

Hello! We are  PrintLab

PrintLab is a learning platform that teaches students how to design custom products with 3D printing.

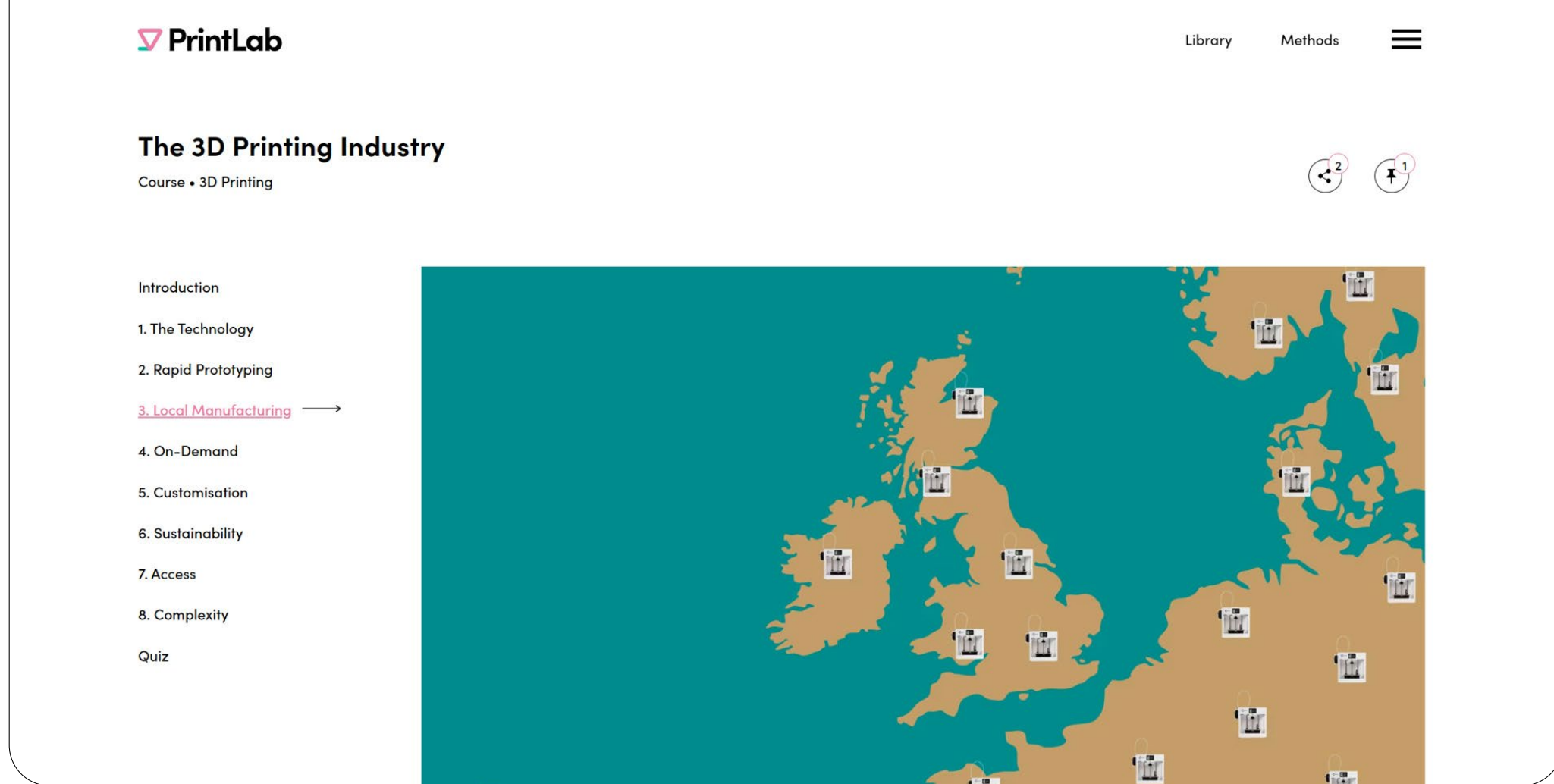
Our library is a toolkit of learning resources that fit into 3 categories – mini courses to build technical skills and knowledge; guided projects to show people how to design specific types of products through an iterative process; and live challenges where people can use everything they’ve learned to tackle open-ended briefs for real people and organisations.

Teachers can give students direct access to these resources using share links — no logins or accounts are required. Each link opens the course or project instantly, making it easy to integrate PrintLab into classroom lessons, virtual learning environments, or homework activities. See an overview of the platform [in this video](#).



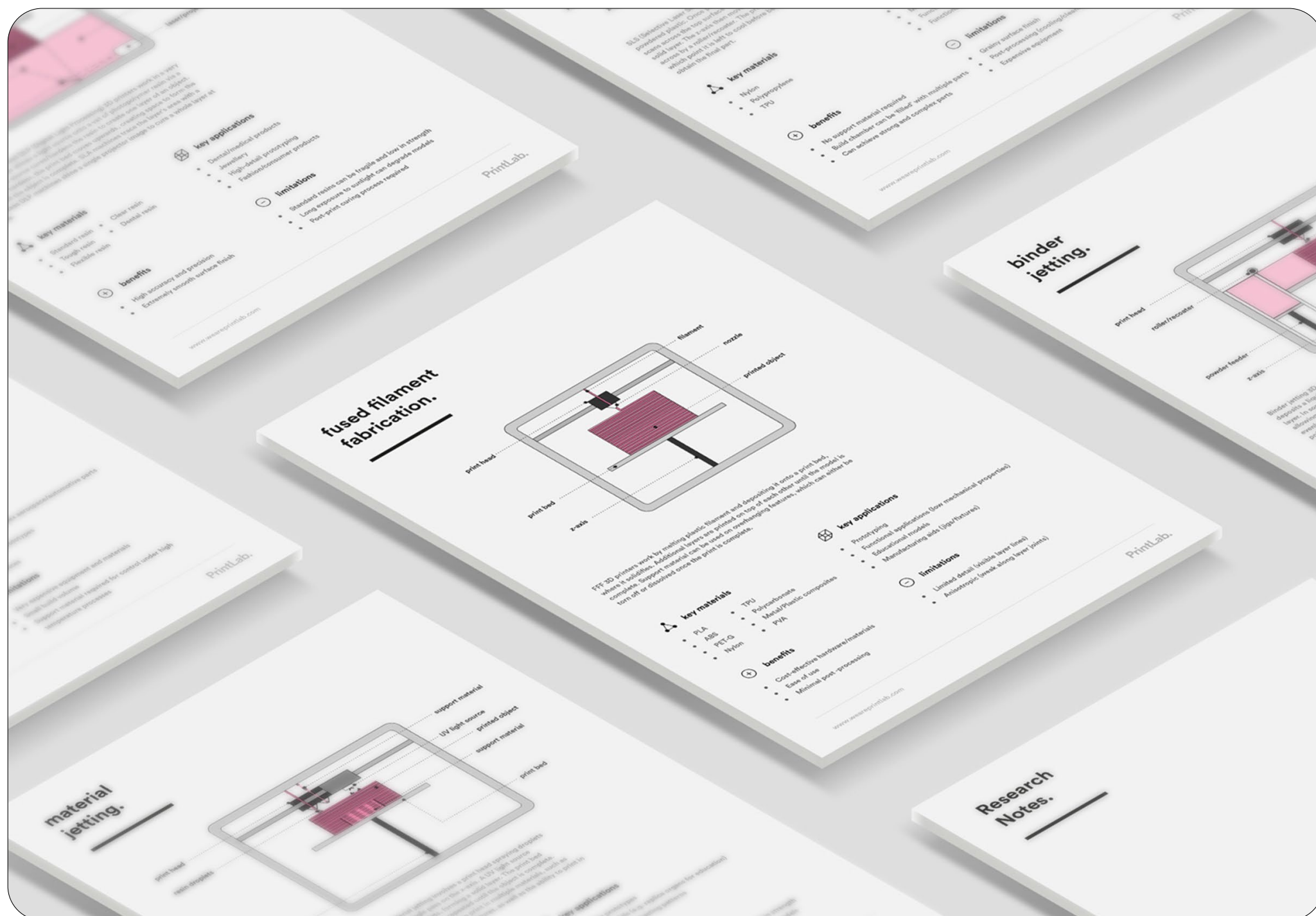
This guide outlines a suggested learning pathway through PrintLab resources to help your students prepare for the *Make:able* Challenge — developing the technical and creative skills needed to design meaningful 3D printed assistive devices. Each step is optional, allowing you to adapt the pathway based on the time available and your students' existing experience. If you're new to PrintLab, we recommend [signing up for a free trial here](#) as you explore the guide.





STEP 1 – Develop an understanding of the 3D printing industry and technologies.

Begin by introducing your students to the [3D Printing Industry](#) mini course, which explores key aspects of the 3D printing industry – from rapid prototyping and local manufacturing to customisation, sustainability, and global accessibility. Then guide them through the [3D Printing Technologies](#) resource to help them understand six major types of 3D printing technologies.



STEP 2 – Select a 3D CAD software and learn the basic tools and functions.

The majority of PrintLab projects include tutorials in both Tinkercad and Fusion 360 (both free for educational and personal use), allowing you to choose which software your students will work with. We recommend Tinkercad for complete beginners and Fusion 360 for students who have some 3D CAD experience or wish to take on a greater challenge. You may wish to begin by introducing both options, then guide students to complete either the [Intro to Tinkercad](#) or [Intro to Fusion 360](#) course.

Intro to Tinkercad

Course • 3D Design

Introduction

1. Intro + Navigation

2. Placing + Moving Shapes

3. Scaling Objects

4. Grouping Objects

5. Rotating Objects

6. Making Holes

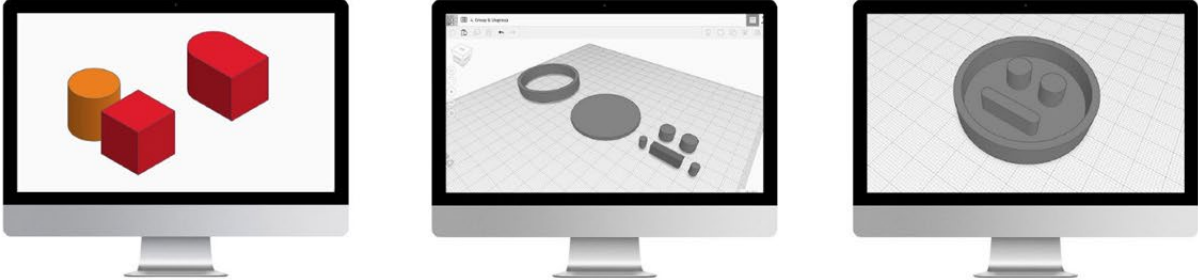
7. Duplicating Objects

8. Aligning Objects

9. The Flip Tool

10. Shape Generators

Overview



By using the 'Group' tool, you can combine multiple shapes into a single object! Grouping shapes can come in handy in various ways such as helping you to position objects and distinguish between different components in a model. You can also use the 'Group' tool to make holes, which we'll look at in a tutorial later on.

PrintLab

Library Methods

Intro to Fusion 360

Course • 3D Design

Introduction

1. Interface - Navigation

2. Sketch - Extrude - Cut

3. Fillet - Chamfer

4. Patterns

5. Revolve

6. Offset Plane - Loft

7. Sweep

8. Shell

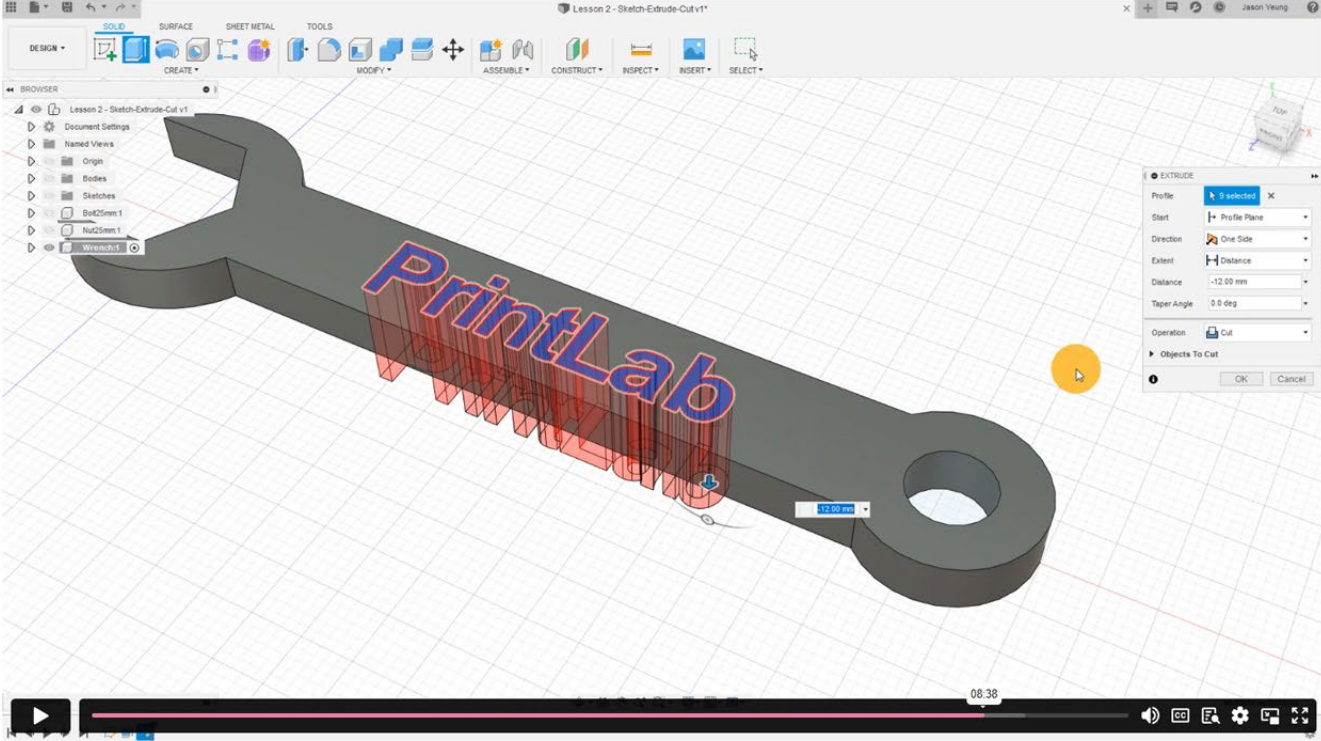
9. Mirror

10. Assemblies

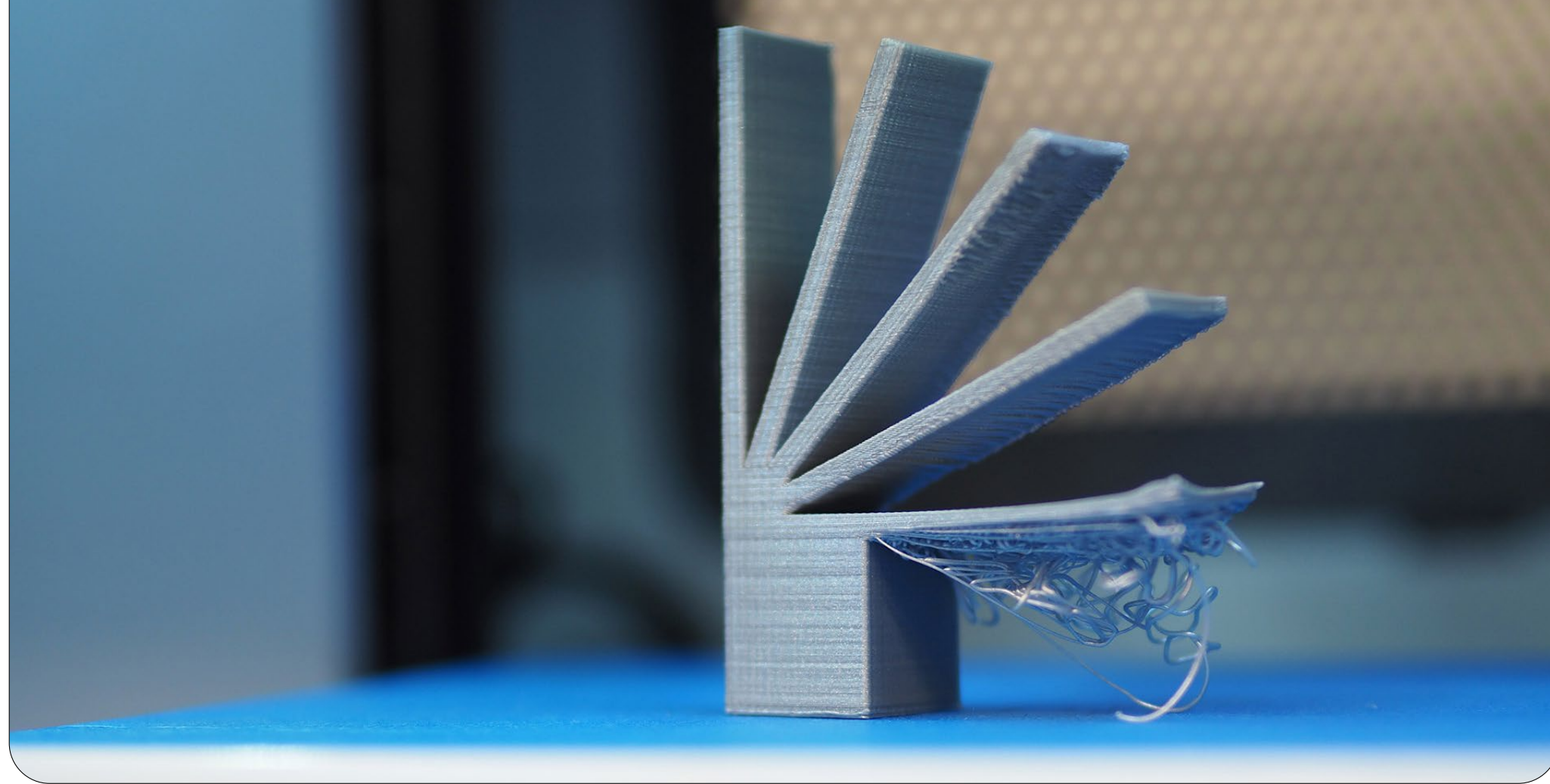
11. Render

12. Drawings

13. 3D Printing



Text Instructions Version



STEP 3 – Learn how to optimize 3D models and slicer software settings for quality 3D prints.

Our [Designing for 3D Printing](#) course introduces students to best practices for designing specifically for 3D printing, while the [Slicing for 3D Printing](#) course explains ten essential slicer settings to help them achieve high-quality prints. Guiding your students through both courses will equip them with foundational knowledge that can be applied to all of their future 3D design projects.

LibraryMethods

Slicing for 3D Printing

Course • 3D Printing

2

1

Introduction

1. Print Speed

2. Print Temperature

3. Layer Height

4. Orientation

5. Outer Layer

6. Print Bed Adhesion

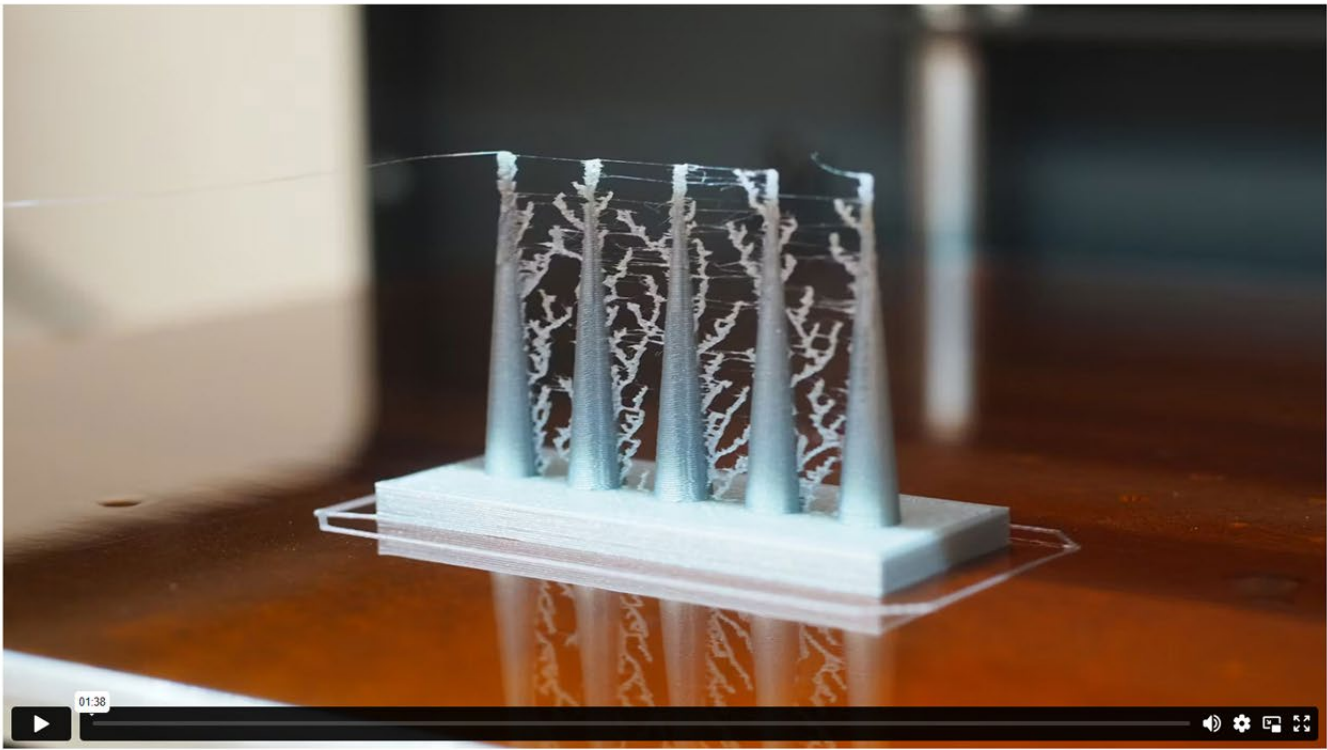
7. Retraction

8. Infill

9. Support Material

10. Cooling Fans

Quiz

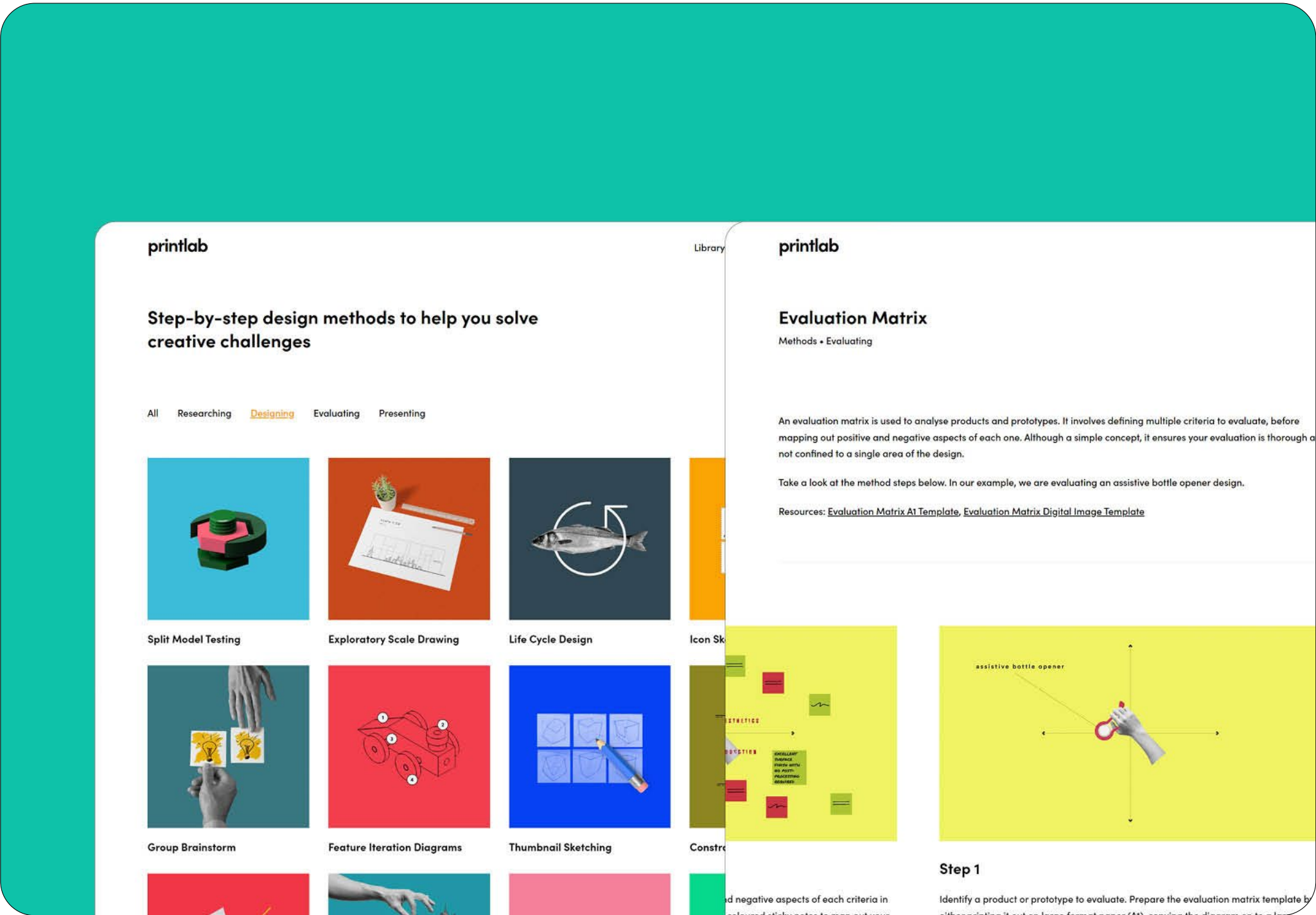
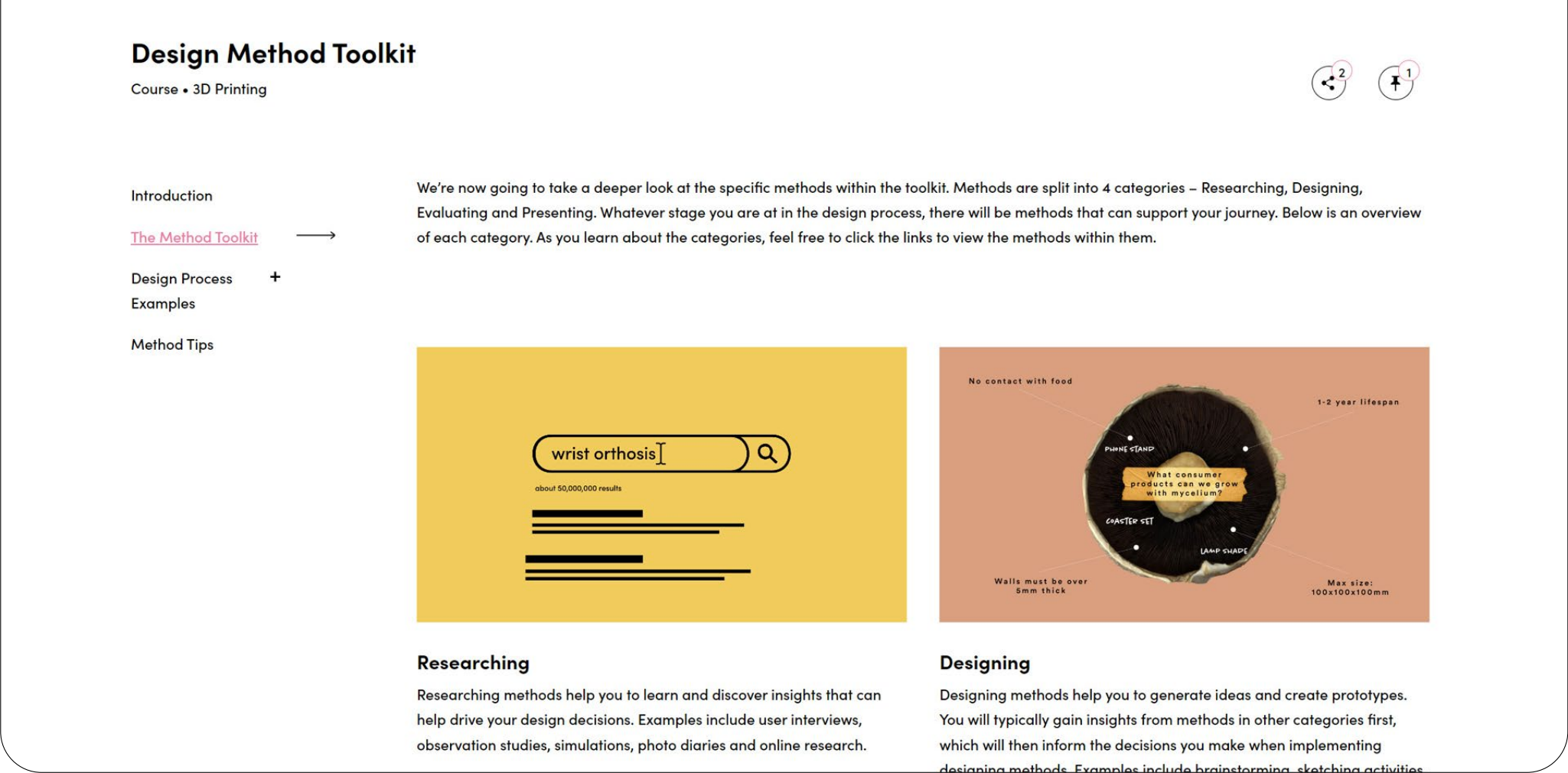


Voice Narrated Version

+

STEP 4 – Understand the full creative process and the tools available to you.

Before your students begin their design projects, it’s valuable for them to understand how designers approach creative challenges and the techniques they use throughout the process. PrintLab’s [Design Method Toolkit](#) provides a range of step-by-step activities for researching, generating ideas, prototyping, evaluating, and presenting work. By introducing your students to this resource, you’ll help them plan and implement these design methods within their own projects.

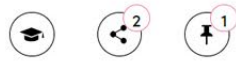


At this stage, your students will have developed a strong foundation of 3D printing knowledge and skills, which they can now apply in a series of assistive technology **design projects**.



Assistive Bottle Openers

Project • Assistive technology



Introduction

Levers

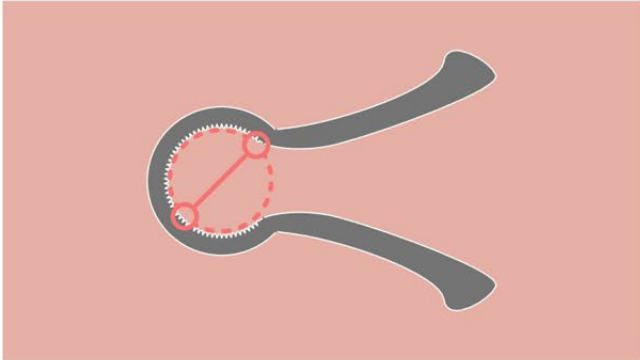
Design Considerations →

Skill Building

Evaluate + Iterate

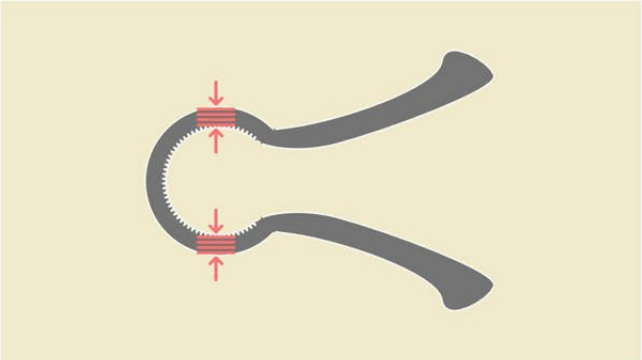
Submit

When designing 3D printed assistive bottle openers, there are many factors to consider. These will depend on the form and function of the bottle opener but in this section, we're going to take a look at some considerations for the design that you have seen featured throughout the videos in the previous sections of the learning platform. Go through the below considerations and refer back to them when you come to developing your own unique design.



Profile Diameter

Ensure the diameter of the profile opening is larger than the diameter of the screw cap. The flexibility and thickness of the device will play a part

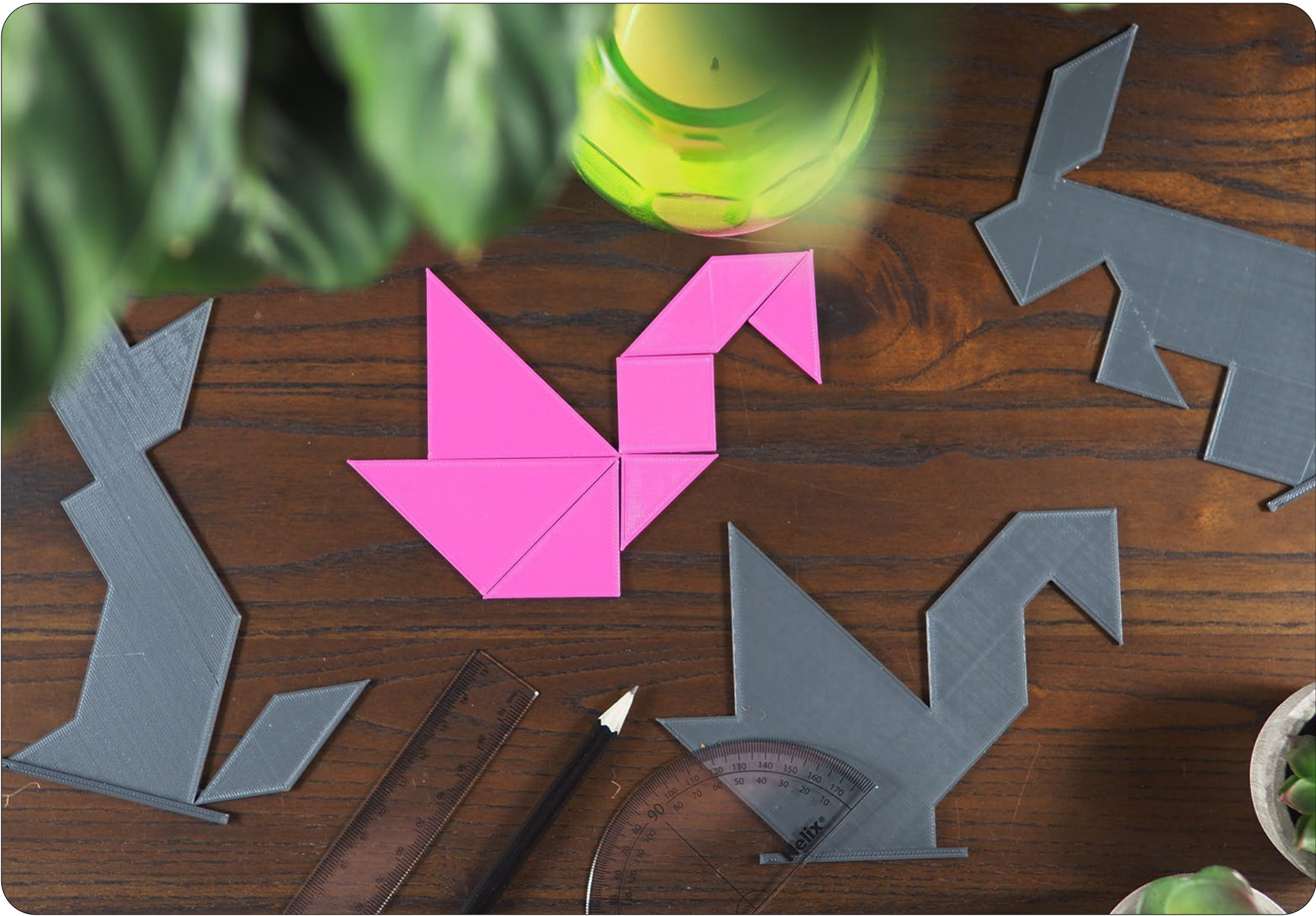


Material + Profile Thickness

The type of material and profile thickness will play a part in how flexible your bottle opener is. A thicker profile will give you less flexibility so bear

STEP 5 - Participate in beginner projects to adapt example designs.

Our [Assistive Bottle Openers](#) and [Tactile Tangram](#) projects are ideal starting points for beginners. These resources guide students through the full design process as they adapt or modify existing designs, while introducing key design methods such as evaluation matrices and real-time prototyping. You may wish to select one or both projects for your students to complete at this stage.



STEP 6 – Move on to projects that allow for more creative freedom.

Our [Assistive Clips](#) and [Tactile Matching Games](#) projects build on the beginner resources introduced in Step 5. They guide students through the full design process using a range of design methods, but this time with greater creative freedom to develop their own unique solutions rather than adapting existing designs.



LibraryMethods

Tactile Matching Games

Project • Assistive technology

Introduction

Tactile Games

Skill Building

Generating Ideas

Design + Make

Submit

In this final section, we'll be bringing your key idea to life through an iterative design process. This involves generating a 3D CAD model, 3D printing the game and performing tests before developing improved iterations. Follow the steps below to complete the project. Remember to document the entire process with photos/videos and notes.

STEP 1: Plan the Components

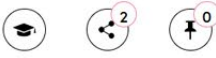
Begin by planning out what components are required for your game. Don't be afraid to mix 3D printed forms with other materials such as paper, cardboard, wood etc. if it makes sense from an aesthetic and functional standpoint.

STEP 2: 3D CAD

With a plan in place, generate a 3D CAD model of your key idea. If you're using Fusion 360, we recommend making use of fillets (rounded edges) to soften edges for a safer and better tactile experience. If you're using Tinkercad, check out the options in the Shape properties menu, where you can adjust the edge radius of certain shapes to soften edges.

Micro:bit Switch Access

Project • Assistive technology



Introduction

To begin your journey, you'll be jumping straight in and building your own Tap device. By assembling and using an example device, you'll better understand how adaptive switches work and the possibilities for customisation and innovation. Follow the steps below to build your switch. Then spend some time using the device on either a phone, tablet or Chromebook.

Switch Assembly



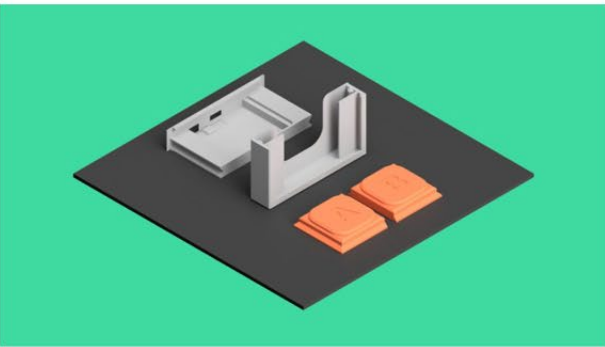
Skill Building



*Disclaimer – Due to the varying tolerances of 3D printers and material properties, we cannot guarantee the same functionality or tactile experience for each manufactured Tap device. If you have any issues with 3D printing or usage, please contact hello@weareprintlab.com and we will do our best to advise you with alternative print settings or design adjustments.

Customisation Options

Design + Make



STEP 1: 3D Print Components

Download the STL files for Tap and 3D print them using the orientations

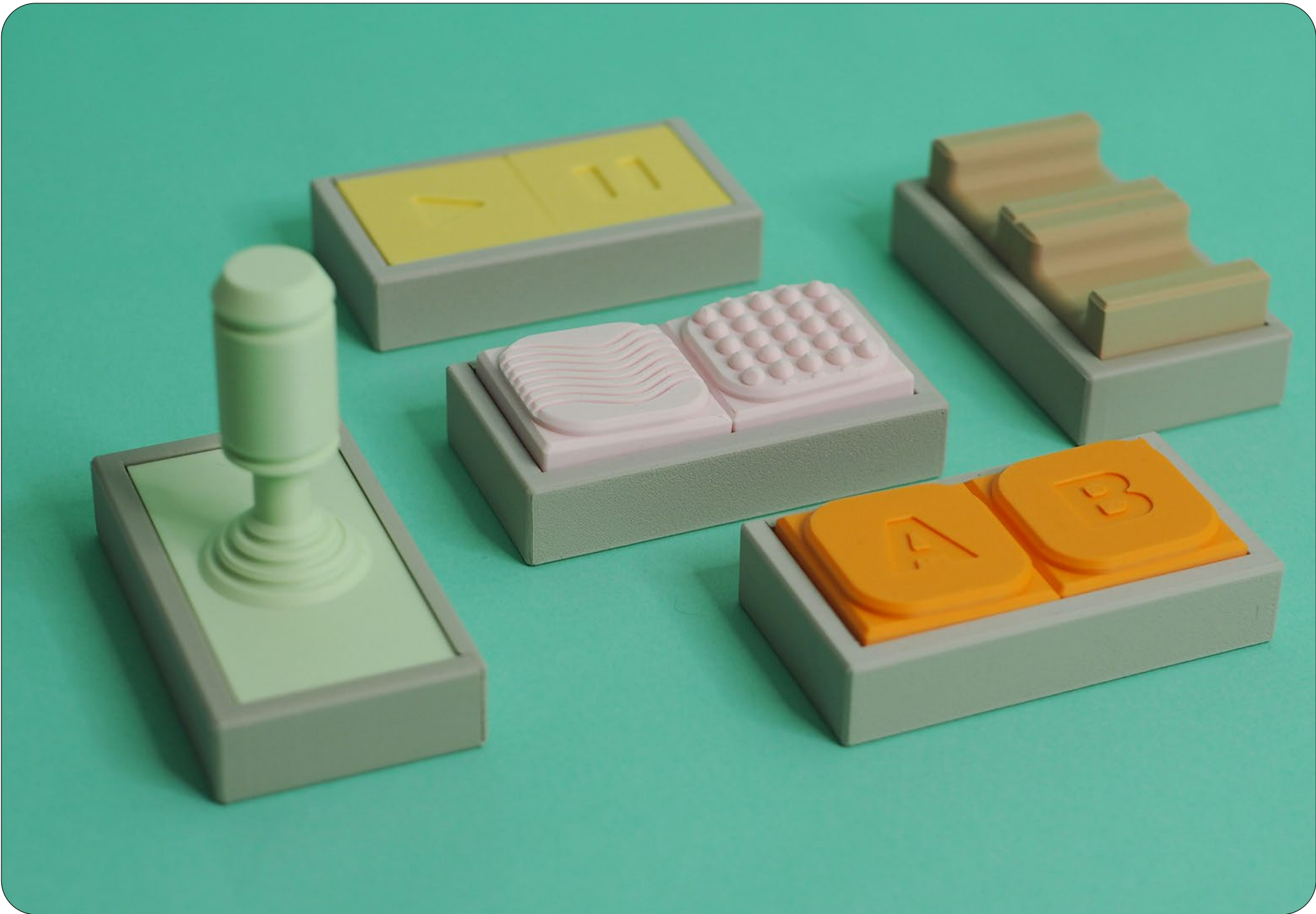


STEP 2: Upload Code to Micro:bit

Connect your micro:bit to a computer via USB connection. Then

STEP 7 – Learn how to integrate electronics and coding into your designs.

The possibilities with 3D printed assistive technology are vast – but when you combine it with electronics and coding, the potential grows even further. Our [Micro:bit Switch Access](#) project guides students through the process of designing a Bluetooth dual-switch device that enables people with disabilities to control phones, tablets, and computers. Along the way, they’ll develop practical skills in coding, electronics, and inclusive design — taking their creativity and technical ability to the next level.



After completing a series of projects, encourage your students to spend some time further **developing their 3D CAD skills** — enabling them to bring a wider range of creative ideas to life.

3D CAD Tutorials

Resource • 3D Design



Introduction

In this tutorial, you'll be designing an assistive bag carrier, which consists of a large ergonomic gripping handle, together with 2 hooks that allow users to hang multiple bags from. The device makes the task of carrying bags more comfortable and it evenly distributes weight to the handle.

Assistive Technology —

- Bottle Opener
- Tactile Tangram Puzzle
- [Bag Carrier](#) →
- Tactile Matching Game
- Finger Tools
- Writing Aid
- Key Turner
- Can Opener
- Cane Grip
- Head Pointer
- Orthoses

Product Design +

STEM +



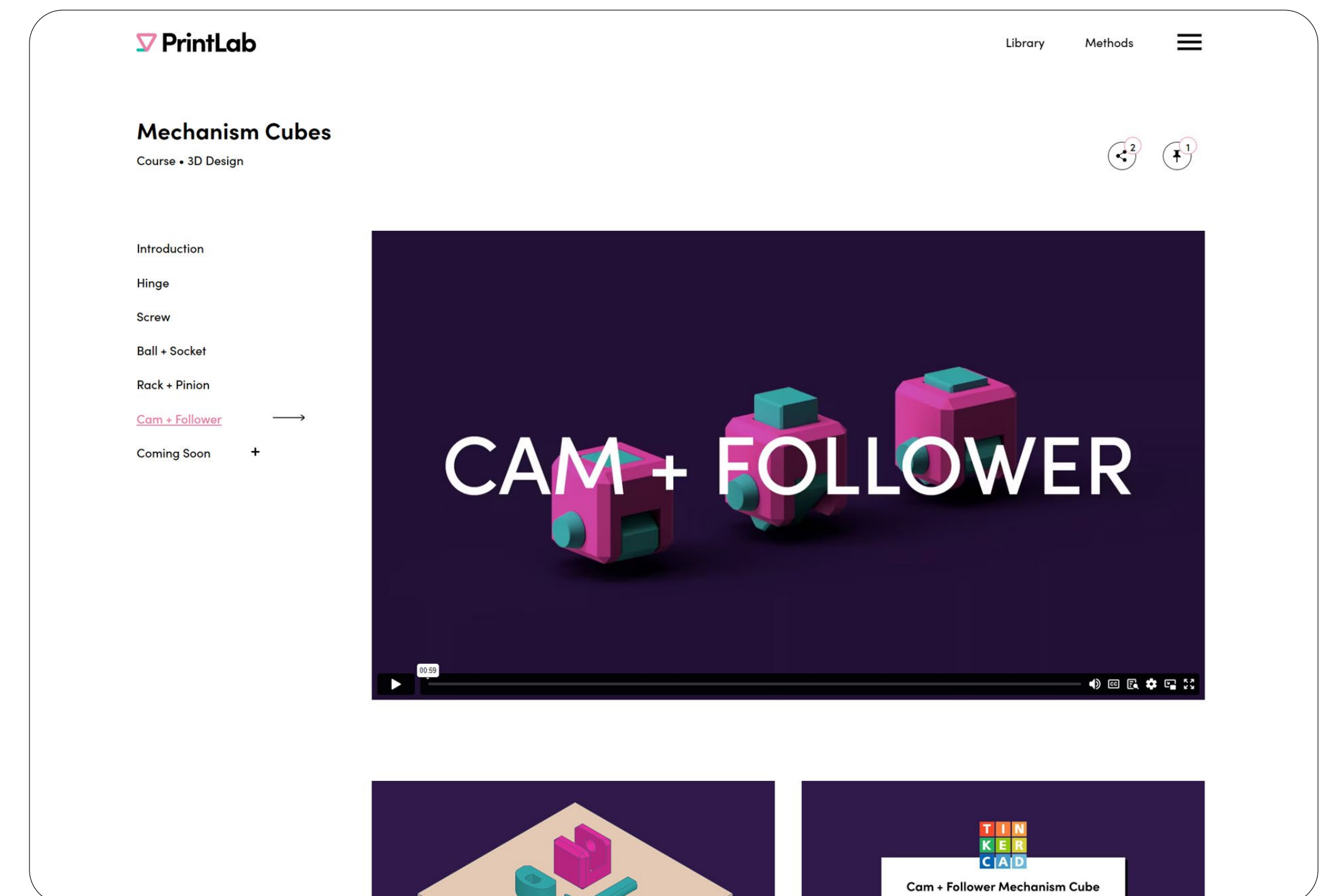
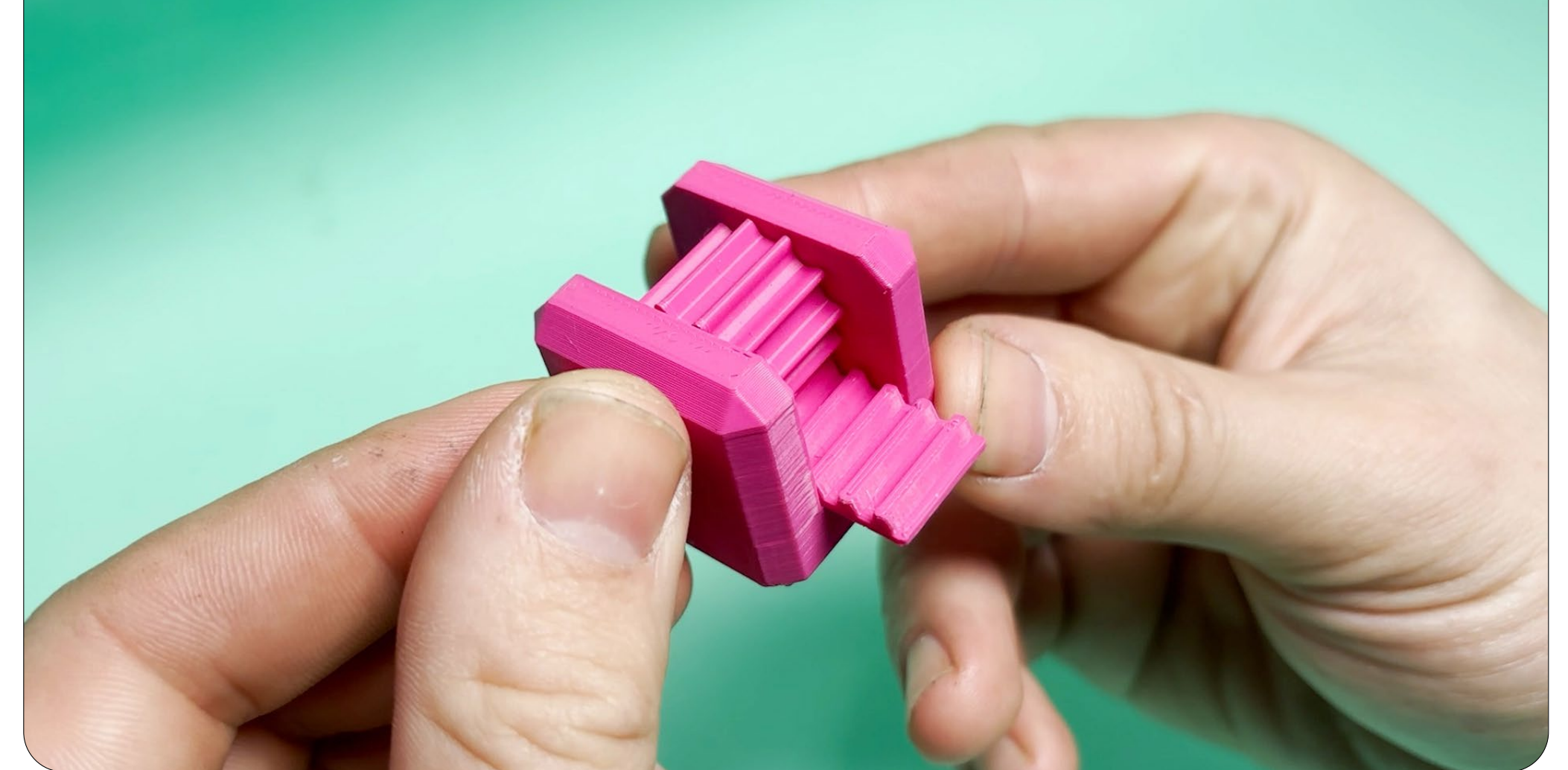
STEP 8 – Engage in additional assistive device CAD Tutorials

If your students began with Tinkercad, you may wish to introduce them to the more advanced 3D CAD software, Fusion 360. This can be achieved through the [Tinkercad to Fusion 360](#) or [Intro to Fusion 360](#) courses. You can also guide students to explore additional 3D CAD tutorials in the [Tools Library](#), including a range of assistive device tutorials they may not have completed yet.



STEP 9 – Learn how to add connections and movement to your 3D models.

Our [Mechanism Cubes](#) course is an intermediate-to-advanced resource that introduces students to the fascinating world of 3D-printed mechanisms. The creative learning materials teach them how to add connections and movement to their 3D models — unlocking new and innovative design possibilities.



As this learning pathway concludes, your students should now be ready to apply their skills to design an assistive device that improves the life of **a real end user**.





STEP 10 – Participate in the Make:able Assistive Technology Challenge

Now that your students have completed the learning pathway, they're ready to put their skills into practice by developing their assistive devices for the Make:able Challenge. As the teacher, you'll need to [register on the Make:able platform](#) to gain access to the challenge toolkit and receive a unique access code for your students. Once registered, share the code with your students so they can access the toolkit. Guide them as they explore the process of developing empathy, generating ideas, and prototyping their concepts — helping them create meaningful solutions for real end users.

[home](#)
[toolkit](#)
[news](#)
[learn 3d printing](#)
[register](#)
[sign out](#)

The challenge toolkit is a complete set of resources to help you to design and make an assistive device.

1 – Introduction
2 – Get Inspired.
3 – Skill Building
4 – Develop Empathy

5 – Idea Generation
6 – Design + Make
7 – Test + Iterate
8 – Share your Story

get in touch | hello@weareprintlab.com

[Privacy Policy](#)
[PrintLab Website](#)

STEP 11 – Develop professional branding skills to launch open source devices.

After your students complete the Make:able Challenge, you may wish to extend their learning through the [Product Branding + Documentation course](#). This resource teaches them how to name their designs, build a simple visual identity, capture strong photography, create diagrams and renders, and prepare their projects for open-source release — enabling their work to be used and adapted by people all around the world.



PrintLab

CoursesTools

10. Product Branding + Documentation

Course • Mini Courses

30

Introduction

1. Product Naming

2. Font Selection

3. Colour Palettes

4. Typographic Logos

5. Product Photography

6. Line Diagrams

7. Graphical Renders

8. Product Overview Videos

DRAG

02:42

PreviousNext



Did you know that by completing the learning pathway, you can obtain **PrintLab Certifications**?

As your students progress through this learning pathway, they can submit their mini course certificates, project portfolios, and challenge submissions to earn industry-recognised digital badge certifications. These verifiable micro-credentials are ideal for sharing on email signatures, résumés, or digital portfolios — helping them showcase their 3D design and assistive technology skills. Learn more on the [PrintLab 3D Printing Certification page](#).



We hope your students find value in this learning pathway. Remember that PrintLab is an ever-growing platform so keep an eye out for **new resources every month!**

www.weareprintlab.com