

Inventions (with BioMimicry)

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Biomimicry (from bios, meaning life, and mimesis, meaning to imitate) is a design discipline that seeks sustainable solutions by emulating nature's time-tested patterns, engineering, architecture, and design strategies to solve man-made challenges. (Biomimicry LA, website)

Course Objectives:

Students will have an opportunity to go through a simulation that will turn them into inventors. They will gain insight into the creative process of inventing as they research inventors in class and see how their inventions have changed our lives. We may speak with inventors about their process and simulate how designers/inventors look to nature for inspiration. Students will brainstorm, investigate, and tinker. They will learn about patenting, advertising, and defending their inventions. They will then start creating plans for their inventions (building a non-working or working model at home). Inventions will be simple, but helpful to society and cost-effective.

Weekly Schedule:

Lesson 1 - Inventions – what are they and how are they created? Dissect an object to decide how it was made. Then look at other inventions that are labeled with Biomimicry and compare and contrast. Why should we investigate Biomimicry for inventions?

Lesson 2 - Brainstorm problems that need solutions to be invented. Take a Nature Walk – pick something in nature and examine it, draw it, write down everything that happens to it in 3 mins. Think about what you experienced, were you able to use what you experienced to think of something to invent? We are going to learn about different young inventors and the ideas that they have come up with and share out to the group what we learned. <http://www.cnn.com/id/42497934> Categories of Inventions poster will be created and students will try to pick a category that they want to investigate more to create their invention in their field of choice. Go over an inventor's Log Book – papers will be passed out describing it. <http://www.youtube.com/watch?v=iqqE-DWYGU8> We will go over what is required for their invention project. (it will be passed out in class) 7 most wanted inventions for 2013. http://www.huffingtonpost.com/2012/12/31/inventions-2013_n_2255454.html#slide=1845974

Lesson 3- This lesson brings together nature, engineering, environment, and health. Students will contemplate their ideas for inventions and consider how it might affect people, animals, and the environment. They will create questions to guide their process as they are formulating their ideas for their invention.

Lesson 4 & 5 - Research an idea to see if someone has invented it. All ideas come from other good ideas. What idea would you like to make more sustainable or useful? Example, phones, cordless phones, car phones, cell phones. Tinkering activity. Play around with 4 different materials to see if you can come up with an invention in a small group of 3 people.

Lesson 6 - Invention Verification email/phone call. Research the following information – What companies might be interested in your invention? Please connect with them via email or phone. Ask the following: Have you ever heard of my idea? Do you think people at a store would buy it? Do you have any idea how much it would sell for?

Students will learn what a patent is and why inventors want one.

<http://www.uspto.gov/patents/process/index.jsp> (Patent graphic organizer) and <http://patentfile.org/how-to-patent-an-idea/> (Patent video explanation). Write up for a patent. Make a model of your idea. Model it out of clay like the idea of a 3D printer.

<http://www.wimp.com/functionaltools/> (Print your tools) Look at how products have to be field tested and can be used for the good of nature and people. Learn about Ornilux glass products that mimic nature.

<http://www.ornilux.com/>

Lesson 7 - Create an advertisement for your product. Look over logos, jingles, billboards, and what draws people to a product? Why Biomimicry?

<http://www.fastcompany.com/biomimicry/the-booming-business-of-biomimicry> (Article with charts on the rise of jobs and use of Biomimicry)

<http://www.slideshare.net/gregfromparis/the-best-digital-campaigns-of-2012>

Research – Watch the video: http://www.youtube.com/watch?v=HJq1FG_soK8 (about PAX & lily) and <https://vimeo.com/46472573> (what the lily is used for as a product.

Students will explore PAX – Prototypes, a shell, and gain insight on how objects in nature can solve problems, PowerPoint.

Lesson 8 – Opportunity to practice their presentations and finish up last minute touches on their inventions.

Lesson 9 - Invention Presentation/Fair: Parents and community are invited to listen to the kids' presentations of their inventions and ask questions of them and their process.