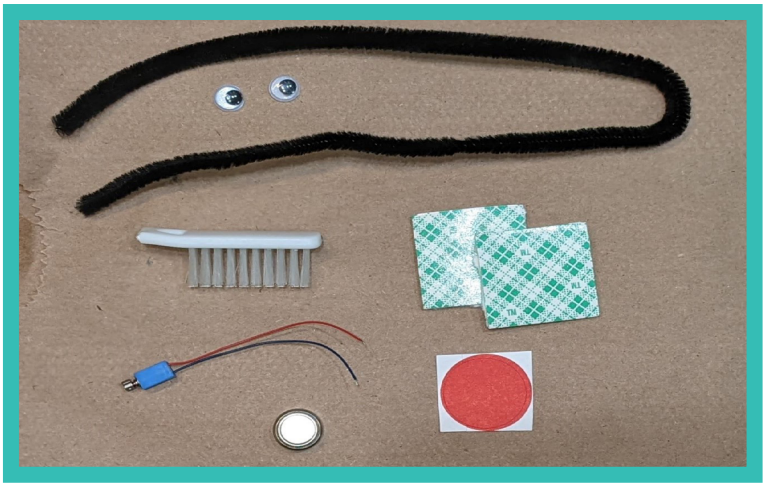
WUNDERSTEM
Career & Workforce Explorations

BRUSHBOTS

Engineers build robots to do all sorts of jobs What are some jobs that you can think of that some robots currently do in your life?

Vacuums, ATM's, even pets can be robots! Robots help us do all sorts of amazing work and come in a variety of shapes and sizes.



MATERIALS

- 1 toothbrush head
- 1 motor
- 1 battery
- 2 double-sided foam tape squares
- 1 red sticker square
- 2 googly eyes
- 1 pipe cleaner

VOCABULARY

Robot: an automatically operated machine that replaces human effort. Not all robots resemble human beings in appearance or perform functions in a humanlike manner.

Automation: the use of largely automatic equipment in a system of manufacturing or other production process.

Oscillation: back and forth movement.

STANDARDS

4-PS3-4 Energy Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

STEL-3D. Explain how various relationships can exist between technology and engineering and other content areas.

WUNDERSTEM
Career & Workforce Explorations

Mister C

Today, we're creating a robot that turns electrical energy into mechanical energy to wiggle and vibrate our brushbot.

Goal: I can create a robot that is able to wiggle its way across a space!

INSTRUCTIONS

1. Peel one side of the backing off of a foam tape square and stick the tape to the smooth side of the toothbrush, pressing firmly.

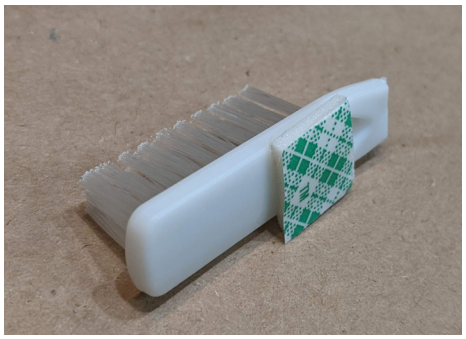
2. Peel off the other side of the backing and place the motor onto the sticky spot.

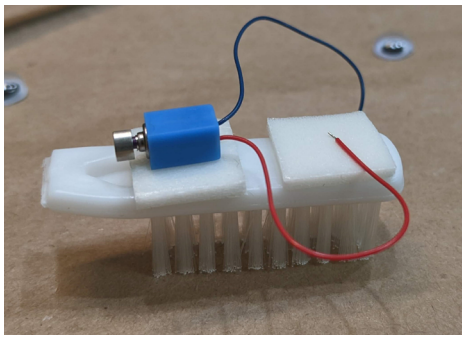
3. Peel the backing off another foam tape square and stick it to the toothbrush. Then peel off the other side of the backing. Stick the end of the red wire to the sticky side of the foam square.

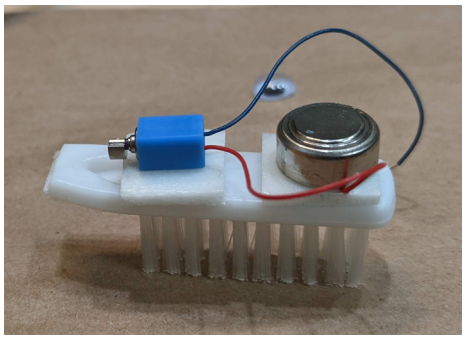
4. Place the battery NEGATIVE SIDE UP. This means the positive side of the button battery will be sitting on top of the red wire. *The metal part of the red wire should be touching the negative side of the battery.

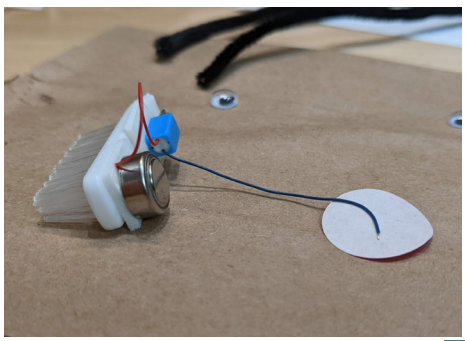
5. Peel up your sticky dot and press onto the end of the blue wire. Then, stick that to the top (NEGATIVE) side of your battery.

6. Your brushbot should now vibrate. With the bristles facing down, sit your bot on the table and floor and watch it go. You may need to balance your brushbot. Make adjustments as needed.









WUNDERSTEM
Career & Workforce Explorations

Mister C

How a Brushbot Works?

Brushbots are mechanical toys with movement generated by a vibrating motor. The vibration is kinetic energy that is transferred through the bristles to the surface on which the brushbot is sitting. This transfer of energy causes the bristles of the brushbot to move rapidly enabling the brushbot to propel about the work surface.

Read a book and keep Exploring

*Bots! Robotics Engineering: with Hands-On Makerspace Activities by Kathy Ceceri (2019) Nomad Press, ISBN 9781619308275

*Careers in Robot Technology by Joshua Gregory (2018) Cherry Lake Publishing, ISBN 9781534129771

*Cutting Edge Careers in Robotics by Stuart Kallen (2020) Referencepoint Press Inc., ISBN 9781682828731

*30 Minute Robotics Projects by Loren Bailey (2019) Lerner Publishing, ISBN 9781541538887

*You Wouldn't Want to Live Without Robots! by Ian Graham (2019) Scholastic Publishing, ISBN 9780531128138