Assignment 1: Introduction to Biomimicry & Creation of Padlet

Biomimicry (from bios, meaning life, and mimesis, meaning to imitate) is a new discipline that studies nature's best ideas and then imitates these designs and processes to solve human problems. Studying a leaf to invent a better solar cell is an example (understanding the process of photosynthesis, the structure of a cell, etc). Scientists usually describe it as "innovation inspired by nature.”

The core idea is that nature, imaginative by necessity, has already solved many of the problems we face on the planet today. Animals, plants, and microbes are master engineers. They have discovered what works, what is appropriate, and most important, what lasts here on Earth. After 3.8 billion years of research and development, failures are fossils, and what surrounds us is the secret to survival.

Therefore, to gain a better understanding, please watch one of the following Biomimicry videos for homework.

[Video 1](http://www.ted.com/talks/michael_pawlyn_using_nature_s_genius_in_architecture#t-366109)---http://www.ted.com/talks/michael\_pawlyn\_using\_nature\_s\_genius\_in\_architecture#t-366109

[Video 2](http://www.ted.com/talks/janine_benyus_biomimicry_in_action)--http://www.ted.com/talks/janine\_benyus\_biomimicry\_in\_action

Jot any relevant notes.

|  |  |
| --- | --- |
| What | Where/Who |
| When | Why |

Activity 1. Walk around the room and read all the different examples of innovations designed by biomimicry. Discuss any of the examples with the peers around you (5-10 mins).

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Global Issues : Water Bottle example

<https://www.youtube.com/watch?v=-tPIE-2HPlA>

<https://www.youtube.com/watch?v=OkbkGMefpcc>

Activity 2: Can you think of any examples of biomimicry being used on Lovett’s campus? Go and find a particular example or object that could be used/altered/changed into

Watch a documentary… ex: **Alien Sharks Return to the Abyss (great for twilight zone discussion later in chapters).**

Dweller Fish -

transparent head barrell eye

fetal dusky shark - cyclobia - mutation shark

kite fin shark - huge reflective eyes - sphericals allow it to breathe while resting

cookie cutter shark

chimera - ghost shark  
lantern shark -oxidizes pigment -

megamouth shark - been around for millions of years

Meet in groups of 4, discuss object and possible prototypes. Write/describe prototype and post it on Padlet as “Introduction to Biomimicry”. Remember to include picture.

What is biomimicry?

What do you find is the most impressive biomimicry example?

Find an object around the classroom and

Assignment 2: Microscopes

Research ways that microscopes or cameras have been developed from the living world. From this information make your own biomimicry card and then post it on your padlet. Be sure to cite your sources.

complete

Assignment 3: Science Organelle Analogy Project: Technology Adventure (Sky is the Limit!)

Description: *Create your own world where the Organelle’s are functioning as part of a story or a scenario or a sport or really anything*

All the parts of the cell need to function properly in order to prevent any issues with the cell.  Each of these functions unique and enables the cell to work properly. Therefore, in looking at a cell, can you find a particular organelle which could be mimicked in order to create a particular product?  
Ex: Cell membrane allows the transport of materials in and out of the cell. The semi permeable membrane selects what passes through the cell. Therefore, a pool cover/strainer allows only certain substances to go through.

-Be creative, think of TV shows, A GAME/ SPORT, Make a location (Beach, Mountain House)

-What kind of creative way can you come up with to share your analogy

-You want to use technology to share your project! Ms. Young or McFadden would be great resources for you to talk to

- You will be presenting these AND they will be grades that will be on your grade report

- You will have the rest of class, 1/2 D-day, that means that you will have to work after class on this :)

**Huh, What do you Mean?**

    Functions of Organelle's Project example: [FACTORY](http://sciencenetlinks.com/student-teacher-sheets/comparing-cell-factory-answer-key/)

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| How are you being graded??? (Below)  **Activity #2 Animal auction**  Students together (1st class) into team  100 auction dollars and 25 animals (we knew they were interesting or thought provoking)  You as a group, a bit of verbiage not a ton of why they are important  GOAL: get the animal find something interesting and apply to a problem  Need to get at least one animal  How it can be used to answer a problem… cheaper ... less expensive  It gets them thinking about the animals.   |  | | --- | |  | |

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| --- | --- | --- | --- | --- |
| CATEGORY | **10** |  |  | **0** |
| **Science Content** | You included All Organelles and there Correct Functions | You included Some Organelles and there Correct Functions | You included Some Organelles but did not include there Correct Functions | You did not include the Organelles or there Correct Functions |
| **Analogy** | Your comparison between the Organelles and Comparison make perfect sense | Some of your Organelle and Comparisons made sense and some did not. |  | Your comparison between the Organelles and Comparison did not make sense |
| **Presentation** | Used technology to smoothly deliver information that held audience attention. | Used technology to smoothly deliver information that mostly held audience attention. | Used technology to smoothly deliver information that often held audience attention. | Used technology to smoothly deliver information that did not hold audience attention. |
| **Originality** | Product shows a large amount of original thought. Ideas are creative and inventive. | Product shows some original thought. Work shows new ideas and insights. | Uses other people\\\'s ideas (giving them credit), but there is little evidence of original thinking. | Uses other people\\\'s ideas, but does not give them credit. |
| **Sources** | Source information collected for all graphics, facts and quotes. All documented in desired format. | Source information collected for all graphics, facts and quotes. Most documented in desired format. | Source information collected for graphics, facts and quotes, but not documented in desired format. | Very little or no source information was collected. |

Assignment 4: Mitosis/Meiosis

Four ideas from cell process, how could you use this in the real world?