

BIOMIMICRY IN-CLASS ACTIVITY #1

A Chance to Practice

Instructor Notes on Lesson

Expected Time: 30 minutes

When to Implement: Biomimicry, being an ideation methodology, should be introduced as a way to come up with possible design solutions (after painstorming is covered, if it is). This method lends itself especially well to design challenges that may benefit from a nature-inspired design or relate to environment or sustainability (however, it can be used for design challenges of any topic). The Biomimicry video should be shown first and this would be an appropriate in-class activity to immediately follow.

Class Set-Up: Teams of approximately 4.

Materials Needed:

- Scrap paper for students
- White board or chart paper for tracking class ideas
- Students may want access to the internet via computers or phones

Learning Outcomes:

At the completion of this activity, students will be able to:

- Break larger design challenges into sub-challenges
- Describe the relationship between big world problems and existing natural processes

Instructor Guide:

After watching the Biomimicry video, put the class in teams of 4 asking students to get out their own note sheet:

INTRODUCTORY DIALOGUE:

Explain to the class that you are going to do an introductory activity to practice the technique of biomimicry. You will build directly off what was talked about in the video, including the various problems our earth faces.

Part 1. Brainstorm “Big Problems” [4 minutes]

- Have student teams brainstorm “big problems” facing our world today. These should be recorded on their scrap paper. Students should then narrow to the one problem that they want to concentrate on for the remainder of this activity.

Part 2. Break these “Big Problems” Down [4 minutes]

- Now have students break these big problems down. They should list all of the sub-problems or processes related to, or leading to, these “big problems”. Examples might include water quality, waste, transport, etc.

Part 3. Identify Natural Phenomenon to Borrow From [10 minutes]

- Students should then be tasked with identifying natural systems (or processes, organisms) that also use these same processes or deal with these same problems. Minimally each student on the team of four should identify at least one natural system (or processes, organisms) to research in-class. (They will want to briefly discuss so they do not all focus on the same system/process/organism. Student should learn enough to then describe to the team/class how this process naturally works.

Part 4. Share Out [5 minutes]

- Have each team give a 30 – 60 second “pitch” describing if they were a new company trying to solve this “big problem” which nature-inspired solution, from the ones they considered, would they borrow from and why?

Part 5. Wrap Up [5 minutes]

To wrap up this activity, instructors may wish to do one of the following:

- Have students individually, in pairs, or in teams complete the short in-class wrap-up handout.

AND/OR

- Have students individually complete the accompanying Biomimicry Homework 1 assignment packet. This assignment directly extends this activity.

4. Likely
5. Extremely likely

b. If you were told you had to use bisociation, how confident would you be that you could do so effectively (without receiving any additional instruction or practice) use biomimicry?

1. Not at all confident
2. Not very confident
3. Somewhat confident
4. Confident
5. Extremely confident

5. If in our next class you were told that you were tasked with coming up with a new product, service, or process that would benefit your local sustainable agricultural farm:

a. How likely would you be to (without receiving any additional instruction or practice) use biomimicry?

1. Extremely unlikely
2. Unlikely
3. Neutral
4. Likely
5. Extremely likely

b. If you were told you had to use bisociation, how confident would you be that you could do so effectively (without receiving any additional instruction or practice) use biomimicry?

1. Not at all confident
2. Not very confident
3. Somewhat confident
4. Confident
5. Extremely confident