Hello! **We are** PrintLab

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

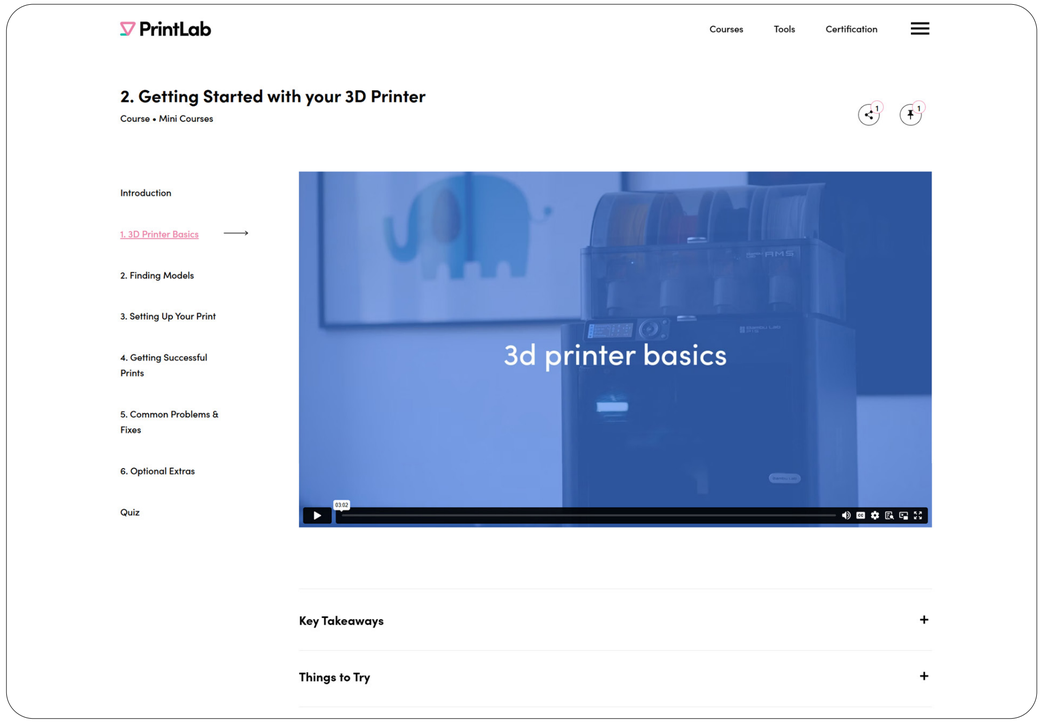
Our library is a toolkit of learning resources that fit into 3 categories - mini courses to build technical skills and knowledge; guided projects to show people how to design specific types of products through an iterative process; and live challenges where people can use everything they've learned to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



This guide outlines a learning pathway through PrintLab resources to help you prepare for the Make:able Challenge — building the technical and creative skills to design meaningful 3D printed assistive devices. Each step is optional, allowing you to follow as little or as much of the pathway as you wish, depending on the time available and the skills you already possess. If you're new to PrintLab, we recommend signing up for a free trial here as you explore the guide.







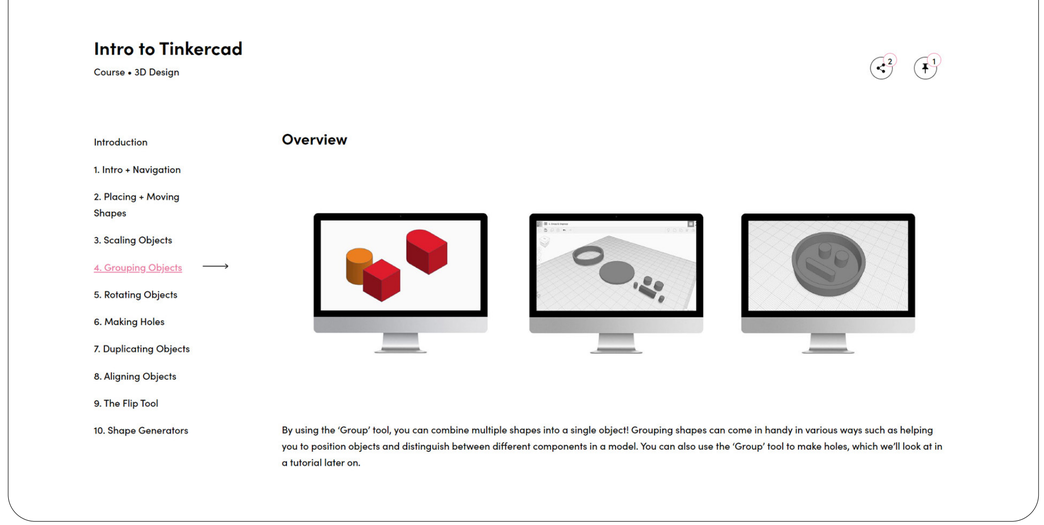
STEP 1 - Develop an understanding of 3D printing and how it works.

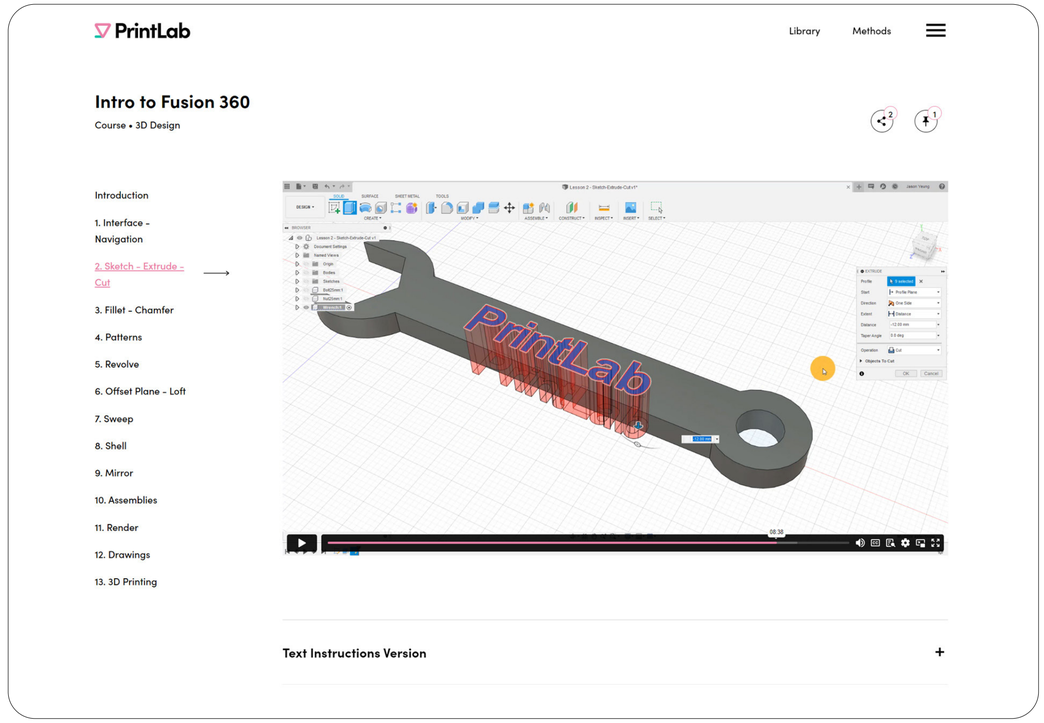
Begin by participating in our 3D Printing Industry mini course to learn about the key aspects of the 3D printing industry – from rapid prototyping and local manufacturing to customisation, sustainability and mass global access. Then complete our Getting Started with Your 3D Printer course to learn the fundamentals of FFF 3D printing, including how printers work, how to find and prepare models, how to achieve successful prints and how to troubleshoot common issues.

Optional: If you'd like to explore the wider landscape of additive manufacturing, our 3D Printing Technologies resource introduces six key 3D printing technologies and their applications.

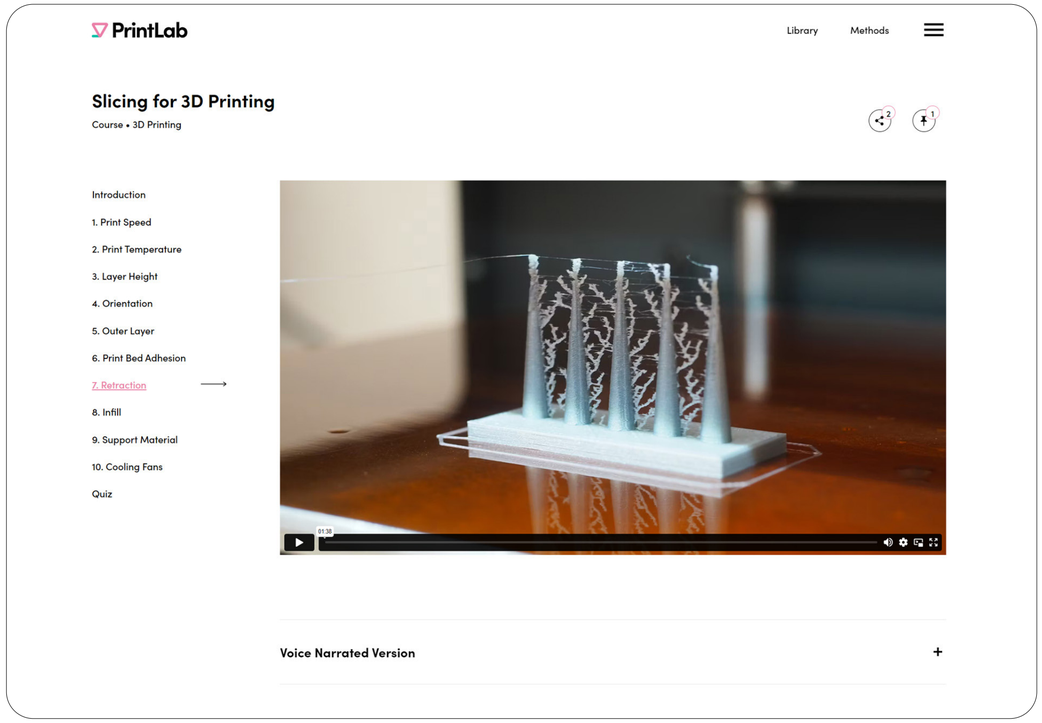
STEP 2 – Select a 3D CAD software and learn the basic tools and functions.

The majority of PrintLab projects come with tutorials in both Tinkercad and Fusion 360 software (both free for educational and personal use) - allowing you to choose your preferred software package. We recommend Tinkercad for complete beginners, and Fusion 360 for those who have some 3D CAD experience or those who want to challenge themselves. Do a little research on both options. Then select one and participate in either our Intro to Tinkercad course, or Intro to Fusion 360 course.







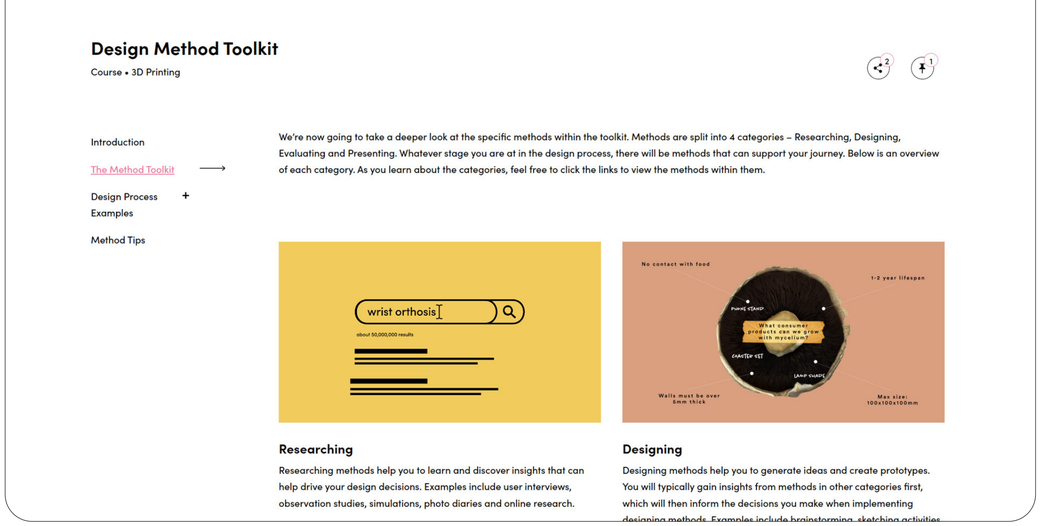


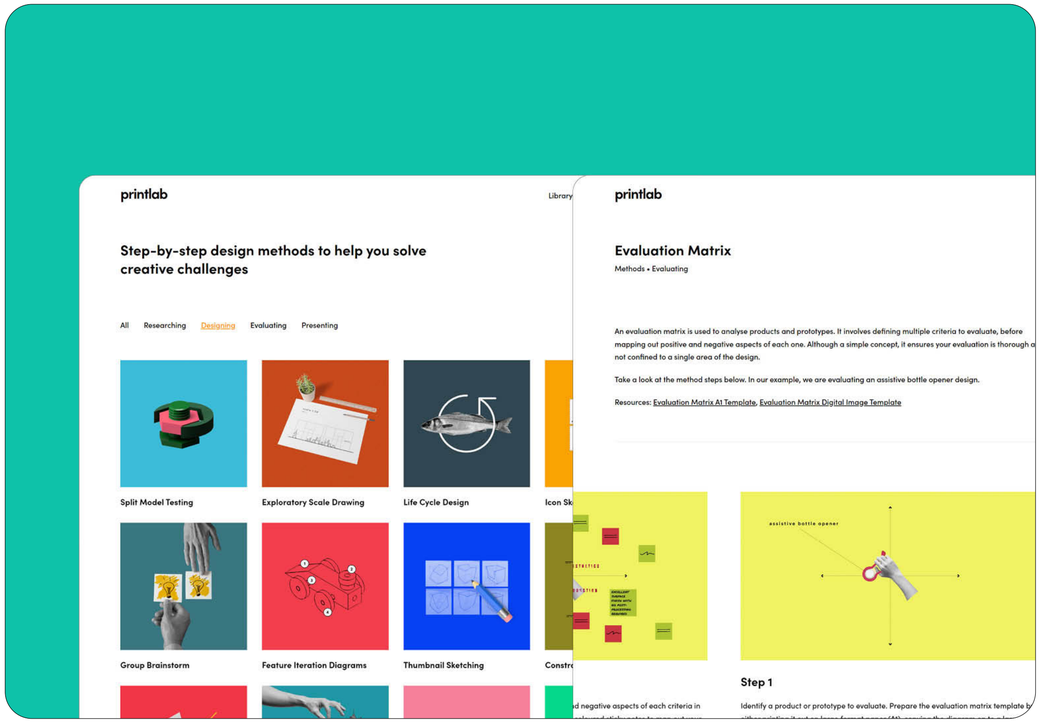
STEP 3 – Learn how to optimize 3D models and slicer software settings for quality 3D prints.

Our Designing for 3D Printing course covers the best practices for designing specifically for 3D printing. And our Slicing for 3D Printing course goes over 10 essential slicer settings to help get the most out of your 3D printer. Participating in both courses will provide you with key knowledge that can be applied to all your upcoming 3D designs.

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

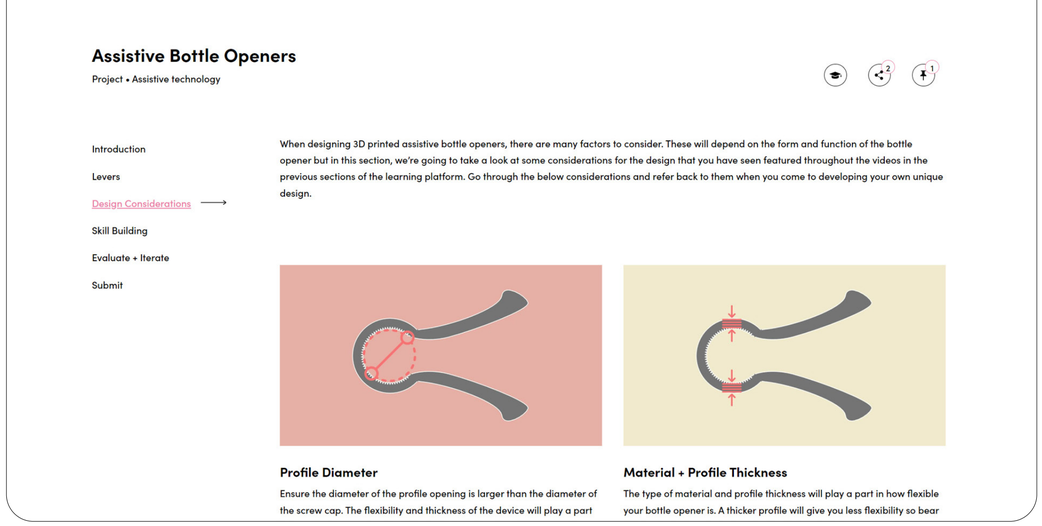
Before you delve into design projects, it's important for you to understand how designers approach creative challenges, and the techniques they use. PrintLab's Design Method Toolkit provides a range of step-by-step problem-solving and design activities that can be used at each stage of the design process – whether it's to research topics, generate ideas, design prototypes, evaluate solutions or present work. And by going through the Design Method Toolkit resource, you'll learn how to plan and implement these activities in your own projects.

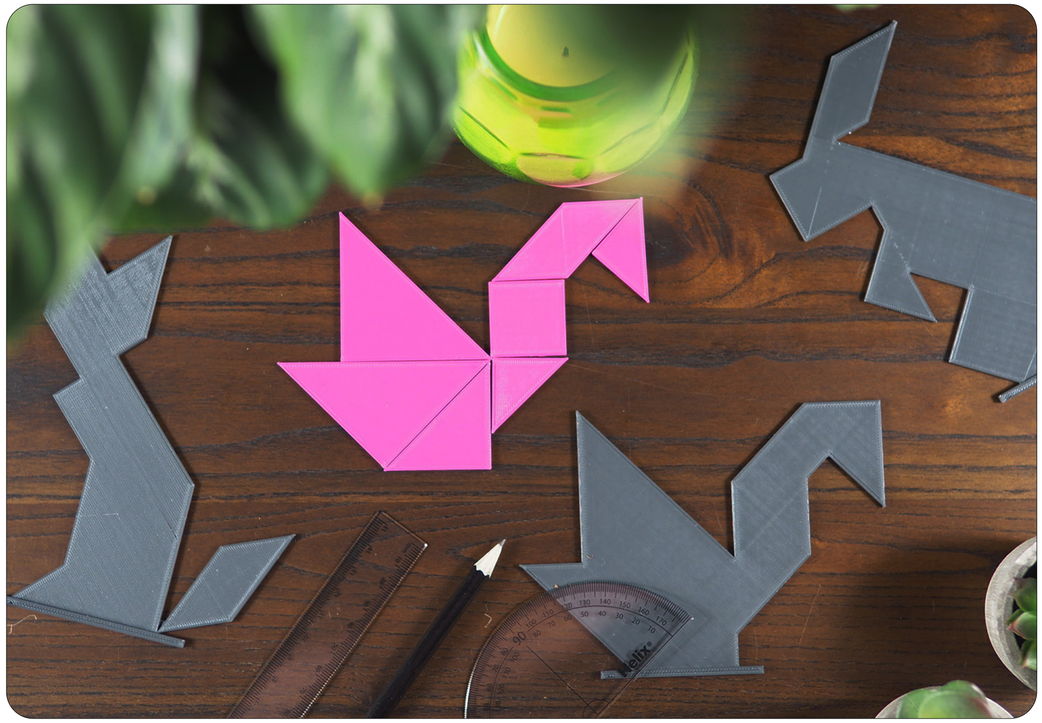




At this stage, you will have built a strong foundation of 3D printing knowledge and skills, which you can now put to the test in a series of assistive technology design projects.







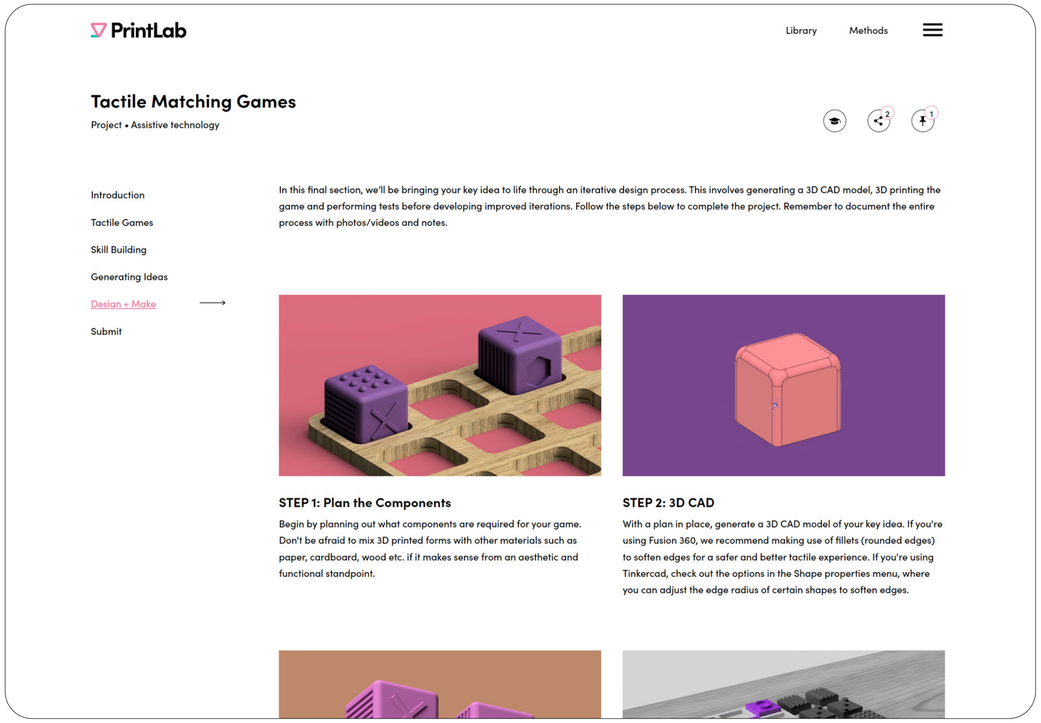
STEP 5 - Participate in beginner projects to adapt example designs.

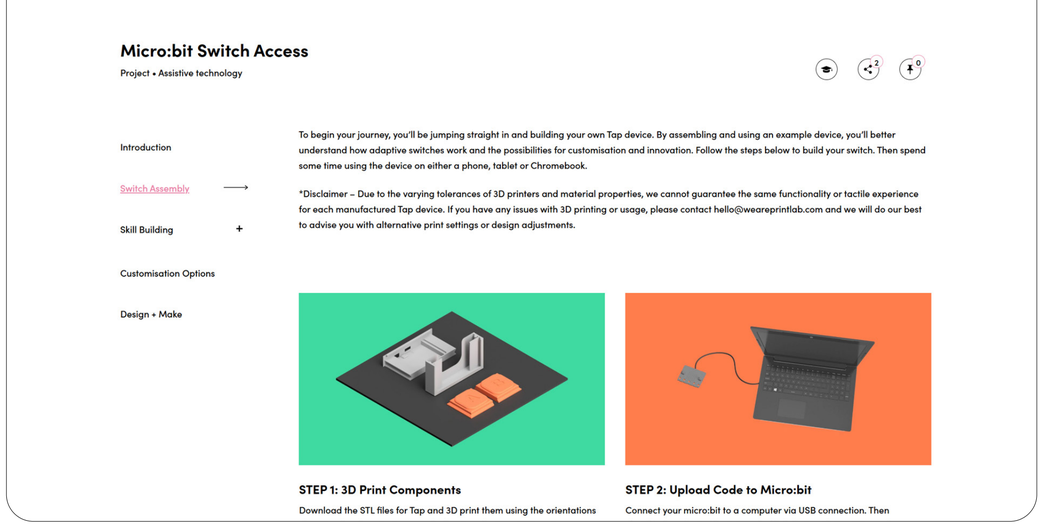
Our Assistive Bottle Openers and Tactile Tangram projects are great starting points for beginners. They guide you through the full design process to adapt/modify existing designs. You'll also be introduced to various design methods, such as evaluation matrixes and real-time prototyping techniques. You may wish to select one or both of these to participate in.

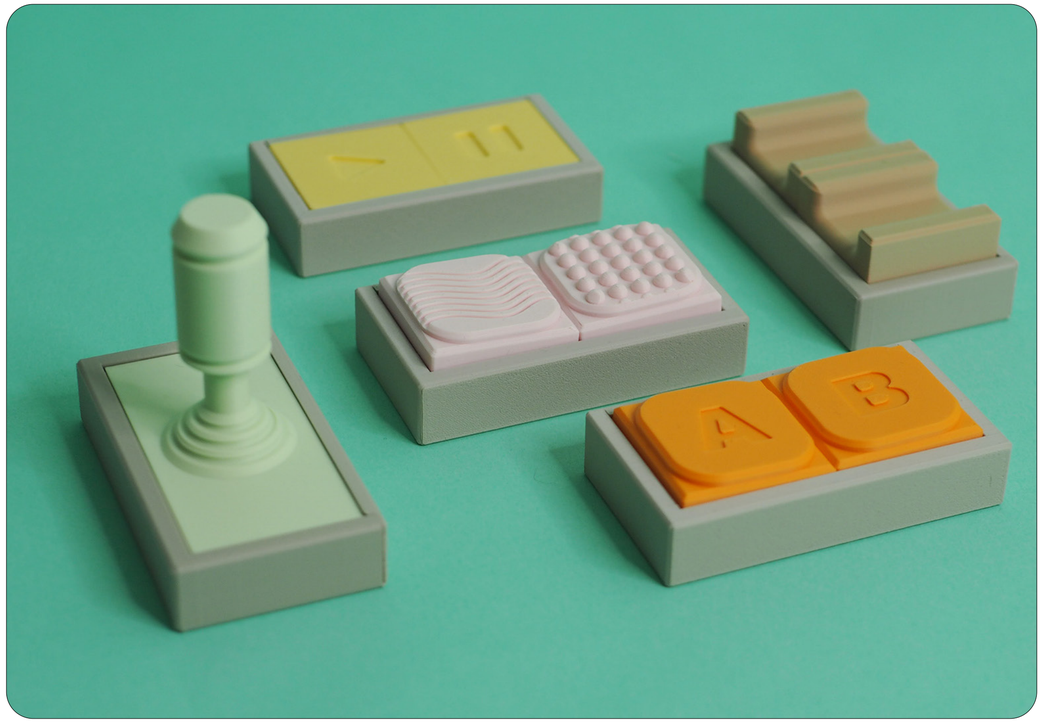
STEP 6 – Move on to projects that allow for more creative freedom.

Our Assistive Clips and Tactile Matching Games projects are similar to the beginner resources introduced in STEP 5. Again, they guide you through the full design process using various design methods. However, rather than adapting/modifying an existing design, you'll have more creative freedom to develop a unique solution.





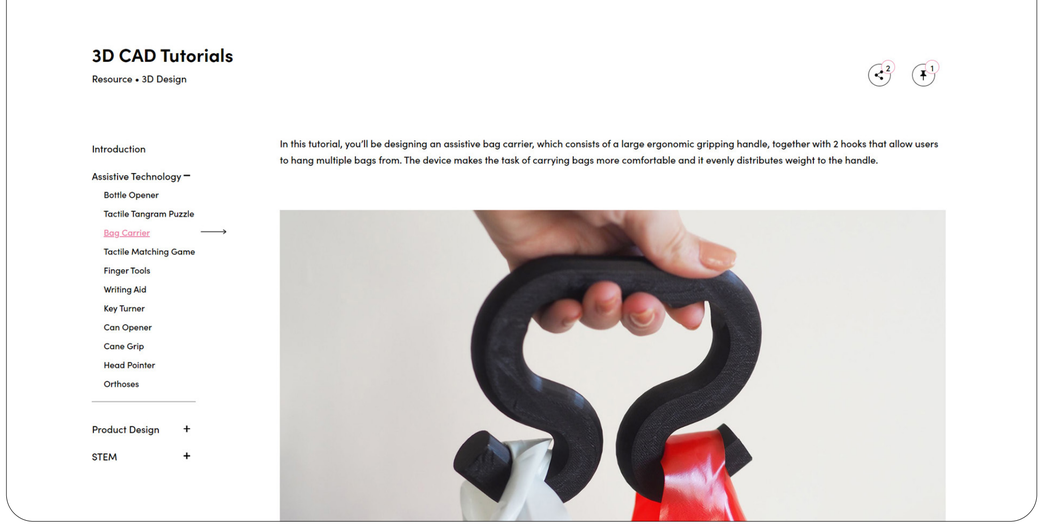




STEP 7 – Learn how to integrate electronics and coding into your designs.

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 you through designing a Bluetooth dual-switch device that empowers people with disabilities to control phones, tablets, and computers. Along the way, you'll develop practical skills in coding, electronics, and inclusive design - taking your creativity and technical ability to the next level.

After participating in a series of projects,
we recommend spending some time further
developing your 3D CAD skills - enabling you to
bring any creative idea to life.



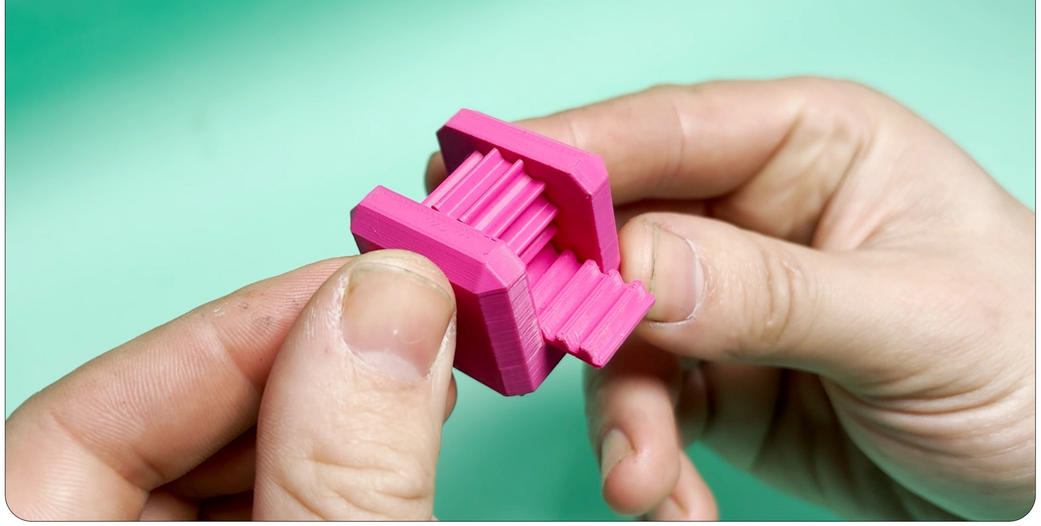


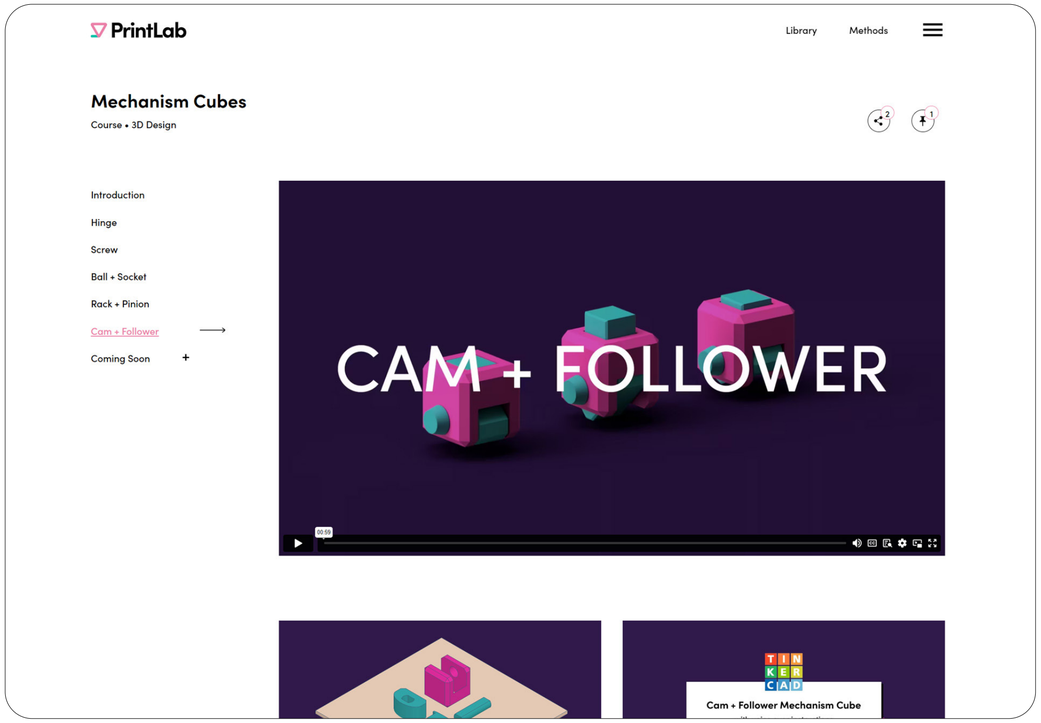
STEP 8 - Engage in additional assistive device CAD Tutorials

If you opted to use Tinkercad from the beginning, you may wish to have a go at the more advanced 3D CAD software, Fusion 360. This can be done by using our Tinkercad to Fusion 360 course, or our Intro to Fusion 360 course. You can also explore additional 3D CAD tutorials in the Tools Library, including a range of assistive device tutorials you 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-advanced resource, where you'll be introduced to the fascinating world of 3D printed mechanisms. The creative learning resources will teach you how to add connections and movement to your 3D models – unlocking new and innovative design possibilities.

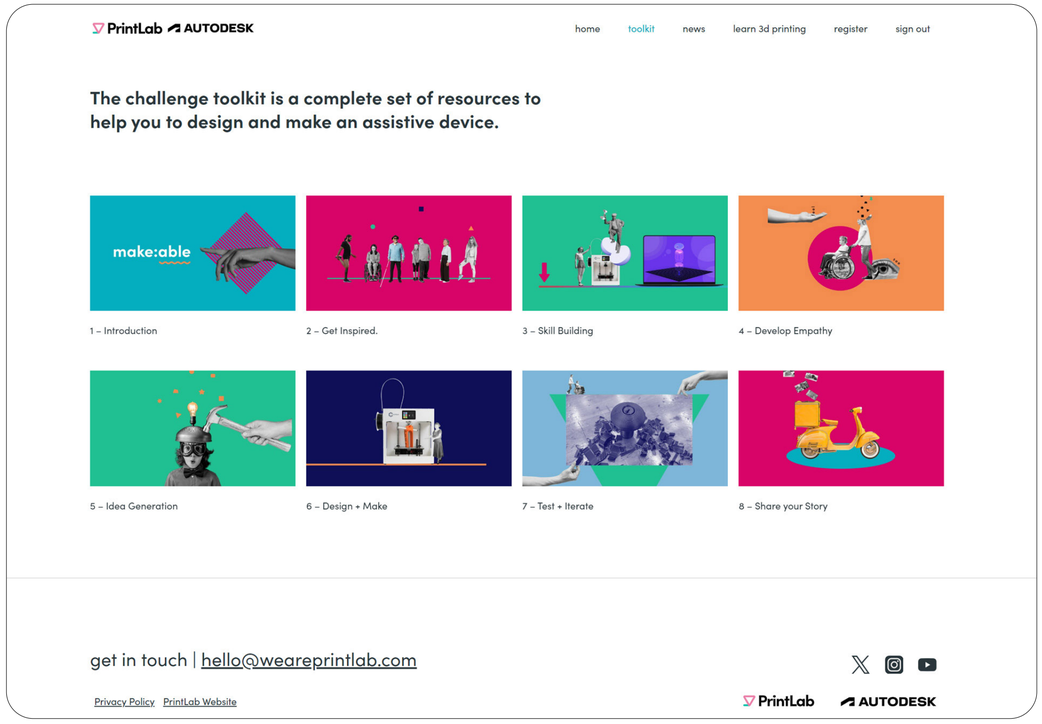




Although this pathway is coming to an end, your journey is just beginning. You should now be prepared to design assistive devices for real end users, adding value to their lives.







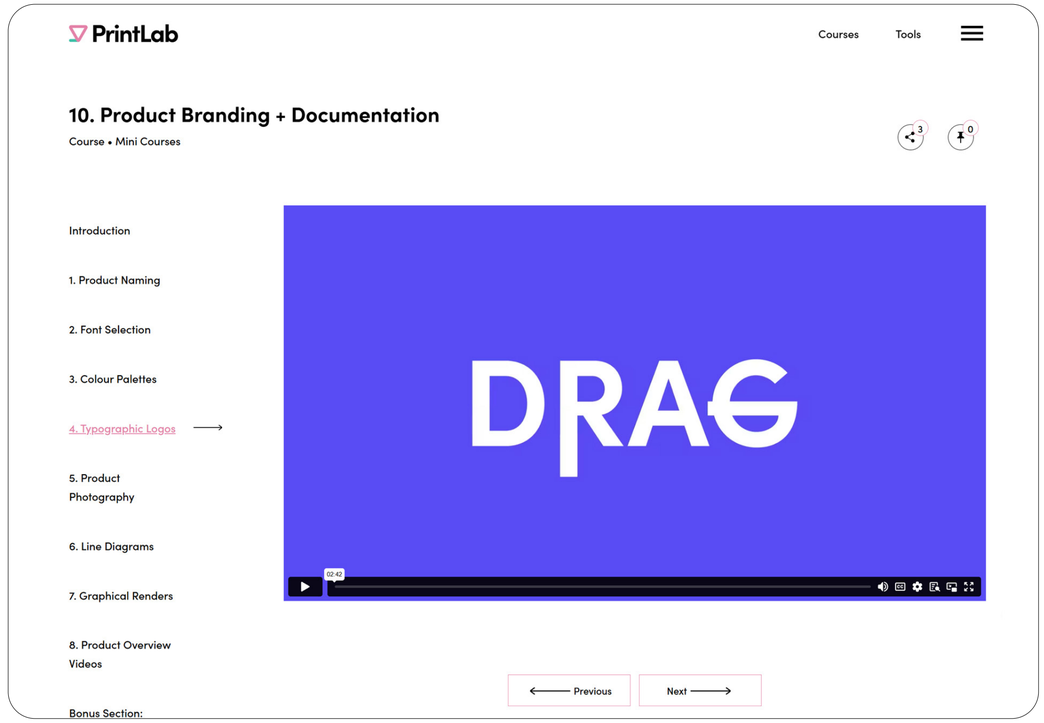
STEP 10 – Design a unique assistive device for someone in your local community.

Make:able is our 3D printing and assistive technology design challenge that supports people in designing devices for real end users. It is centered around an online toolkit, which takes you step-by-step through the entire process. Throughout the toolkit, you'll also be able to see inspirational case studies and hear from industry experts. Head over to the platform to sign up and browse the toolkit.

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

Our Product Branding + Documentation course teaches you the essential skills to turn your 3D printed creations into professionally branded products. You'll learn how to name products, select fonts and colours, design typographic logos, capture strong photography, create line diagrams, produce graphical renders, and plan product videos. Finally, you'll see how these elements come together in a MakerGuide – perfect for open-source product releases.









COMING SOON – Learn how to design modular switch access devices.

PrintSwitch is an upcoming collection of learning resources that will teach you how to create modular input devices for gaming, communication, computer access and other assistive technology applications. Using interchangeable 3D printed modules and electronics, you'll learn how to develop flexible solutions tailored to individual users.

Coming soon to PrintLab.

We hope you found 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