

Lily pads

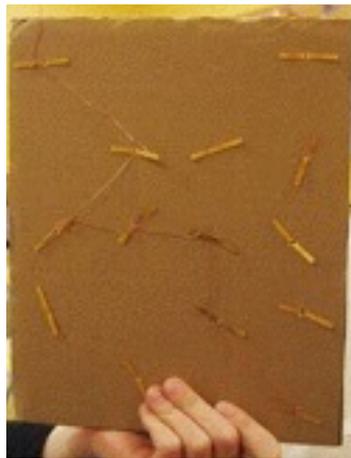
How to Build It:

Materials:

- | | | | |
|--|---|---|--|
| <input type="checkbox"/> Cardboard or matboard (8 x 10") | <input type="checkbox"/> Copper or uninsulated wire | <input type="checkbox"/> Insulated wire | <input type="checkbox"/> Markers |
| <input type="checkbox"/> Brad fasteners | <input type="checkbox"/> AA batteries | <input type="checkbox"/> Tinfoil | <input type="checkbox"/> Scissors |
| <input type="checkbox"/> Rulers | <input type="checkbox"/> AA battery holders | <input type="checkbox"/> Game piece | <input type="checkbox"/> Awl, x-acto knives or other tool for poking holes |
| <input type="checkbox"/> Pencils | <input type="checkbox"/> LED or Christmas light | <input type="checkbox"/> Tinfoil tape | |

Procedure:

1. On a piece of matboard or cardboard, draw a grid that is at least 4 x 5 squares big (20 squares total). Decorate the game board however you feel like. Remember to mark one square Start and one square Finish.
2. In each square, poke one hole using an awl or something sharp. Insert a brad fastener into each hole.
3. Turn the board over and connect a series of brads from start to finish using the long copper/stripped wire.



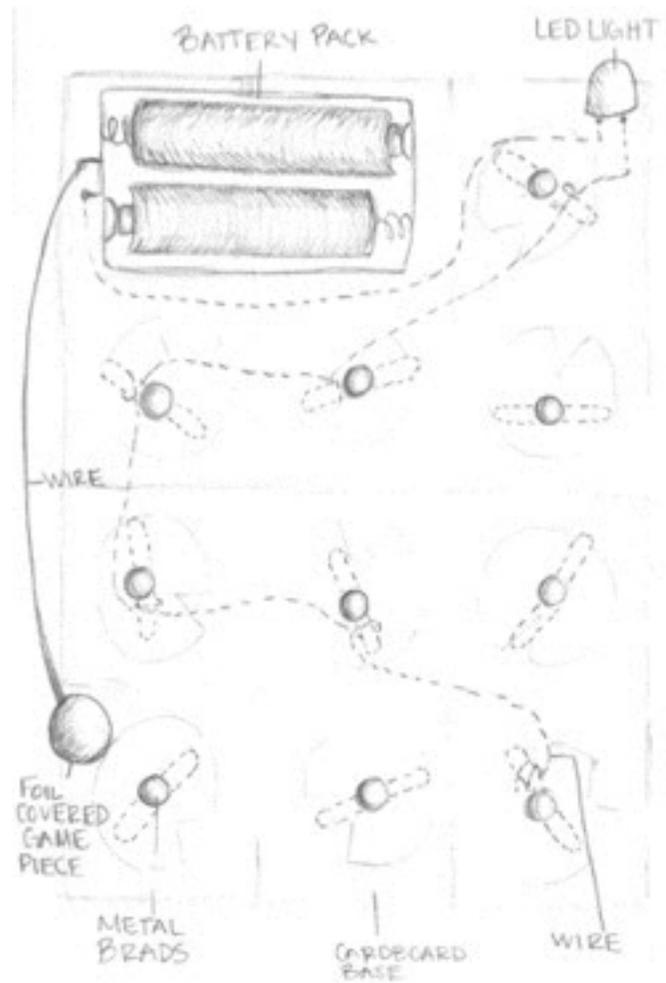
Twist the wire tightly around each brad to make sure the connection is tight.

4. Poke an extra hole in the top corner of the board for the LED light.
5. Solder the end of the wire at the Finish square to the long (positive) leg of the LED.
6. Solder the short (negative) leg of the LED to the black wire on the battery pack.
7. Connect the Game piece to long insulated wire.
8. Solder the other end of the long insulated wire to the red wire on the battery pack.



How it Works:

The copper wire on the back of the board connects a bunch of brad fasteners together. Because the wire is soldered to one side of the battery pack, it acts an extension of the wire part of the circuit. The lightbulb is connected to the game piece which is attached by a long wire to the other side of the battery pack. Because the game piece is conductive and attached to the wires in our circuit, anywhere we touch the game piece to a brad fastener that is connected to the wire on the back should result in the light turning on! We complete the circuit when the game piece is in the right spot, but the circuit stays open when the game piece is in the wrong spot.



Experiment!

Experiment with different materials to complete the board. What other conductive materials could you replace the pieces with?

How could you adapt this idea to electrify other types of board games?