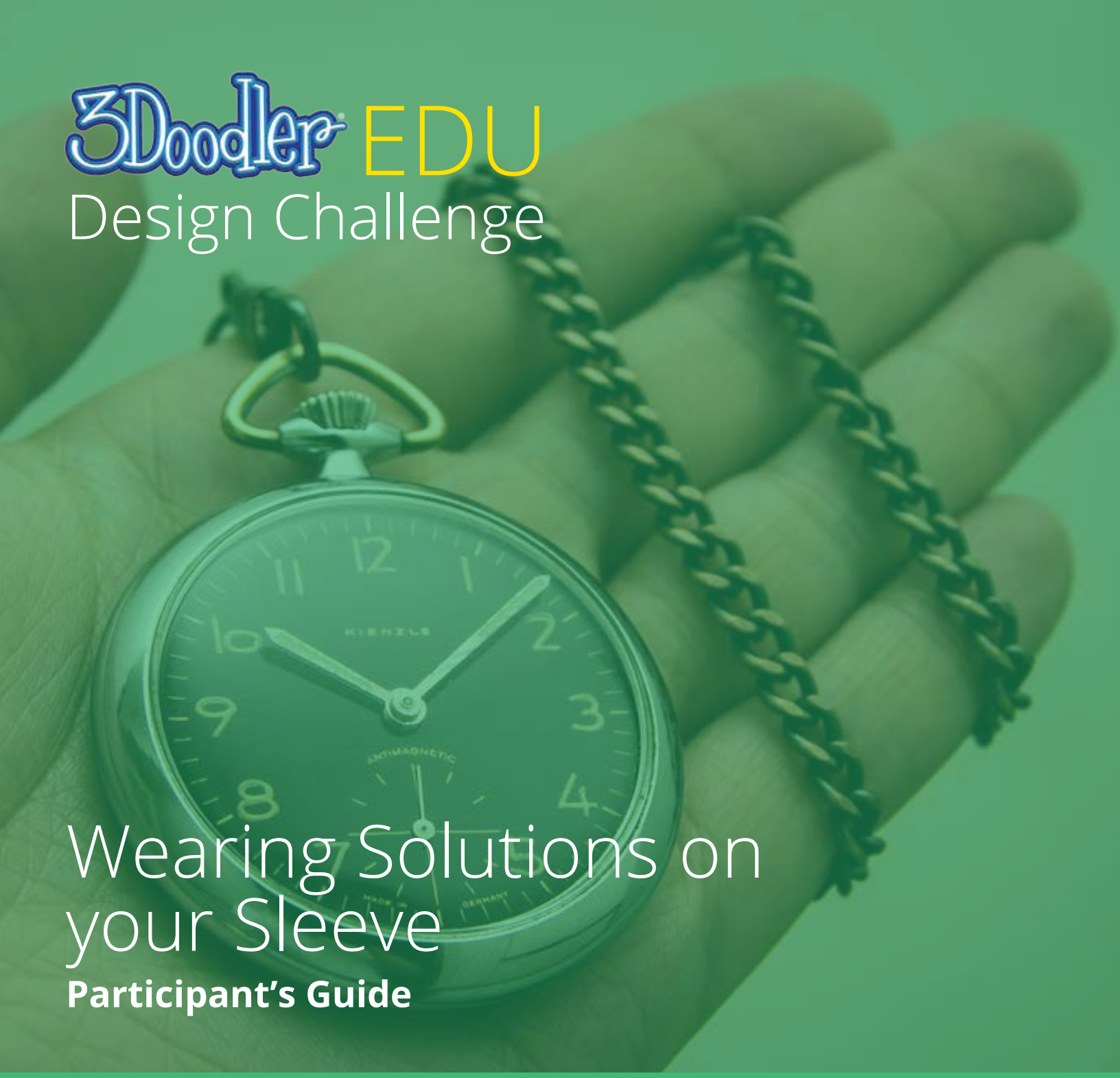
3Doodler EDU

Design Challenge



Wearing Solutions on your Sleeve

Participant's Guide

The Challenge

Choose a problem to solve by creating a wearable device using 3Doodler and plastic strands. Kick it up another notch and add micro sensors, circuit boards or processors.

Challenge Background

Take It Further
This challenge can be an "ignite event" for an entrepreneurial project. Introduce a specific problem to solve or allow it to be open-ended to get new product ideas flowing.

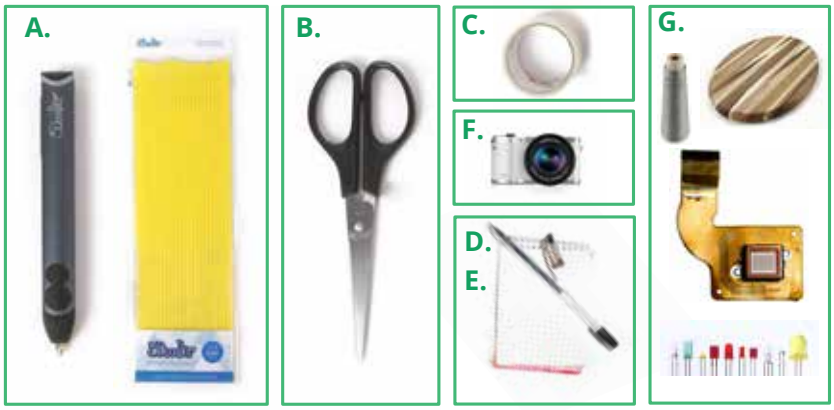
Fig. 1

Fig. 2

One of the newest trends in technology is wearables. From monitoring your fitness goals to augmented reality glasses, wearables will revolutionize the way we connect and communicate. But wearables are not a new technology. The German inventor, Peter Henlein, was regularly producing a pendent-worn watch, the first portable clock, in 1524. Prior to WWI, the wrist watch became popular due to smaller and more precise springs and mechanisms. Digital calculator watches were introduced in the 1970s. In 1979, Sony came out with the Walkman: a cassette player and the first personal portable music device.

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
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. Optional micro sensors, boards, wires, conductive thread, conductive ink, LEDs, batteries + paper rolls (or scrap fabrics) for pattern making.

Notes

Challenge Organization

Notes

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 (20 min.)

Step 1: In teams of two, answer the following questions:

- What would it be like to have a piece of jewelry or an accessory on your arm, leg or head that could communicate your mood, message or direction just by moving it?
- What if this accessory could protect you from extreme cold, heat or pressure, toxins or even molten lava?
- What would help you to carry tools or medicine in a stylish way?

Step 2: Working as a team, decide an existing problem you would like to solve. Jot down fifteen quick ideas for a wearable accessory that can help you communicate or solve a problem.

Design (30 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.

Fig. 3

Step 1: Look over your ideas and answer the following questions:

- Are there some that jump out to you?
- Are there a couple of good ideas that are similar or could work well together?
- Where on the body will this accessory be worn?

Step 2: Select your best idea and draw a quick sketch of what it will look like.

Step 3: Paper is an inexpensive and flexible material for making a pattern on the body. Have one teammate be the model and use a roll of paper to start forming this accessory to your teammate's body.

Step 4: Cut away, fold and make notes on the paper model of your product.

Step 5: Use a few 3Dooder plastic strands to experiment with how the accessory will go together. Think about how the plastic strands could be used. How will electronic components be added or hidden in the accessory? This process will help to create a pattern to draw with the 3Doodler.

Class 2: Present, Reflect, Re-design & Plan

Total Time: 50 min.

Present & Reflect (30 min.)

Step 1: Now it's time to present your wearable accessory. Take five minutes to name your accessory and to describe who the accessory is made for and what problem it solves.

Step 2: Discuss how the 3Doodler plastic strands will be used and how the electronics may be integrated.

Step 3: Take turns presenting your accessories use the "I Like, I Wonder, I Wish" model for providing feedback. Don't forget to take pictures of your accessory models to document the process.

Re-design & Plan (20 min.)

Fig. 4

Fig. 5

Step 1: From the feedback received, make adjustments to the design of your accessory. Make sure you have the tools you need to cut or manipulate the materials and the color and type of 3Doodler plastic ready for use.

Step 2: Select any electronic components that will be incorporated into the accessory. Have everything ready to use before you start the Build phase.

Class 3 & 4: Build

Total Time: 100 min.

Build (100 min.)

Step 1: Take your design tweaks and materials (including your 3Dooder pen and plastic) and begin the building phase. Remember your accessory is a prototype of a final product. It is not meant to be perfect.

Experiment and try things out. The goal is to be able to demonstrate your idea and how it works. Use the 3Doodler to bring your design idea to life.

Notes

Class 5 : Test, Present & Reflect

Total Time: 50 min.

Test (30 min.)

Step 1: Test out your accessory on your teammate. Does it work?

Step 2: : Make any adjustments or fixes.

Step 3: Prepare for the final presentation.

Present & Reflect (20 min.)

Step 1: Demonstrate your accessory to the group.

Step 2: Discuss what worked, design challenges and how your team would improve the accessory.

Step 3: Provide feedback using the "I like, I wonder, I wish" model. Don't forget to video record and take pictures of your final product.

Notes

More Information:

For further information about the history of wearables, visit:

- http://goo.gl/74lWej

For further information and inspiration about wearable technology, visit:

- http://www.wareable.com/wearable-tech/what-is-wearable-tech-753

For further information and inspiration about how to design wearables, visit:

- http://goo.gl/jQMDy5

Images:

Cover Page: https://c1.staticflickr.com/3/2876/9170655730_1a5fa3d829_b.jpg

Fig.1: http://i.ebayimg.com/images/i/360891072386-0-1/s-l1000.jpg

Fig. 2: https://upload.wikimedia.org/wikipedia/commons/f/f8/Original_Sony_DAT_Walkman.JPG

Fig. 3: https://upload.wikimedia.org/wikipedia/en/e/e7/Draping_example_by_Jeanette_Aultz_2013.jpg

Fig. 4: https://i.ytimg.com/vi/qlc8H6S7vq0/maxresdefault.jpg

Fig. 5: https://c1.staticflickr.com/3/2389/2289176665_68945d9339_b.jpg