

The logo features the word "3Doodler" in a blue, bubbly, 3D-style font with a white outline. To its right, "EDU" is written in a bold, yellow, sans-serif font. Below "3Doodler EDU", the words "Design Challenge" are written in a white, sans-serif font. The background is a green-tinted image of a wooden letterpress tray containing various raised letters and symbols.

3Doodler EDU

Design Challenge

What's in a Word?

Facilitator's Guide

🚩 The Challenge

Using the 3Doodler and plastic strands, design a 3D font inspired by an emotion or a cultural reference.

👁️ Overview

⌚ **Total Time: 150-200 minutes (3 Class Periods with optional 4th Class)**

This Challenge gives participants the opportunity to combine the skills of drawing, expression and technology by creating their own font with the 3Doodler pen. Have participants consider the history of printing and movable type and how it has been transformed from a three-dimensional tool to a computer generated image. If time permits, this Challenge provides an optional fourth class to create an entire alphabet.

⌘ Challenge Background

💡 Challenge Tip

Look at how fonts have been designed throughout history to reflect changes in writing technology.



Fig. 1

	Textur	Rotunda	Schwa- bacher	Fraktur
a	ā	Ꝑ	Ꝑ	Ꝑ
d	ð	Ꝕ	Ꝕ	Ꝕ
g	Ꝓ	Ꝓ	Ꝓ	Ꝓ
n	ꝛ	ꝛ	ꝛ	ꝛ
o	ꝝ	ꝝ	ꝝ	ꝝ
A	Ꝑ	Ꝑ	Ꝑ	Ꝑ
B	ꝑ	ꝑ	ꝑ	ꝑ
H	Ꝓ	Ꝓ	Ꝓ	Ꝓ
S	ꝓ	ꝓ	ꝓ	ꝓ

Fig. 2

Although Johan Gutenberg (1398-1468) is credited with the invention of the printing press and movable type, he actually did not invent either. He did *improve upon* the printing process to make it easier and created the first typeface (or font) called Blackletter: a 300-character typeface meant to replicate hand-written calligraphy of the scribes. Many others followed, creating fonts that are still used today. Fonts help to express emotions—such as excitement, humor, or seriousness of the message—or an idea, such as nature, machines, or the future.

✂ 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. Acrylic paints or stamp-pad ink for students to create a stamp

☰ 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: Imagine & Design

🕒 Total Time: 50 min.

🗨️ Imagine & Design (🕒 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: Select an emotion or an idea as a basis for your font.

Step 2: Look at photographs, art, the environment or history and select three images to serve as an inspirational reference.

Step 3: Select a word (3-5 letters in length) that best captures the emotion or idea. These letters will be the ones you will create for your font design.

Step 4: Draw your font with a pencil or black pen and use graph paper as a guide and a template for 3Doodling later. As you design your letters, think about how the letters could be three-dimensional. For example, if you were using a tree to represent nature, the "T" might be made like a trunk with branches. The letters should be no taller than 3" and no shorter than ½".

📝 Facilitator's Notes

In Class 1, participants will explore how typeface design can express ideas and emotions. Have participants look up some examples or provide images of art, history or the environment to inspire their typeface design. Provide paper and/or sticky notes and markers with various size tips for drawing their ideas.

Class 2: Build

🕒 Total Time: 50 min.

Build (🕒 50 min.)

Step 1: To design fonts, graphic designers will use only black ink so that the font's form, shape and line can stand on their own without the distraction that multiple colors can create. For this Build phase, we recommend that each font is made with a single color. Black is preferable, but if not available, any single dark color (red, blue, green) will do. Turn your design from Class 1 into a stencil (for Doodling) using pen or marker on the paper provided.

Step 2: When your letters are completed, line them up to spell out your word. With the 3Doodler pen, trace over your design to create a three-dimensional version of your word.

📌 Facilitator's Notes

In Class 2, we highly recommend the use of black for the design of the participants' fonts. This keeps the design of the font from being bogged down by the meaning of a specific color and allows the shapes to dictate the emotional expression of the font.

Class 3: Test, Present & Reflect

🕒 Total Time: 50 min.

Test (🕒 30 min.)

Step 1: Use your new Doodled word as a stamp. Use paint or ink to transfer the design onto paper. Which side is used to print the font correctly? How does the use of the plastic strands contribute to the design of the font?

👤 Present & Reflect (🕒 20 min.)

Step 1: Present your font to the group. Explain how the word and font design help to reinforce your intended emotion or idea.

Step 2: Provide feedback using the "I Like, I Wonder, I Wish" model. Do your classmates' fonts express the emotions or ideas they represent?

Step 3: Based on this feedback, consider what you would change to make the font more legible or to further express the emotions or ideas that your font represents.

📌 Facilitator's Notes

In Class 3, provide participants with tempera or acrylic paints and paper to see how their letters print. Participants may decide to touch up their fonts or add other features to their printing blocks.

Optional Class 4 : Improve & Build

🕒 Total Time: 50 min.

🔧 Improve & Build (🕒 50 min.)

Step 1: Take pictures of your word. From the comments received by the group, consider the following questions:

- How can you improve your font?
- What would the rest of the alphabet look like?
- Would you create your own unique alphabet that spells out certain words?
- Would you create new letter forms for letter combinations such as *sh*, *ch* or *th*?

Step 2: Use the 3Doodler to include these improvements in a second version of your font.

Step 3: If you have time, create an entire alphabet of your font and photograph or 3D scan the designs to publish them online at Thingiverse.com or another 3D design community.

📝 Facilitator's Notes

Class 4 is optional and can provide an opportunity for participants to push the limits of letter forms, create their own alphabet or scan and create their own font using a computer program like Adobe Illustrator.

🔍 More Information:

For further information about the history of the printing press, visit:

- <http://www.historyguide.org/intellect/press.html>

For further information and inspiration about moveable type and the history of graphic design, visit:

- http://www.designhistory.org/Type_milestones_pages/Gutenberg.html

For further information and inspiration about font design, visit:

- <http://goo.gl/UB4Ych>
- <http://www.vandelaydesign.com/how-to-create-a-font/>

🖼️ Images:

Cover Page: <https://goo.gl/3DmvnL>

Fig. 1: https://upload.wikimedia.org/wikipedia/commons/f/f8/Printer_in_1568-ce.png

Fig. 2: http://www.designhistory.org/Type_milestones_pages/Gutenberg.html

Fig. 3: https://pixabay.com/static/uploads/photo/2016/03/31/09/18/font-1292316_960_720.jpg