Science, Technology, Engineering, Art and Math come to life as students explore the galleries, then tinker with simple circuitry to create a motorized mark-making machine. Lots of fun!

**WORKSHOP OBJECTIVES**

Students will:
- Create a circuit using objects provided
- Use creative problem-solving skills.
- Create a mark-making machine that incorporates the use of circuitry
- Discover connections between art and science.

**COLLECTION FOCUS**

Works of art will be visited that illustrate types of mark making with a variety of tools and methods as well as art that illustrates science concepts connected to art making.

*Certain collections or galleries may be unavailable due to rotations or construction. We apologize for the inconvenience.*
BEFORE YOUR VISIT

- Review the vocabulary/concepts list

VOCABULARY/CONCEPTS

**Circuit:** In electronics, a circuit is a path between two or more points along which an electrical current can be carried

**Motor:** In electronics, a circuit is a path between two or more points along which an electrical current can be carried

**Jitter Bot:** A motorized contraption that jitters or vibrates

**Scribble Bot:** A motorized contraption that moves in unusual ways and leaves marks to trace its path

**Vibrate:** To move or cause to move continuously and rapidly to and fro

**Mark Making:** A term used to describe the different lines, patterns and textures that are created in artwork using a variety of materials

**Alligator clip test leads:** A spring loaded clip with serrated jaws used to make temporary electrical connections

**Balance:**
- **Asymmetrical** - Organization of a design so that unlike objects have equal visual weight
- **Symmetrical** - Organization of a design so that elements are the same on either side of a central axis

AFTER YOUR VISIT

- Continue experimenting with the scribble bots. Conduct research where students collaborate and resolve student generated questions. Some examples:
  1. How many students’ bots moved in circles? How many in straight lines? Do they all have a characteristic in common?
  2. How can changes be made to make the scribble bot move faster/slower or in an unrecognizable pattern?
  3. Which bots make dotted lines? Why?

- Create collage art utilizing the scribble bot mark making patterns on paper. Add to the lines and shapes created with markers, oil pastels and pencils.

- Ask students to write about their bots and brainstorm various ways the bot could be used to solve a problem or accomplish a task.

EDUCATOR RESOURCE CENTER

The ERC can help you expand your before and after visit activities to fully connect your museum experience with your classroom curriculum. The ERC provides:

- **Curriculum Consultations**
- **Circulating Resources including Art Connection Kits**
- **Professional Development Workshops**

[nelson-atkins.org/educators/](http://nelson-atkins.org/educators/)