

3Doodler[®] EDU

Design Challenge

Jigs To Equip Your 3Doodler

Facilitator's Guide

🚩 The Challenge

Develop a set of 3Doodler jigs that help to build spheres, arches, cones and volumes.

👁️ Overview

⌚ **Total Time: 100 minutes (2 Class Periods)**

This challenge is paired with learning how to use and manipulate the 3Doodler pen. Have participants do the warm-up exercises and then have them work with plastic cups, balls, egg cartons and other materials slated for the trash to make various volumes.

⚙️ Challenge Background

💡 Challenge Tip

When making volumes, remember to create a # or X structure pattern so that the volume stays intact when the jig is removed.



Fig. 1



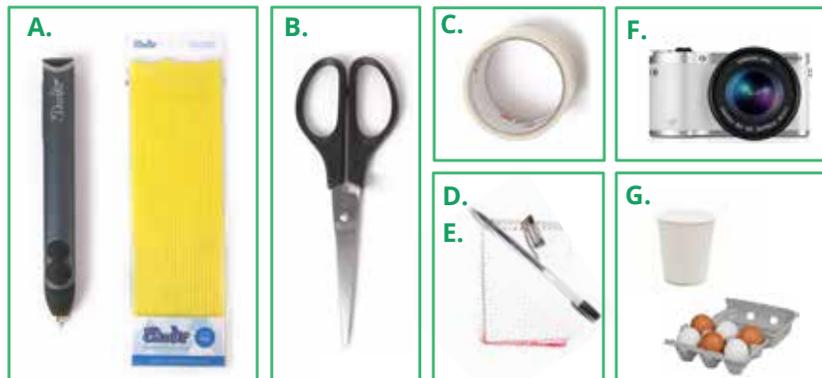
Fig. 2

Jigs, clamps, molds and straps are used to form difficult shapes in wood, metal and plastic work. Jigs are used to position material or machines at angles, make curves and protect fingers from being too close to fast operating machinery. Jigs are also used to obtain consistency in shape, volume, and the location of screw holes and spacing of parts.

🔧 Materials & Tools

🕒 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.



- 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.** Various materials slated for the trash bin: wood shapes, plastic cups, egg cartons, waterbottles and paper tubes

📅 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: Warm Up

🕒 Total Time: 50 min.

🔧 Warm Up (🕒 50 min.)

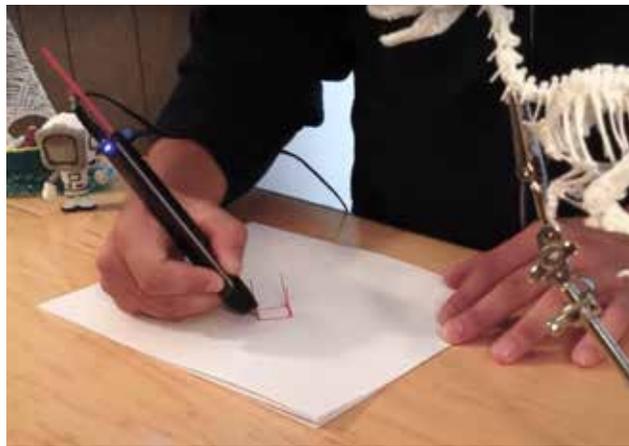


Fig. 3

🔪 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.

Step 1: Watch the 3Doodler Getting Started videos first here <http://the3doodler.com/videos/>

Step 2: Practice loading in and unloading plastic strands from the 3Doodler.

Step 3: Now practice making basic shapes like triangles and cubes.

📝 Facilitator's Notes

In Class 1, have participants become familiar with using the 3Doodler pen and the tools like tweezers, scissors, needle-nose pliers and small screwdrivers. Have either a mobile devices or a projector and screen to watch the 3Doodler instructional videos.

🖥️ Class 2: Experiment & Document, Present & Reflect

🕒 Total Time: 50 min.

🔧 Experiment & Document (🕒40 min.)

Step 1: Each table will have materials and objects to create jigs as a base for Doodling unusual volumes. Select two objects to experiment with and make two different volumes.

Consider these questions:

- What is the difference between using paper, plastic or metal as a jig?
- What kind of structure is needed to maintain the shape of the volume once the jig is removed?
- What kinds of volumes can specific objects be used to create?
- What would happen if you connected jigs with tape to create larger volumes?

Step 2: Document the process and end results of Doodles made both on and off of the jig.

👤 Present & Reflect (🕒10 min.)

Step 1: Gather participants around a display table and have each participant place their jigs and the resulting 3Doodles on a table.

Step 2: Go around the group and have each participant discuss what the process was like for them and what they learned about creating a structure. Use the 'I Like, I Wish, I Wonder' feedback method to reflect on the activity.

📝 Facilitator's Notes

In Class 2, participants will begin using various objects like plastic cups, balls, egg cartons, cans, bottles, paper rolls, etc. to create volumes. Have enough materials to provide an assortment for the groups.

🔗 More Information:

For further information and inspiration about the making and the uses of jigs, visit:

- <http://goo.gl/IRnEVZ>
- <http://www.startwoodworking.com/post/how-build-woodworking-jigs>
- <https://www.youtube.com/watch?v=lj16XnRV70>

🖼 Images:

Cover Page: <https://i.ytimg.com/vi/81qqI3OI6uA/hqdefault.jpg>

Fig. 1: https://i.ytimg.com/vi/68O_YeoXSw/hqdefault.jpg

Fig. 2: <https://upload.wikimedia.org/wikipedia/commons/4/4f/5-Axis-Waterjet-Cutting-Head.jpg>

Fig. 3: <http://the3doodler.com/videos/>