

Robotic Arms

Humans pick things up without thinking about the steps involved. In order for a robot or a robotic arm to pick up or move something, someone has to tell it to perform several actions in a particular order — from moving the arm, to rotating the “wrist” to opening and closing the “hand” or “fingers.”

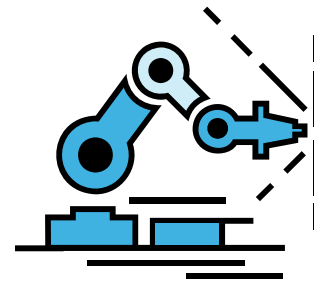
Astronauts that use robotic arms to do things in space need to practice simple tasks here on Earth first. Scientists working with robots on other planets design them to know the best procedure to use their arms.

Your child will explore the steps involved in using a robotic arm to pick up, move, and drop an object into a cup.

Note: this activity was written for the Armatron / Radio Shack Robot Mechanical Arm, which is no longer for sale. Products, such as the Lynx 5 Programmable Robotic Arm Kit by Hobitron (<http://www.hobbytron.com/lynx-arm.html?AID=10289758&PID=2224652>) or a remotely controlled toy can be used with modifications.

What You Need:

- ✦ A robotic arm
- ✦ Fuzzy pom-poms or candies on a plate
- ✦ A paper cup



What To Do:

The joystick on the left operates the “elbow” and your child can manipulate the hand by turning the knob on top of the stick. The joystick on the right operates the “shoulder”.

- ✦ Ask your child to test each of the motions on the robotic arms by moving the knobs and sticks, one at a time.
 - What do they need to do to open and close the “hand” or clamp?
 - How can they move it to the left or right?
 - How can they move it up and down?
 - Ask your child to move the arm and hand so that the robotic arm picks up the fuzzy pom-pom or a piece of candy.
 - Finally, your child can move the arm over his/her cup, and drop the pom-pom or candy into the cup.

Parent Prompts:

How many steps did it take you to pick up and move the object to the cup?

Why do astronauts practice using the robotic arm?

How easy or difficult would it be to unscrew a screw,
or to tie something together using the robotic arm?

What kind of tasks might astronauts or scientists perform with a robotic arm on
the space station or on another planet?