

ECO BOT Facilitator Outline

Materials:

Small motors (6+)	small watch batteries (6+)	sticky foam squares
Tooth brushes (6+)	scissors	card stock
Bird seed or rice	paper	straws
Calculators (6)	plastic drinking cups	

Do	Say	Materials	Time
Welcome & Introduction	Read "Getting Started, Your Challenge" "Real Robots in Action"	Facilitator Guide: Page 3 Page 5	5 min
<ul style="list-style-type: none"> • Break students into teams • Hand out the beach and engineering model description (keep in plastic sleeves). 	"Each team is a research center. You will work together to design a bot to clean the beach."	Map & engineering model	5 min
Part 1: Build the Robot <ul style="list-style-type: none"> • Hand out the instructions, and review. • Hand out materials for bot construction. 	"Now we will build your robot, working together, build the robot and see how it works"	Student Handout for Part 1: Building instructions "Observe what it Does"	15 min
Part 2: Program the Robot	"All robots need to be programmed. In this activity, the 'programming' is done by	Student Handout Part 2: Build the Control Surfaces	15 min

<p>Note: while students are making their control surfaces, create a chart to log the cleaning attempts of each team.</p>	<p>'surface control.' In your group, brainstorm a list of control ideas. Then construct those ideas"</p>	<p>Give groups scissors, cardstock and paper.</p>	
<p>Part 3: Clean the Beach</p> <ul style="list-style-type: none"> • Time the groups for 2 minutes. • When time is up, count the squares that were cleared. • Divide by total # (125) to get percentage. • Log the result for each team on the flip chart paper or board. • Did they have to rescue a trapped or fallen over bot? How many times? Log this number as well. 	<p>"Using your robot, for the set amount of time, without touch, clean the beach."</p>	<p>Student Handout 3: Testing the Robot</p> <p>Timer</p>	<p>15</p>
<p>Conclusion</p>	<p>Debrief with groups. "Which bot was most effective? Which 'programming' method worked the best?" What would you do differently?</p>	<p>Collect all materials.</p>	<p>5 min</p>