BIOMIMICRY
YOUTH DESIGN CHALLENGE

M I M I C

MOTIVATE   **INVESTIGATE**   **MATCH**   **INNOVATE**   **COMMUNICATE**

BIOMIMICRY
INSTITUTE

WELCOME TO THE YDC'S REMOTE LEARNING RESOURCE GUIDE FOR EDUCATORS.

REMOTE LEARNING SUPPORT

For those working with students remotely, we recognize the hurdles imposed by distance learning. We encourage you to empower your students to embrace their creativity and problem solving abilities to adapt to various sets of circumstances and learning environments.

ONLINE COLLABORATION STRATEGIES & TOOLS

The first step is to choose one or more ways for the students to connect with one another, to share ideas and documents, and to complete the group project. Base your choice on team members' ability to access the technology or software. If students are not familiar with or comfortable working with the tools or platform you choose, you will want to demonstrate how it is done and let them practice with you.

ONLINE COLLABORATION STRATEGIES & TOOLS

- **AUDIO CALLS.** Smartphones allow students to talk one-on-one or in groups. You can also set up an account with **FreeConferenceCalls.com**

- **VIDEO CONFERENCE CALLS.** Here are some commonly used free video conferencing platforms.
  - **Google Hangouts:** Hangouts requires a Gmail/Google account. Go to the Hangouts website or open Hangouts in **Gmail**. Then, you can invite others. Screen sharing of documents and desktops is a feature. *Google also offers a **Teach from Home** resource website with information about how to use their tools.*
  - **Skype:** Each person needs to download the app and set up an account. Screen sharing of documents and desktops is a feature.
  - **Zoom:** You can set up an account for your class or team, schedule meetings, and share the meeting link with the students. **Breakout Rooms** on this platform allow you to meet as a class first, break out into smaller groups as needed, and come back to the larger group when done. Screen sharing of documents and desktops is a feature. *Zoom also offers **additional remote learning services** to schools.*
  - Many video chat apps are also available for mobile devices and desktop/laptop computers. You or your students might know about other video conferencing services.

- **DOCUMENT SHARING.** Your school or organization may already have a system in place for students to share documents. If you don't, some options are provided below. After choosing a platform, the next step is for you and your team to upload all documents that they are working on. you can also upload helpful documents and handouts from the YDC website that you want students to use. (e.g. Action Plan, Team Self Assessment, etc.)
  - **Google Drive:** A file storage service that allows students to upload and organize documents and presentations into folders, and to collaboratively and simultaneously edit them. *Google also offers a **Teach From Home** resource website with information about how to use their tools.*
  - **Google Slides:** A presentation software that multiple users can edit and can be downloaded as a pdf.
  - **Microsoft One Drive:** This program offers similar collaborative document and presentation development and sharing as Google Drive.
  - **Emails:** Documents and presentations can be shared in group emails. Make sure students add numbers or dates to the document file names to identify the latest version.

- **Dropbox:** A file sharing application for easy transfer of documents and photos between users.

- FREE DIGITAL PLATFORMS FOR CLASS & TEAM COLLABORATION, DISCUSSIONS, & SHARING
  - **Padlet:** A web app that lets users post and organize notes on a digital wall. The notes can include images, links, and videos.
  - **LucidChart:** Create flowcharts and diagrams online using an extensive library of templates.
  - **Jamboard by Google:** A collaborative interactive whiteboard of digital sticky notes.
  - **Miro:** An online visual whiteboard collaboration platform for teamwork to create flow maps and charts.
  - **Flipgrid:** Video chats in which teachers/coaches can pose questions and students can respond in a video post. if desired, emojies can be used to cover faces.
  - **Socrative:** Give pre-planned or instant quizzes and exit slips, and get feedback in real time.
  - **Crowdsignal:** Create customized surveys, polls, and quizzes.
  - **GoFormative:** Create digital formative assessments, tasks, or assignments.
  - **Kahoot!:** A game-based learning platform to create multiple-choice quizzes for classes to respond to in a game format.

- STRATEGIES FOR ONLINE COLLABORATION
  - Establish a schedule for virtual team meetings, which can include the entire team, just the students, or individual/small group meeting with you to provide feedback. Make sure each person knows what they need to get done before the next team meeting.
  - Determine how team members will work together. Options include: dividing responsibilities for different parts of the project among team members; having multiple students work individually, then share and combine their ideas on a video call; and/or having one student start work on part of the project and then pass it to another student for further development and refinement.
  - When you meet, review what has been completed and what still needs to be accomplished.

MODELING & PROTOTYPING

You might need to change your previous plans regarding how students model and test their design solutions. Here are some options to consider.

- IDEAS FOR MODEL-MAKING WHILE WORKING REMOTELY
  - Instead of a physical model, make a detailed design drawing. Drawing could be made by hand (then scanned or photographed), or produced using software. Encourage students to include multiple views that show different sides or magnify key parts. To enhance clarity of the model, suggest adding notes about size, the materials, and how it would be made.

  - Create a storyboard (series of drawings, like a comic strip) showing how the design would be implemented or used. Each student should complete a piece of the storyboard.

  - Use simple craft materials that can be found at home (scrap cardboard, tape, etc) to build a model that represents the idea or a key part of it. Models don't have to be functional in order to learn from them and refine the idea. One student could be designated the "model-builder" and communicate regularly with teammates to incorporate feedback.

  - Use 3D CAD (computer aided design) programs to build a digital model of the design concept. Many free CAD programs are available
    - **SketchUp for Secondary Education / SketchUp for Beginners** (tutorial)
    - AutoDesk **TinkerCAD**
  - Other **Free CAD software resources** for beginners and kids

- **SUGGESTIONS FOR TESTING & REFINING DESIGN IDEAS**

For students who may be working at home, that doesn't mean they can't still test out their ideas in some way. A great way to do this is by talking with experts, potential users, and other stakeholders to get their opinions and suggestions

- Students could email images and information about their design to local experts and/or invite them to meet on a video call where they can show their work and ask questions.
- If you have multiple teams, have them offer constructive feedback to each other using the **Peer Feedback Loop UPDATE THIS FILE/UPDATE THIS LINK** activity in the Instructional Storyline.
- If it is possible to build a physical model. students could create simple home-based testing strategies for evaluating one or more key aspects of the design.

PREPARING THE PITCH VIDEO

Many students are quite skilled at creating videos on webcams and smart phones. Many free video-editing apps exists which require a download to a device, while other work in the cloud and support group collaboration. **Here's a round-up review of some free options**. Provide students with guidance about which tool(s) you want them to use. Refer to the **Video Pitch Tips** resource for suggestions you might be able to incorporate.

- **IDEAS FOR COORDINATING REMOTE VIDEO PRODUCTION**
  - Have students plan their video by writing a script together using a document-sharing platform.
  - Each student could individually videotape or voice record a segment for the video and upload it to the document-sharing platform. The clips can then be reviewed as a group and assembled online (in a cloud-based application) or one person could download and combine the pieces into one video on their own device.
  - Record a slideshow with a voiceover narration. Many computers have screen-capture software. Quicktime comes standard on Macs, and **this article** describes how to record within the PowerPoint application.
  - As a team, you could record the screen of a virtual video conference call with students talking sequentially or in unison. Most video conferencing platforms allow screen sharing so the students can talk about uploaded images, documents and presentations as part of the video presentation. Many platforms have integrated recording features.
  - Give students the flexibility to come up with other creative ways to create the video for their design submission!