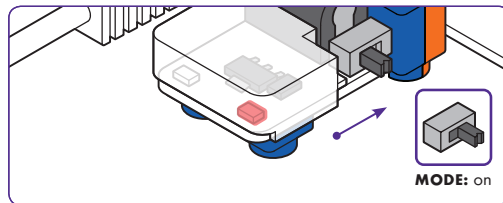
8. On the third bitsnap of the fork, connect a wire + RGB LED.



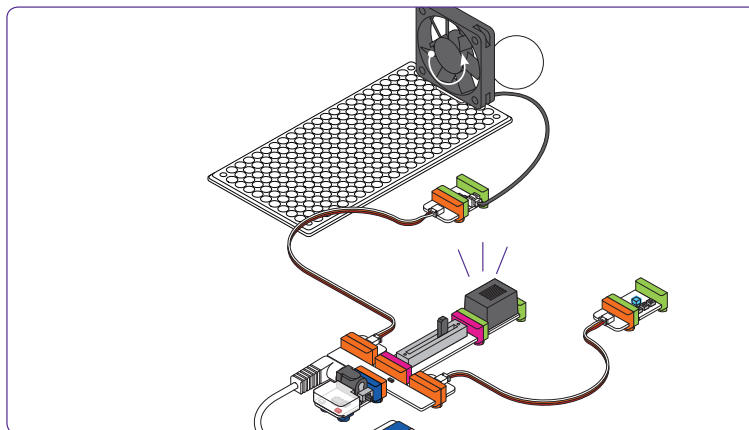
PLAY

PLAY

9. Let's test that the circuit works! Power on your circuit.



10. Place the ball on the table in front of the fan better "see" the air that the fan is moving.



WRITE

11. Complete Writing Box #2 in your guided handout.



REMIX

REMIX

- Answer some of the following questions with your group:
 - How could we design our circuit to produce waves in the medium of water instead of air?
 - What new Bits could you invent to harness the sun as a source of energy?
 - Imagine that we had a 'Stove Bit' that, when attached to the power Bit became very hot and could even cook a pancake! What kind of energy transfer would be working here?



CLEAN

CLEAN UP

- **Until next time, littleBits!** Place the Bits gently back in the box according to the diagram on the back of the Bit Index; return classroom materials to their proper place and check the area around your workstation.

Name: **CHALLENGE OVERVIEW**

Let's create an energy circuit!

GUIDING QUESTIONS TO REACH LEARNING OBJECTIVES

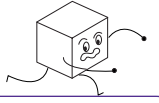
Can multiple energy exchanges happen at the same time? How can we describe different types of energy? How do forces affect a change in motion?

**CREATE**

1. Draw a picture of your friend holding a ball in their outstretched hand. What type of energy does the ball in the hand represent?

Explain using the terms potential energy and kinetic energy how that energy changes when your friend lets go of the ball.





2. Draw a model of your circuit. Label the different types of energy exchanges, using the following vocabulary words: **Source**, **Potential Energy**, **Electrical Energy**, **Energy as Heat**, **Energy as Light**, **Energy as Sound**, **Energy as Motion**, **Waves moving through a Medium**.

