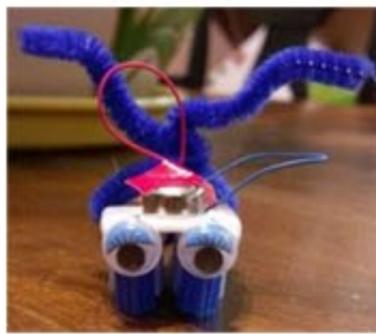


BUMPER

BUGBOTS



SUPPLIES

2 toothbrush heads



Battery



Googly Eyes



Double Sided Tape



Vibrating Motor



Pipe Cleaners



Copper Tape



LED



Popsicle Sticks



1 APPLY DOUBLE SIDED TAPE TO TOP CENTER OF BRUSH HEADS

Peel adhesive backing from underside of tape. Press tape onto the center of the 2 brush heads. Peel adhesive backing from top of tape.



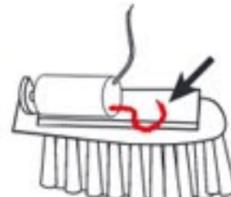
2 ATTACH THE MOTOR TO TAPE

Place the end of the motor so the spinning part hangs off the tape without touching any part of the toothbrush allowing it to spin freely.



3 STICK THE RED WIRE TO TAPE

Bend and press the red wire metal tip onto the tape. Don't press too hard to where the wire gets buried into the tape, preventing contact with the battery.



4 STICK THE BATTERY TO THE TAPE ON TOP OF THE WIRE

Stick the battery on top of the red wire making sure it makes contact with the metal tip of the wire. The flat side of the battery with the "+" should face up.



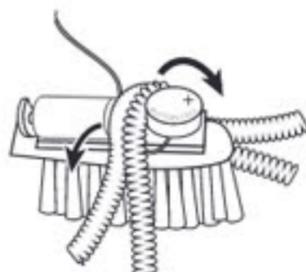
5 TEST THE CONNECTION

Take the free blue wire and touch it to the top of the battery. The motor should vibrate. If not, check that both wire metal tips are making contact with the battery and that the motor end can spin freely.



6 ADD PIPE CLEANERS

Wrap pipe cleaners over the toothbrush heads to make feet or wrap them up and around to make antennae. Get creative with this. Just make sure they do not get in the way of the spinning part of the motor.



7 ADD GOOGLY EYES

Peel the adhesive backing from the googly eyes and stick them on the front or front-side of the bot. You can attach 1 big eye or multiple eyes.



8 CONNECT THE BLUE WIRE AND LET IT RUN

Take the adhesive backing off the small strip of your copper tape and stick the metal tip of the blue wire to the tape. Then stick the tape and wire to the top of the battery making sure the metal tip is making contact with the battery.



CONGRATS! YOU BUILT A BUMPER BUG BOT!

Let it buzz around on the floor, race it with other bug bots, build a track with blocks and let it run through the track or build a square with blocks and let it bump around with other bots like bumper cars.

ADDITIONAL CHALLENGES

These are additional things we can add to the bots if we have time left over and the kids are still engaged.

1 ADD WINGS TO YOUR BUG BOT

Wrap duct tape around the center of 2 popsicle sticks making wings. Detach the battery and motor from the white double sided tape and stick the wings onto the tape. Attach another piece of double side tape on top of the wings and then stick the battery and motor on top of that.

2 ADD A LIGHT TO YOUR BOT

The LED will require 2 batteries. Place another battery on top of the one already on your bot with the positive side facing up and wrap electrical tape around them. Place one end of the LED underneath the bottom battery and the other end on the top battery securing the top with copper wire. You may need to bend the LED metal legs in order to make a good contact connection.