WOBBLEBOTS

Goal: To introduce students to basic circuitry and the design process while fostering problem solving and critical thinking skills

Scientific Significance

Understand concepts related to circuits, energy, and Newton's laws. Explore the conversion of chemical to kinetic energy

Key Terms

- Circuit: a closed path through which an electric current may flow
- Battery: an electrical component that creates the driving force for the circuit
- Motor: an electrical component that converts electrical energy to kinetic energy (motion)
- Wires: electrical components that pass current easily from one part of a circuit to another
- Lead: an electrical connection (metal pad or wire) that is used for physical support, to transfer power, and/or to probe circuits.

What are WobbleBots?

Wobblebots are simple-to-assemble robots where the motion is caused by the transfer of kinetic energy from the motor that vibrates through the robot to the ground.

Directions:

1) Describe Wobblebots and show examples to the students.

2) Students will need a CD, dome-shaped lid, *motor*, battery holder, *batteries*, tape, eraser and 2 pieces of wire to begin their project.

3) Instruct students to use needle nose pliers to bend the ends of 1 piece of wire and attach that piece of wire to their motor's *lead* and switch's lead.

4) Then use the same technique to connect the other piece of wire from the battery pack to their motor's free lead, and then the last wire to connect the battery pack to their switch's free lead. (The end result of the 3

Supplies

- CDs or DVDs
- Dome-shaped (slurpie) lids
- 2 "AAA" battery holder
- 2 "AAA" batteries
- 1.5-3 V DC Motor
- SPST Switch (single pole single throw)
- Wire (2-3in cut and stripped)
- Pencil with eraser
- Decorative materials
- Wire cutters
- Needle nose pliers
- Hot glue gun
- Scissors
- Electrical tape

Facilitator Tips

- Engage students by asking about different robots they have seen or know of
- Promote problem solving by asking students how placing the motor or weights at different parts of the CD would affect how their robot wobbles
- Engage students' creativity by asking how putting different ends on the motor would effect how their robot wobbles

electrical components and 3 wires is a big circle between the motor, switch, and battery pack).

5) Next the students can attach the eraser to the end of the motor, and then hot glue their motor onto the CD, with the eraser sticking through the middle of the CD.

6) Once the battery pack is secure, the students can tape the battery pack to the motor and the CD. (Because of the electrical circuit they have created, the switch should be the only remaining loose piece.)

7) Place the slurp lid over the motor and battery pack with the switch sticking through the top of the lid. (Students can then decorate their wobblebot with googly eyes etc.)

Troubleshooting Tips:

• If the motor is not running, ensure that all parts of the battery-switch-motor circuit are connected.

References

http://researchparent.com/homemade-wobblebot/