



Name: _____

Inspired by Nature - Biomimicry Project

Introduction

Humans have the ability to affect the world in both positive and negative ways. Looking at the environment, it is easy to see problems that humans have created. However, that same environment often holds the inspiration for solving some of the world's trickiest problems and gives us a chance to correct past mistakes.

Biomimicry is the design and production of a solution to a problem using the natural world as a model.

During this project you will explore different examples of biomimicry, identify and research an environmental problem created by humans, investigate the adaptations of plants and animals that might offer a solution to the environmental problem, design a project to address the environmental problem based on inspiration from the natural world, and make a model of your biomimicry project.



Examples of Biomimicry

Watch the video “Bio-Inspiration: Nature as Muse” --
<https://www.youtube.com/watch?v=JnBkbaFsZOY>

What was the natural inspiration for Velcro?

What type of product did the scientists create based on their research of gecko feet?
How is this product different than others of the same kind?

Go to the website <https://biomimicry.org/biomimicry-examples/> Explore different examples of biomimicry. Choose one to investigate further and answer the questions below:

What was the problem that the scientists were trying to solve?

What organism inspired the solution to the problem?

How did the organism’s adaptation(s) provide a solution to the problem?



Identifying and Researching an Environmental Problem

The best designs come from people who are passionate about finding a solution to a problem that is important to them. Look into an environmental issue that you are concerned about. The following is a good resource for information about problems created by human activities:

https://www.nationalgeographic.org/topics/resource-library-human-impacts-environment/?q=&page=1&per_page=25

What environmental problem did you research?

What part of the environment is affected by this problem (air, land, water, specific habitat, etc.)?

How do humans contribute to this problem?

What are humans currently doing to solve this problem?

Why has this issue been difficult to solve?

List anything else that you discovered during your research that you think is important:



Investigating Adaptations of Plants and Animals

Research a plant or animal that might offer inspiration to a solution for the environmental problem you have been studying. If you are unsure where to begin, consider the part of the environment that is being affected (air, water, land, specific habitat) and choose an organism that lives there. If the first plant or animal that you research does not provide inspiration, choose another one until you find something that works for the environmental problem you are studying.

Websites to help you research:

<https://www.nationalgeographic.com/animals/facts-pictures/>

<http://www.mbgnet.net/bioplants/adapt.html>

If you choose to utilize other sources for your research be sure that they come from a reputable source.

What plant or animal did you research?

List the adaptations that help this plant or animal survive in its habitat:

How can these adaptations be used as inspiration for a solution to the environmental problem you are studying?

List anything else that you discovered during your research that you think is important:



Designing a Biomimicry Project

Now it's time to put your research into action! Using the plant or animal adaptations as inspiration, design a solution to the environmental problem you researched. Use the questions below to help you with your design.

What does your design do?

How does your design solve or improve an environmental problem?

What constraints will affect your ability to create this design? (ex. money, time, materials, etc.)

Make a drawing of your design below. Be sure to label key components.



Creating a Model of Your Biomimicry Project

Create a model of your biomimicry project. You can use any type of material that you want. Test out different materials to see which ones work best. Reusing old materials is great for the environment. Be creative! Share your design with the Zoo by tagging us on Facebook, Instagram or Twitter - @senecaparkzoo