

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



Markers taped to cup



Draw Bot assembled



Draw Bot creating art

- 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

