

SciGirls

Activity: Grab & Go

People first used robotic arms in factories in the 1950s. These arms were developed to help with dangerous jobs such as heavy duty welding, painting, and lifting large equipment. Today they are also used in scientific research, medical surgery, and to help people who have had amputations.

Here's How:

1. Research robotic/mechanical arms in books or online. Compare the different arms making sure to talk about what robotic arms might be used for, and what limitations they may have (what they may or not be able to do to complete a task).
2. Using some of the materials from the list, build an arm that can lift a paper cup from 1 foot away.
Here are some rules to keep in mind when designing:
 - Only one person can operate the arm.
 - The mechanical arm is the only thing that can touch the cup.
 - The cup must be set back down and the arm removed when done.
 - The cup cannot be damaged in the process of picking it up.
3. Be sure to plan and design before you start to build. If you get stuck, try breaking down some of the arms you researched into pieces and build a similar version.

You'll Need:

- Styrofoam plates, styrofoam trays, or a craft foam
- Craft sticks, wooden dowels, or wooden skewers in varying lengths and sizes
- Plastic drinking straws
- String
- Scissors
- Permanent markers
- Pencil and paper
- Rubber bands
- Tape
- 8 ounce paper cup
- Ruler

4. Keep trying your arm until it is able to pick up the paper cup from 1 foot away. If it does not work at first, try not to get frustrated. Engineering is all about trying again and again!

5. For a challenge try adding weight to the cup and see if the arm still works. Brainstorm other things that you can try picking up (stuffed animals, popcorn, pencils). How might you modify your design to address these new challenges?



Learn More!

Watch SciGirls design and build an underwater robot to investigate oyster reefs at pbskids.org/scigirls.



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