



LESSON PLAN 10:

BIODESIGN

EXHIBITION

Curriculum: Introduction to Biodesign
Unit: 3—Biosystems
Grade Level: 10th-11th

Background Information For Teachers

Overview of this lesson:

This is the last lesson in the Bio-design curriculum, in which students reflect on what they have learned and created over the course of the semester and curate, design, and present their own Biodesign Exhibition. This lesson is described as a five-hour lesson split into several sessions, but can be made as long or as short as you want it to be. For example, it includes a component in which students write their own exhibition narrative panels, which may or may not be feasible for your group. Likewise, the “public” that is invited to view the exhibition may take different forms, including community members, parents, teachers, designers, scientists, but can also just easily be other classes in your school. What is important is to have a discussion about the role exhibitions play for artists, designers, and scientists, the reason exhibitions are created, and about what makes them successful.

Even if your exhibition ends up being small, we feel that having these conversations about information display and interpretation is important to students’ understanding of both art/design and science.

While there is no new science content introduced in this lesson, we felt that it was important for students to have a class to reflect on and synthesize what they know. We always tried to end every lesson with what we called a “So What?”—a moment in which we lifted that day’s learning out of the classroom and considered how it was important to our community, our planet, and our thinking. This lesson, Lesson 10, is a chance for students to have their own “So What?” Here, they have a chance to answer the questions: “Why is Biodesign important? What have I learned and created that I think is bigger than just this classroom?”



Standards, Objectives, & Supplies

Grade Level: 10th-11th

Duration: 5.5 hours (divided into two-three class sessions: exhibition brainstorm, preparation, and presentation.)

Lesson Concept: We can use the tools and knowledge of both artists and scientists to better understand, protect, and effect positive change in the natural and built environment. Through exhibition and information design, we can share our understanding and practice of biodesign with our community to raise awareness about ways to live more benignly on our finite planet.

Lesson Objectives/Learner Outcomes:

1. Create an exhibition for the community (school, parents, community at large.)
2. Understand that artists, designers, and scientists have a responsibility to share their knowledge in a way that is engaging and accessible.

Instructional Support

Materials (if needed):

- Powerpoint with necessary images + journal prompts.
- LCD projector/smartboard
- Computers for small groups to use to write exhibition narratives
- Printer to print exhibition narratives
- Exhibition Space (a classroom, a hallway in your school, a community center, a folding display panel)

Materials + Supplies:

- Exhibition panels or open wall space to display 2-D work
- Tables or pedestals to display 3-D work
- Posterboard/foam board (3-5)
- Colored paper to mount exhibition narratives on, if wanted
- Tacks (20-30)
- Glue or rubber cement (2-3 bottles)
- Tape (several rolls)

Science / Art

Standards

SCIENCE (Next Generation Science Standards):

Science and Engineering Practices - Obtaining, Evaluating, and Communicating Information -

Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (including orally, graphically, textually, and mathematically).

ART (National Core Art Standards):

VA:Pr5.1.8a Collaboratively prepare and present selected theme-based artwork for display, and formulate exhibition narratives for the viewer

VA:Pr5.1.1a Analyze and evaluate the reasons and ways an exhibition is presented.



Learning Plan

Stage 1: Motivation

1. Introduction Discussion: What goes into an exhibition? First explain to students that to end our Biodesign curriculum they are going to be creating an exhibition of our work for the public. Should students need a definition: An exhibition is where art objects are displayed for an audience, usually temporarily. (2 minutes)

Note: The following discussions can be guided, whole-group conversations, or you can write these prompts on four posters and have students walk around the classroom and write their thoughts in response to each prompt, after which you can convene as a group to discuss.

2. Discussion: “Exhibitions have...” Engage students in a discussion about what goes into an exhibition. Begin a list on the board or on a poster. Ask students: “When you’ve been to exhibitions in the past, what have you seen there?” (5 minutes)

3. Discussion: “Exhibitions are created because...” Engage students in a discussion about why exhibitions are created. (5 minutes).

4. Discussion: “Successful exhibitions are...” Engage students in a discussion about what makes for a successful exhibition. You can use the following types of questions as guides for this conversation: “When and if you’ve been to exhibitions in the past, what has made you interested, what made you care about what was being presented, what made you want to know more? What didn’t you like about exhibitions you’ve been to in the past?” Begin recording this as a third list on the board. (5 minutes)

5. Wrap-up Discussion: “Our exhibitions will be...” Tell students that now their task is to think about what will go into their exhibition on Biodesign. Decide as a class: Who is our audience going to be (will we invite younger students, parents, scientists, designers, teachers)? Where are we going to have our exhibition (a school gym, a community center, our classroom)? How long will it be on display (a week, a day, several hours)? As the teacher, you can weigh in about what is logistically possible for your group, but encourage students to be ambitious! (5 minutes)



Image: RISD community members view students sketchbooks on display at the Biodesign Exhibition.



Image: Biomimicry projects made during Unit 2, displayed alongside a quote about nature and mycelium “pedestals.”



Learning Plan

Stage 2: Exploration

1. Small Groups Write Exhibition Narratives. Explain to students: “Keeping in mind these ideas about exhibitions that we’ve just brainstormed, we are now going to move to planning our own exhibition. Key to most exhibitions are narrative panels that help the viewers understand what they’re seeing, which we will be utilizing. Divide the class into four small groups, each assigned to collaboratively writing a different exhibition narrative. Groups will write a paragraph (or exhibition narrative) on Biomaterials, Biomimicry, Biosystems, or Biodesign, respectively. Groups can use the Exhibition Narrative Worksheet (see end of PDF) if helpful. Paragraphs will address what the unit or “sub-theme” being presented is or means, what students did in this unit, and why it might be important in a larger, outside-the-classroom context. When students have written the exhibition narratives, send them to one computer where they can be formatted and printed. Either you, the teacher, or a small group of students can act as editors making sure all narratives are written in the same font, sizing, and check for spelling errors or content overlap. Once done, these narratives should be printed and mounted. (30 minutes)

2. Students select artwork to exhibit. Each student selects two or three of her artworks to display in the exhibition. Students create an exhibition label with the title of the work, the artist’s name, and medium (materials used.) If there is time, students may write an artist statement about their pieces. Students may use the Exhibition Label Worksheet (see end of PDF) if helpful. (30 minutes)

3. Students mount Biodesign Exhibition (in the following class session). In the following class session (it is difficult to prepare for and mount an exhibition, even a small one, in one two-hour class) students begin to mount their exhibition. To expedite this process, for homework or in a separate class, you can break students up into teams each responsible for their own component of the exhibition: Curation (a team that is deciding where artworks and materials are going and hanging/displaying them), Press & Community Outreach (a team that is creating posters/emails/social media posts to advertise the exhibition and/or, in person, inviting parents, community members, other classes to the exhibition), and Interpretation (a team that is coalescing, editing, and printing all of the Exhibition Narratives and labels and hanging



Image: Posters created by students on display in Biodesign Exhibition.



Image: Students biomimicry projects on display.



Learning Plan

them.) Alternately, you, the teacher, can set up the exhibition before class (this is dependent on how much ownership you want students to have over the exhibition, how much time you can spare, students' ability to work independently, and your expectations for the exhibition). With our students, we did a mixture of the two aforementioned approaches—setting up all of the exhibition panels and some of the 2-D artwork beforehand, but allowing students to display the 3-D artwork (models, etc.) as they saw fit. (2 hours)

Stage 3: Reflection

1. Five-Minute Journaling. Students clean up and return to tables to journal for five minutes. Teacher can pick one prompt for all students to respond to, or students can choose from three prompts. (Writing: 5 minutes, if desired: 5 minute pair share or group share)

- What about the Biodesign class is going to stick with you? What was the most important project you made, idea you uncovered, or discussion you had? Why is it important?
- Have any of your ideas about art, science, or both changed since taking this class? If so, how?
- Why do you think what we've been studying in this curriculum might be important outside of the classroom?

2. Biodesign Exhibition Opening. As the culminating experience of this curriculum, hold on opening of your exhibition to the public. Students may choose to present their five-minute "Biosystems" proposals (see Lesson 9) during this time, or only display their posters. This is something to decide beforehand as a group. Students should use this time to talk to visitors about their work and to educate about Biodesign. They are curators, designers, artists, scientists, and educators in this context. (1 hour)

3. "So what?" Lesson + Curriculum Recap. Ask students: What did we do today? Why is it important? Emphasize key ideas covered and larger context for today's learning—for example "We can use the tools and knowledge of both artists and scientists to better understand, protect, and effect change in the natural and built environment. Through exhibition and information design, we can share our understanding and practice of biodesign with our community to raise awareness about ways to live more benignly on our finite planet." (5 minutes)



Image: RISD community members view the Biodesign Exhibition.



Image: Students' "Looks Like/Works Like" projects on display.





Exhibition Narrative Worksheet

Your task is to write a panel, or “exhibition narrative” for part of your class exhibition. You should think about the following: how can we describe what we have learned and made in a way that is clear, brief, and engaging? If I were a viewer, what would make me care about this exhibition? Use these questions to craft your four to six sentence “Exhibition Narrative.”

Exhibition Narrative Title:

What are “Biomaterials”, “Biomimicry”, “Biosystems”, or “Biodesign”? (Describe in one sentence or two what your unit is about. Keep in mind that some of your viewers may not have ever heard these words or concepts before):

What did you do during this unit or curriculum? (Describe in one or two sentences important projects or artworks you made, discussions you had, or ideas you uncovered):

Why might this be important outside of your classroom? Why should your viewers care about this? (Describe in one sentence or two why this kind of learning or making matters):





Exhibition Label Worksheet

, you will need to write a label. Your label should have a title, and make clear who made it and with what materials it was made. If you feel it is helpful to the viewer, you may also write an artist statement.

Title of work:

Artist/Designer Name:

Materials (if your work has more than three materials, list only the three most important):

Artist Statement (You can answer the following questions in your artist statement: What were you hoping to achieve when you made this work? What was the inspiration for this work? How did your ideas or your design change while you made the work?):

