recommended for grades 3 and up
(adult assistance needed for cutting)

D.I.Y. STEAM: ARTBOT

Activity adapted from http://www.instructables.com/id/ArtBot/

SUPPLIES

- 1 Styrofoam pool noodle
- scissors/box cutter/X-acto blade (and an adult to use it)
- 1 electric toothbrush with removable brush head
- 1 toothbrush battery
- art materials (googly eyes, pipe cleaners, feathers, etc)
- 3-4 markers
- 2-3 rubber bands
- drawing surface (i.e. large piece of paper)
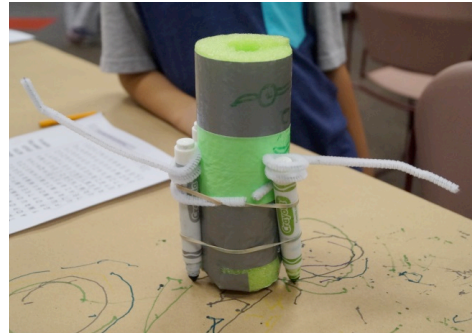
DIRECTIONS

Step 1: Prepare Your ArtBot

a. Ask an adult to cut off a piece of pool noodle that is slightly longer than your toothbrush.
b. Decorate the pool noodle however you like! (Tip: Wrapping duct tape around the pool noodle will create a flat surface that is easy to draw on.)

Step 2: Prepare Your Toothbrush

a. Insert the battery.
b. Turn on the switch to make sure the motor works.

Step 3: Put It All Together

a. Turn off the motor. Slide the toothbrush into the hole in the center of the pool noodle.
b. Position the markers on the sides of the pool noodle. Secure them with rubber bands.
c. Place your ArtBot on a large drawing surface. Turn on the motor and be amazed!

Questions for Discovery

- How does a battery-operated toothbrush work? Take your toothbrush apart and examine the motor and the battery. Can you reassemble the toothbrush and make it work again? Learn more at http://www.explainthatstuff.com/electrictoothbrush.html.
- Weigh your ArtBot before and after decorating it. How does extra weight affect functionality?
- Position the markers in different places. Add or subtract markers to your ArtBot. Substitute pencils, pens, or crayons for the markers. Do these changes make ArtBot more stable or less stable? How do these changes affect the designs that ArtBot creates?

Further Reading

- Mercer, Bobby. *The Robot Book.* Chicago Review Press, 2014. (gr 4 and up)
- Stewart, Melissa. *Robots.* National Geographic, 2014. (gr 1-3)
- Wilson, Roman. *How Does a Battery Work?* Gareth Stevens Publishing, 2013. (gr 4-6)

PALATINE PUBLIC LIBRARY DISTRICT

Main Library
700 N. North Court
Palatine, IL 60067
847-358-5881

North Hoffman Branch
3600 Lexington Drive
Hoffman Estates, IL 60192
847-934-0220

Rand Road Branch
1585 Rand Road
Palatine, IL 60074
847-202-1194

www.palatinelibrary.org