

Lesson Plan

Underwater Inspiration

Book: *Robots Inspired by Nature*

Series: Technology Inspired by Nature

Level: Navigator

Objective

To help students explore how scientists base robot designs on ocean animals, and to have students create their own robot designs that mimic how an ocean animal looks or moves.

Supplies

- *Robots Inspired by Nature* book
- 11x17 inch paper
- Pencils, markers, and colored pencils

Before the Activity

Read *Robots Inspired by Nature*, or assign it to students to read on their own.

Activity

Robots help people do many different jobs and activities. Some robot designs are inspired by nature. These robots often look or move like animals. Chapter 2 (“Bots That Swim”) describes two robots that were inspired by ocean animals. Ask students the following questions to review the information from that chapter:

- Which two robots are described in this chapter? (Answer: Octobot and Robojelly)
- How is Octobot similar to an ocean animal? (Answer: Similar to an octopus, Octobot has a soft body with tentacles.)
- How does Octobot move through the water? (Answer: Gas flows through Octobot’s arms and inflates actuators, and the actuators flex the robot’s arms so it can swim.)
- How is Robojelly similar to an ocean animal? (Answer: Similar to a moon jelly, Robojelly moves by bending and folding its body.)
- What are some jobs Robojelly might do? (Answer: It could be used to study the environment, clean up oil spills, or perform search and rescue.)

Ask students to design a robot based on a different ocean animal. Like the examples from the book, their robot should look or move similar to this animal. Give each student an 11x17 sheet of paper. Then have students turn to page 13 and look at the “Octobot” diagram. Students should create a similar diagram about their robot. Like the diagram in the book, it should include the following elements:

- the robot’s name
- a sentence that describes the robot
- a drawing that shows what the robot looks like
- arrows labeling 4 to 6 parts of the robot

Students should write a paragraph below the drawing that explains how the robot works. They should describe how the robot will move and what jobs or activities the robot will help do.

Give students time to design their robots. Then hang all the robots on the classroom walls. Have students go around the room and admire their classmates’ ideas.

Evaluation

As students look at their classmates’ ideas, go around the room to grade each diagram. Use the following rubric to give each student up to 8 points:

- 1 point for including the robot’s name
- 1 point for writing a complete sentence that describes the robot
- 2 points for labeling 4 to 6 parts of the robot
- 2 points for describing how the robot will move
- 2 points for explaining what jobs or activities the robot will help do

Standards

This lesson may be used to address the Common Core State Standards’ reading standards for informational texts, grade 4 (RI 4.1, 4.7) and the National Science Education Standards’ Content Standard E, grades K–4.