

SCRIBBLE BOTS

Construct a vibrating scribble machine and watch it bounce, spin, and bump on paper making a unique colorful design.

Big Idea

Building a functioning circuit. The variety of materials should encourage learners to experiment and increase their knowledge by redesigning & developing new ideas. Collaboration is encouraged. New ideas can be found through others.

Standards

IELDS 11.A.ECf Make meaning from experience and information by describing, talking, and thinking about what happened during an investigation.	Students will describe and discuss what happened while working with their scribble bots.
IELDS 1.A.ECa Follow simple one-, two- and three-step directions.	Students will follow the directions to make their scribble bots.
NGSS K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull	Students will test out the different weights and designs of their scribble bots to determine if it changes the speed or direction as intended.

Materials

- Recyclable containers (yogurt, cream cheese, strong cups-big cups/solo cups, grape tomato basket, cardboard tubes, plastic bottles, long black tubes, lids)
- Markers, long & short
- Thick rubber bands
- Tape
- 1.5-3.0 volt motors
- AA batteries
- Popsicle sticks
- Small Weights: glue gun glue sticks, play dough, tape
- Decorative items: pipe cleaners, twisty ties, feathers
- Scissors
- Energy sticks
- Large sheets of paper for Scribble Bot drawings
- Two 4" lead/electrical wire*

*Some mini DC Motors come with lead wires already attached

Setup

Cover an area of the floor in large sheets of paper. On a table, put the tape, markers, glue, scissors, and decor on the tables.

Directions

1. Wrap a rubber band around battery lengthwise and tape battery to the top of the container.
2. Tape the motor with arm sticking out to the top of container. Connect one wire to battery end by tucking it into the rubber band – leave the other wire disconnected until ready to use.
3. Attach a weight to motor arm.
4. Tape marker “legs” to container.
5. Decorate your scribble bot as you wish.
6. Place a sheet of paper on table, uncap marker “legs”, and attach the other wire to opposite battery end.

For an added challenge with older students, provide the materials without the step by step on how to build the robot to see if they can come up with another design.

Investigation Questions: What do you think will happen when you connect the wires? What happens if you switch the wires connected to the battery? How is the scribble bot moving? What happens with the short markers versus the tall markers? What happens when you add more legs? What happens in the battery is on the side versus the top? What happens if you change the weight attached to the motor?