

Spinning Arm

What can you create with a Ping Pong ball, 3 volt motor, wires, battery and paint stirrers? A motorized arm--kicking stick--to hit the Ping Pong ball across the floor!

TEKS:

4.6C Demonstrate that electricity travels in a closed path, creating an electrical circuit, and explore an electro-magnetic field.

4.6D Design an experiment to test the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.

Materials:

- 2 craft sticks
- 3 volt motor (the kinds with gear attached to shaft)
- AA battery in a battery holder
- Aluminum foil
- Cardboard
- Duct tape
- Hook-up wire
- Paint stirrer
- Paper clips
- Ping pong ball
- Rubber faucet washer (3/4 inch or larger)
- Scissors
- Wire strippers

How To

1. First build the circuit by connecting the battery, wires, and motor. To create a switch, add two pieces of aluminum foil at the end of the wires (see picture below). The motor will work if the aluminum foil pieces are touching, as that is a closed circuit and the electricity can run through.

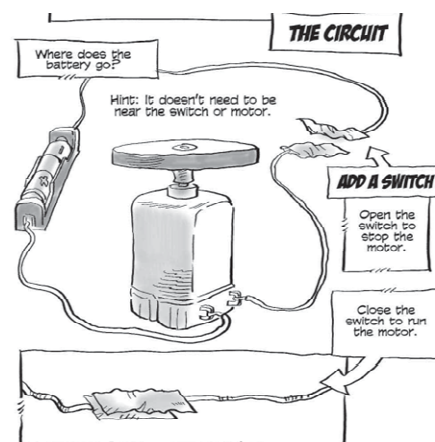
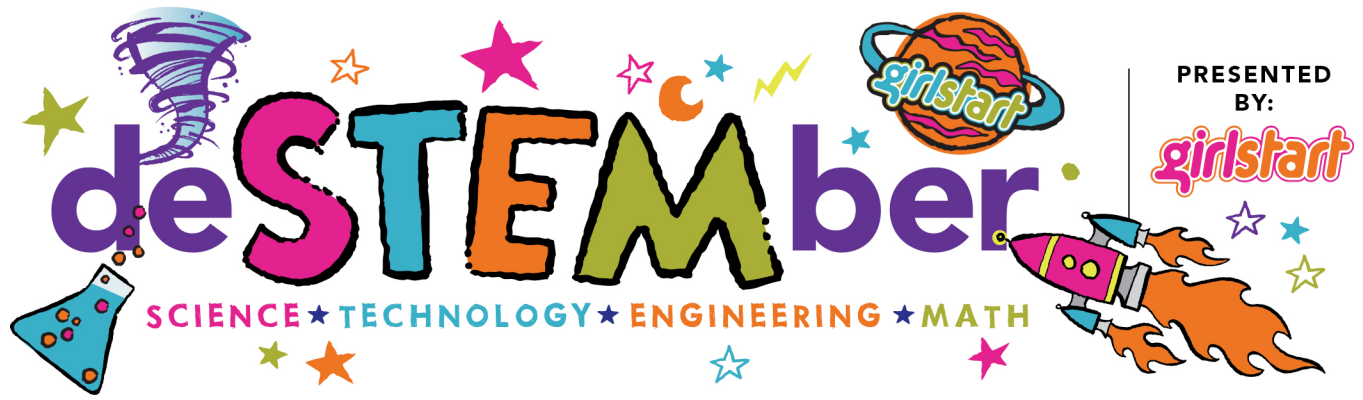


Image by Design Squad

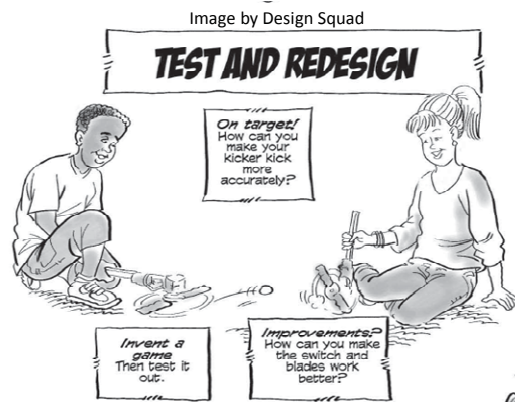
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How To Continued...

2. The large washer slips onto the gear on the motor and spins when the shaft spins. The blades will be attached to this washer through tape. The blades can be created out of craft sticks, paper clips, paper or duct-tape strips rolled tightly. The choice is yours for the type of blades that you want to use. You also have the choice of where on the motor you will connect to the paint stirrer or stick (in the middle of the stick, the end pointing out, the end pointing down), as the paint stirrer will serve as the handle for this kick stick. Construct and attach the blades and paint stirrer and give your kick stick a try!



Why Does it Work?

The battery powers the motor as the current travels a single path through the wires from the battery terminal. When the motor is powered, the shaft spins and causes the blades to rotate. The rotating of the blades can kick a ball, when the kick stick is held by the paint stirrer which is attached to the motor.

Career Connection:

Engineers build and improve things that matter to people! Engineers can make games, and that matters because games entertain people.

Resources: pbs.org/designsquad

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