

# Drawing Robots

## A STEAM - Integrated Classroom Lesson

### Materials

- A light weight cup
- Tape
- One medium-sized rubber band
- Washable markers
- A small, motorized object (and batteries)
- Small waxed paper cups
- Art paper
- Water color paint (Optional)

### Objectives:

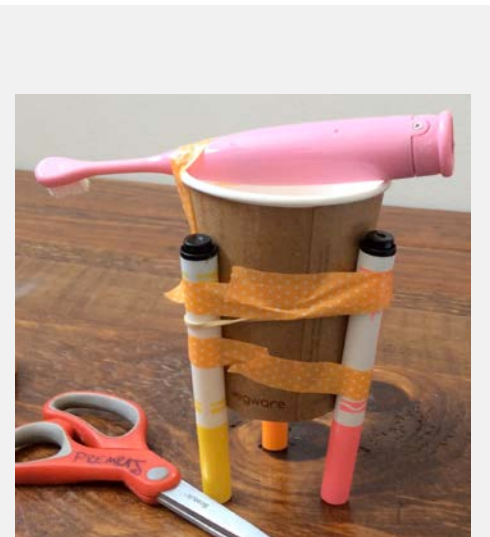
- Understanding the motion within motors
- See force influencing objects
- Complete challenge of creating art without touching the paper
- Predicting how changing variables will change the direction and behavior of the robot – Examples: Tilting the surface of the paper, adding weights into the cup, using a lower powered battery, repositioning the balance of the motor and markers

### Activity Instructions:

- 1) Slip the rubber band around the cup
- 2) Pick three markers that make a nice color grouping and slip them under the rubber band with the cap pointing down
- 3) Adjust the markers to act as legs, holding the cup up. Secure markers with tape (you should still be able to remove lids when needed)
- 4) Balance motorized object evenly across or inside of the cup and tape securely. When turned on, your robot should vibrate, jump, or move without falling over on a level surface
- 5) Take off all three marker caps and place robot on paper. Turn on and watch it draw! Continue until paper is decorated
- 6) Shift environment to manipulate robot
- 7) When finished, you may want to sketch in a silhouette in pencil, then trace in permanent marker. Afterward, brush paper with water or watercolors to see the robot's patterns and lines swirl into beautiful strokes



Markers taped to cup



Draw Bot assembled



Draw Bot creating art

