BIOMIMICRY
YOUTH DESIGN CHALLENGE

COMMUNICATE

M MOTIVATE
I INVESTIGATE
M MATCH
I INNOVATE
C COMMUNICATE

BIOMIMICRY INSTITUTE

💬 COMMUNICATE

The Communicate section of the Biomimicry Institute's Youth Design Challenge (YDC) has students present their designs with clear language around the problem that was solved, the inspiration for their design solution, what their design accomplishes, and how well it meets sustainability goals.

- Students will gather the information from their biomimetic design project and create a **Project Portfolio**.
- After a classroom review, the top three designs will be considered for submission to the YDC. A limit of three project submissions per coach/educator will be accepted. Please use the steps in this section to select the strongest three projects to submit to the YDC.
- Educators can choose to follow the instructions given in the Communicate section of this curriculum or they may choose to go directly to the **site** to submit student projects.

Goal: Explain how your design solves the selected problem, how it was inspired by nature, and how you created a design in real life.

Question Aligned to the Storyline: What did you learn about biomimicry, and how can you communicate the process of designing with nature in mind?

5E Instructional Model—Evaluate: In Communicate, we focus on the Evaluate component, which provides opportunities for learners to assess their own progress, and educators empower students to assess their understanding of the knowledge and skills gained throughout this experience. Educators are also given the opportunity to evaluate student progress toward achieving learning outcomes.

Communicate Questions

Part 1: How is the biomimicry solution going to be communicated in it in its effectiveness to help solve the identified problem?

Part 2: How do we decide which of our design projects to submit to the Biomimicry Institute's YDC?

Part 3: How can you share what you learned and experienced so others recognize biomimcry as a sustainable design process?

How is the biomimicry solution going to be communicated in its effectiveness to help solve the identified problem?

1. Have students revisit the **Design Brief**. The strongest projects are those that are most aligned to the Design Brief and the **YDC Project Rubric**. Let them know in this section they will be working on the final project needs, including creating a Project Overview, Video Pitch, Project Portfolio, Project Image, and Team Photo.

- Complete all of these steps for all student projects for grading. The next phase will help you determine which of the projects to submit.
  - **Note:** The YDC submission portal is **here**.
- Revisit the **Project Portfolio Checklist** with students.

2. Using the **Project Portfolio Checklist**, begin working on the following sections, beginning with the Project Overview.

Project Overview:
Save these responses for the YDC Submission Portal and/or for grading.

Have students write an answer to each of the three questions below. **Each response is limited to 100 words.** The answers will be the first thing judges will read about the project, so make sure they are succinct, complete, and well-written.

What is the problem your team solved for this challenge?
- What is the problem addressed?
- How is the problem connected to the selected SDG?

How is your solution inspired by nature?
- What organisms did you learn from?
- How effectively did you translate the biological strategies for use in the final design?

What does your design solution do?
- How does it address or solve the problem you selected?
- How did what you learned from nature inform your design?

Two-Minute Video Pitch:
This connection to Visual and Performing Arts may take place during art/drama/after-school programming, asynchronously, etc.

A video pitch is the second requirement for submission to the YDC. The video pitch is an engaging overview of the design project and convinces viewers that the idea has merit. For additional suggestions and resources, here are some **Video Pitch Ideas**.

Be sure to include the following in the Two-Minute Video Pitch:

- How the empathy interview or research was carried out with the results about what was learned;
- Clearly explain the project that will be seen and how it relates to the selected SDG;
- How the design is inspired by nature;
- And communicate key discoveries or insights from the design process.

Project Portfolio:

A Project Portfolio is a document or presentation that combines narrative and images to tell the story of your team's biomimicry design and process for developing it. The portfolio should illustrate how the team approached selecting a specific problem, how they researched biological models, and how they developed the bio-inspired design solution, including refining ideas and getting back feedback from others.

This must be uploaded as a PDF for submission to YDC.

- **Slide 1: Title Page:** Project Name, Coach Name, Team Members, School or Organization, Grade Level, and Project Photo (Can be a sketch)

- **Slide 2: Meet the Team:** Team Photo (with coach if possible), Names, Ages and General Info

- **Slide 3: Project Abstract:** Problem and SDG Addressed, Biological Models used as Mentors, Criteria and Constraints listed (summary of the project in 75 words or less)

- **Slide 4: Innovate:** Problem is defined with a proposed solution that defines who needs the design, what is needed in the design, and why the design is needed

- **Slide 5: Inspiration/Match:** The biological models that were used for the design, including the abstracted design strategy

- **Slides 6 & 7: Iterations/Process:** The process of developing the designs along the way. Show all of the "design failures" that have occured. Annotate the models to show the strengths and limitations of the designs.

- **Slide 8: Final Project Image:** Image with labels of design features, include how the 3 essential elements of biomimicry were used in the design

- **Slides 9 & 10: References and Works Cited:** For all sources, image credits and experts consulted. Include any AskNature pages used (If image credits are provided with captions, there is no need to provide additional citations in the references list).

Project Image

The project image is a drawing, diagram, or photograph that clearly portrays your team's design solution. Include top and side views of the project and upload as JPG format. The image cannot be smaller than 1500px by 1000px.

Include an image caption that explains the key features that are being presented (entered separately in the submission form).

Team Photo

This may be the same photo from the Project Portfolio (entered separately in the submission form). JPG file format for the image and larger than 600px by 400px. Consider horizontal and vertical versions, if possible.

How do we decide which of our design projects to submit to the Biomimicry Institute's YDC?

1. Tell students that a lot of great work has taken place and they must now work as a community to submit (up to three of the strongest) design projects to the YDC (the ones most aligned to the sustainability criteria, **Design Brief**, and three essential parts of biomimicry).

2. Explore the options below for selecting the top three projects (after comparing them to the **Design Brief** and the **YDC Project Rubric**).

- Display projects during STEM Fairs, science fairs, Open House, parent-teacher conferences, etc. and use surveys for judging (or ask a formal judging panel of teachers, local community members, guest experts, etc. to review)
- Hold a biomimicry design fair in your classroom, requiring students to give their video pitches in person to small groups. Allow students to use the rubrics to judge the top three.
- Hold a biomimicry design fair in your classroom, and allow staff and parents to use the rubric to judge the top three. This will require an introduction to biomimicry (to discuss biomimicry components, above and beyond a science fair), and can be used to spark community discussion and continue the conversation beyond the YDC deadline.
- Have students vote on two of the projects that will move forward, and you make the final decision. The YDC Project Rubric can also be used to assess mastery and convert student work into a score/letter. You could use this scoring to pick the top three teams (or if students are voting, use the team with the highest score that was not selected by their peers).
- Invite a guest panel of science professionals to judge the projects virtually or in person.

3. Submit the three selected projects to the **YDC**.

Procedure Part 3
How can you share what you learned and experienced so others recognize biomimicry as a sustainable design practice?

1. Invite the selected teams (and any other teams who you like) to share how their biomimicry journey has impacted their understanding of local and global issues.

2. Have students think about how they can take their designs further. Are there other organisms that students might have missed that could have helped in their design?

3. Celebrate! Give students a high five that they completed this inspiring project and that they are taking steps in learning about how biomimicry is helping to solve global issues!

Communicate: New Vocabulary

Portal	Rubric	Work Cited
Portfolio	Submission	
References	Video Pitch	