

A Guide to Designing Your Own 3Doodler EDU Design Challenge

🚩 The Challenge

So you want to design your own version of a 3Doodler EDU Design Challenge? That's great! Here's how.

👁 Overview

Every Design Challenge is based on two things: a **multi-disciplines approach** and the **innovation process**.

A **multi-disciplines approach** allows for a project to be based on a combination of history, art, writing, culture, science, engineering, technology or math. Working with the 3Doodler provides an arts and technology base for all projects. Have participants think about the history, cultural context or background behind the science or engineering of your challenge. Write about this context in the Challenge Background section.

The innovation process is based on how designers, scientists and engineers tackle a problem. The key phases of the innovation process include:

- **Documenting** the process to have a visual record of the thinking and making process;
 - **Investigating** the who, what, when, where, why and how of the problem;
 - **Imagining** a new approach to the problem or an improvement to an existing product;
 - **Designing** and **Planning** a solution through writing, drawing sketches and making models as well as deciding what materials are needed and which team member will do what;
 - **Building** and **Testing** the product to see if it works;
 - **Presenting** and **Reflecting** on what you have created with others, and, if time allows,
 - **Re-iterating** to improve your product based on the feedback received during the challenge.
- Sometimes the challenges only include some of the innovation process phases but **designing, building, presenting** and **reflecting** are essential components to any challenge

Challenge Tips

Some considerations we learned along the way for creating a challenge:

Time Limits:

A large part of the challenge is to provide a time limit to each innovation phase. Time limits keep challengers moving quickly through the design process to keep from getting stuck in the mud of one area. Time limits also help to keep the challenges small-scaled and focused.

Provide Examples:

Provide images as inspiration and to make details clear in the phase descriptions.

Ask Questions:

When writing the phases ask questions for challengers to consider. "How can...?" and "What if...?" "Are there...?" type questions will provide a frame of reference for the challenges. It will help to focus the challenger's attention on what is important to do while making the product.

Failure is Learning:

Design the challenges in ways that help participants to take risks. The goals are not necessarily to win, but to try out new ideas in a low-risk environment. It's good to base evaluations

- Were creative ideas expressed and demonstrated?
- How well did the teams work together?
- Did participants persevere and work through the problem?
- Was constructive feedback and discussion created?
- Was the challenge fun and engaging?

Documentation:

Encourage participants to document their projects as they make them with a mobile phone camera or tablet. Documentation can be used during the presentation phase.

Attached is the template to create your own challenge. The text and images of these documents can be edited using Adobe Reader or a similar software.

Share your original challenge ideas and results by tagging [#3DoodlerEDU](#) or emailing EDU@the3Doodler.com for a chance to be featured! Thank you for adding your ideas to the community.

3Doodler[®] EDU

Design Challenge

Challenge Title

Facilitator's Guide

The Challenge

(A statement of what is expected of the participants)

This challenge will...

Overview

⌚ Total Time: # of minutes (# of Class Periods)

Provide an overview for facilitators to gain a quick understanding of what will happen for the participants during the challenge, including what's expected and the quality of the experience.

🔍 Challenge Background

💡 Challenge Tip -or- Take It Further
Provide a tip or suggestion for the participants to consider while doing the challenge. This can help to focus the participants' attention, or to take the challenge to a whole new level (during or after class).

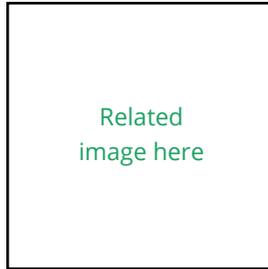


Fig.1

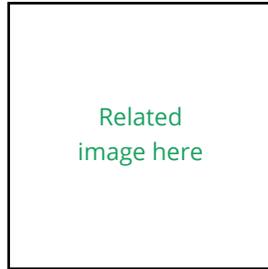


Fig.2

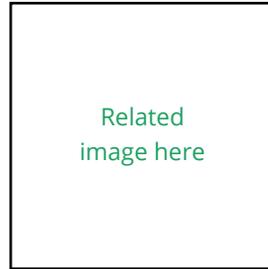


Fig.3

Help provide the challenge with an historical, cultural or scientific context and ask questions for the challengers to consider. Supply at least two example images from the context so that participants can get inspired and understand the direction of the challenge.

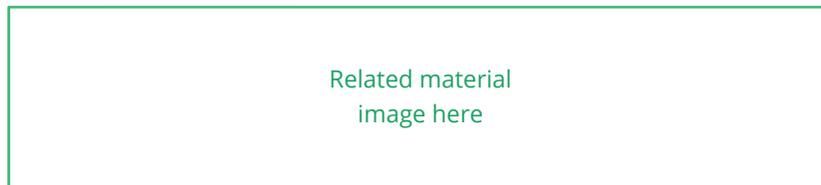
✂️ Materials & Tools

① Before You Start Doodling
We recommend using a DoodlePad or clear tape placed over paper as a foundation to keep your Doodles in place and so that you can peel them off with ease.



(Here is the basic list of supplies. Add other materials needed for your challenge like recycled materials, electronics, sensors, etc.)

Determine the number of participants and gather all of the materials and tools prior to the challenge.)



- A.** 3Doodler Pens and Plastic Strands of various colors (one per student, or have students work in pairs or small groups)
- B.** Tools (from your 3Doodler box) plus needle-nose pliers or scissors for snipping plastic ends
- C.** Clear plastic tape or DoodlePad for Doodling foundation
- D.** Paper for Doodling foundation and extra sketching/note-taking space
- E.** Drawing utensils (markers, pens or pencils)
- F.** Camera or video recording device to document the Challenge and results
- G.** Add your own
- H.** Add your own

☰ Challenge Organization

📷 Challenge Documentation

Take photos & videos of your process using a camera. Document what to do and what not to do. Share your experience with the online community using #3DoodlerEDU!

Challenges are organized into 50-minute periods so they can fit into a traditional classroom structure, or be combined into a single workshop with breaks in between activities. This Challenge is designed to have participants work in short sprints to quickly explore the concepts.

🖥️ Class 1:

⌚ Total Time: 50 min.

Figure out how many class periods you will need to complete your challenge. Challenges can be done during classroom periods, during a longer afterschool session or for a day-long workshop. Customize your time as you need it. Keep in mind that more than one challenge activity can happen during the day. Include 10-15 minutes for presentation and reflection at the end of your challenge. See the list below for the kinds of activities to include in your challenge. Split them up based on class periods needed and time allotted for each activity.

📝 Facilitator's Notes

In Class 1, participants will.... (include notes to guide a facilitator)

Investigate Activity (xx min.):

(Ask challengers to dig deeper into the challenge's ideas, history and context.)

Imagine Activity (xx min.):

(Ask challengers to come up with ideas, inspirations or ways of seeing the problem.)

Design & Plan Activity (xx min.):

(Ask challengers to provide drawings, models and a plan of attack.)

Build Activity (xx min.):

(Provide directions or guidelines for building and testing the product.)

Documentation Activity (xx min.):

(Ask challengers to video record or take pictures of the challenge process.)

Present/Reflect Activity (xx min.):

(Discuss how the challenge will be evaluated and presented.)

Re-Iterate Activity (xx min.):

(Ask challengers how they can improve their product.)

Class 2:

🕒 Total Time: 50 min.

🔑 Remember to Snip Those Ends

We recommend pliers or scissors for snipping plastic ends. Make sure to keep your plastic ends clean to prevent clogs and jams. Snip plastic after removing it from the 3Doodler pen to make sure it's clean for the next time.

📝 Facilitator's Notes

In Class 2, participants will... (include notes to guide a facilitator)

 Class 3:

🕒 Total Time: 50 min

 **Facilitator's Notes**

In Class 3, participants will... (include notes to guide a facilitator)

🖥️ Class 4: Present & Evaluate

🕒 Total Time: 50 min.

📝 Facilitator's Notes

In Class 4, participants will... (include notes to guide a facilitator)

🖥️ Class 5: Present & Evaluate

🕒 Total Time: 50 min.

📝 Facilitator's Notes

In Class 5, participants will... (include notes to guide a facilitator)

🔗 More Information:

For More Information on _____ go to:

- Include websites and videos for participants to reference to generate ideas or understand a specific technique.

📄 Image Sources:

Cover Page: website

Fig. 1: website

Fig. 2: website

Fig. 3: website