

# Bug Biomimicry



*Distance Learning Edition - 45 minutes*

## Lesson Step: Introduction: 2 minutes

Do a very brief introduction to yourself and MBHI. Let students generally know the flow of the program and what to expect.



*Camera: Facetime*

## Biomimicry Slideshow: 10 minutes

The slide show starts with a discussion of “what does biomimicry even mean anyway?” Go through the example of a flat tire and bees inspiring a new type of tire.



Next, move through the four examples of biomimicry and the insect world.

- For each example explain the basics of the Bug Ambassador in question, highlighting the qualities of the arthropod in question.
- After describing the Bug Ambassadors’ attributes, launch the poll for that animal. Once everyone has responded, shift to the second slide and explain the correct answer. Highlight the story of how the biomimicry invention came about.

*Camera: Facetime to start, moving to Share Screen*

## Studying the Cockroaches: 15 Minutes

Part One:

- Go to the Hissers slide in the PPT
- Explain that it's now time to meet a live Bug Ambassador who has inspired a very cool invention. Tell the story of the team of scientists and engineers who were looking to improve a robot they were working on so they decided to study cockroaches. Cockroaches had a few traits, a few characteristics that they wanted their robot to have so they started studying cockroaches to learn from them.
- Tell students that they're about to meet a cockroach and that their goal is to observe it and see what you can notice about this cockroach. We'll share our observations together afterwards via the chat. As they study the cockroach we want them to be thinking of answers to two questions: **“What do you notice about this cockroach?”** and **“Based on your observations, what job do you think the robot the scientists in California were working on has?”**



Part Two:

- Share the roach with the group via the IPEVO camera

Part Three:

- Share the whiteboard and type in “Cockroaches” in the center.
- Have the co-host (Kelli) share observations from the chat. Type these in one color.
- Have the co-host (Kelli) share their guesses about the robots job. Type these in another color.
- Summarize the observations and guesses. Save the whiteboard

Part Four: Share the slide with the CRAM robot and explain its job and the attributes the scientists were hoping to emulate.

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## Studying the Water Striders: 15 Minutes

We now have another chance to meet a Bug Ambassador who has inspired a really cool invention. We're going to repeat our process of observation and sharing without giving you any clues yet about the invention that these Bug Ambassadors have inspired.



### Part One

Show the PPT slide of the water striders and give instructions.

- Copy down the name
- Draw the water striders
- Describe the water striders

Don't say anything about inventions yet, just that the striders are going to inspire and engineering challenge they can do at home.

### Part Two

- Share the striders via the IPEVO camera
- Let the students observe while showing off the striders and giving basic facts about them.

### Part Three

- Share observations from the chat via the white board with the co-host (Kelli)'s assistance.

### Part Four

Returning to the PPT image of water striders, summarize their observations and lay out the ways water striders are able to keep themselves afloat.

- Water striders have six legs that spread out wide to help them keep their balance.
- Water striders sit low and flat to the water so they don't tip over very easily.
- Water striders have special hairs at the ends of their legs that push away water.

Move on to the "Water Strider Inspired Boats" slide of the PPT. Tell students that engineers are studying water striders to get ideas for a lot of different inventions, one of which is a search and rescue boat that can stay afloat in turbulent waters.

Introduce the at-home engineering challenge using the final slide in the powerpoint. Be sure to email the teacher the PDF of instructions for the challenge.

