

Bug Biomimicry Post-Program Activity



Prototyping Your Own Animal-Inspired Invention

Time: 30 or 60 minutes

Number of Students: Up to 30

Materials:

- Pencils & scrap paper
- Assorted recyclable materials
- Tape, string, glue

Advance Preparation: Collect assorted recyclable materials from home and arrange for students to bring some in as well.

Purpose:

During the field trip students were asked to make a boat inspired by water striders. This time around they are coming up with their own invention inspired by an arthropod of their choosing. The goal of this activity is to allow students the opportunity to transfer the skills they developed during the field trip to a project where they have the freedom to create the invention themselves.

Lesson Steps: Brainstorming

Break the students into teams. They can work with the teams that they were in during the Bugs on the Move program or ones of your choosing. Depending on your classroom dynamics you may choose to allow students to work independently as well.

- Each team or individual should start by picking an animal that they know a few things about (or one they can easily get a book about from the library). From there they should write down or draw all of their favorite characteristics of that animal. For example, they may write down all the facts they know about octopuses: they swim, they can change colors, they can squeeze into tight places etc.
- Once they have a good list going they can shift gears and think about what problems could be solved with those characteristics. Does the Navy need wet suits that help their divers swim and blend in with their surroundings like an octopus?
- The last step in the brainstorming process is to start drawing pictures and designs for their invention. What would it look like? How would it work? What would it be made out of? Student can use the invention brainstorming sheet at the end of this lesson plan to help with this process.

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Tip: *The brainstorming for this activity starts with the animal inspiration and then moves on to potential invention ideas. While some professional engineers do indeed start with the problem or invention they want to make and then look to the animal kingdom, we have found that this activity works best going from animal to invention.*

Tip: *As students move through the brainstorming process attempt to keep them thinking about the problems they could solve by studying how the natural world works instead of building something new just because it's cool. Ask the questions "What problem is your invention solving?" or "In what ways is this invention inspired by the animal you choose?"*

Lesson Steps: Prototyping

- Once the teams have a good design down on paper they can start to create a prototype out of assorted recycled materials. This process is not unlike the work they did to create their water strider-inspired boats during the Bugs on the Move program.
- Once the prototypes are complete, have the teams pitch their inventions; introducing their invention to the class, explaining how it works, the problem it solves and what animal inspired it.

Note

It is possible to do this activity without actually building a physical prototype. If time or materials are in short supply have the students focus on brainstorming and sketching pictures and diagrams of their invention rather than building a physical model. They can still present their work to the class and draw more detailed "design schematics" of their inventions.

Biomimicry Invention



Name: _____

Invention: _____

What animal inspired this invention? _____

What problem does this invention solve? _____

Draw a picture of your invention: