

101 - Intro to 3D Modelling

SLQ Wiki Fabrication Lab 2024/07/27 11:28

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Acknowledgement

We acknowledge Aboriginal and Torres Strait Islander peoples and their continuing connection to land and as custodians of stories for millennia. We respectfully acknowledge the land on which we all meet today, and pay our respects to elders past, present and emerging.

Workshop presentation

The 3D modelling workshop has been created into a slide show for presentation and documentation purposes. Please feel free to download and use the guide and files as per our CC license in the footnote.

Some pages may link to other online workshops, tutorials or guides created at The Edge, you may require the internet to connect and view links.

[Admin view](#)

[Public slides](#)

Summary

Using the State Library 3D printers you can turn a digital 3D model into a solid plastic object.

In this workshop you will learn the basics of 3D design with Tinkercad and how to print your own model, including how to load it into the printer and cleaning up the product. You will also get a look at the basics of Blender.

101 skill development workshops give you the basic skills you need to start your new creative

journey. Each workshop is delivered by an experienced facilitator and no prior experience is required, just basic computer skills, a willingness to learn and a bit of ambition.

Skills Introduced

In this workshop we'll be

- **learning about the Prusa i3Mk3s** (the 3D printers we currently have for booking at The Edge - safety considerations, its major components and the workflow to take 3D model and prepare it for printing.
- **learning about Tinkercad** the entry level Computer Aided Design (CAD) software teach people to get started in 3D printing. In this we'll look at navigating a virtual 3D space on a 2D screen, the tools in TinkerCad and some of the things you should consider when designing for 3D printing
- **discussing finishing other ways 3D printing can be used** Some of the things you can to achieve a better finish your 3D prints and some of the ways 3D printing can be used in other processes including casting, vacuum forming and injection moulding.
- **Induction** - participants will complete the 3D printing Induction during this session.

Materials, Tools and Software

Participants will print in The Edge's standard PLA+ and may want to use some hand tools to remove support and clean up their finished print. PLA particles present an inhalation risk so we won't be using any abrasive tools for finishing in the workshop.

Computers used for this workshop require:

1. Web browser for TinkerCad and Inductions.slq.qld.gov.au
2. Prusa Slicer
3. USB port/SD card slot

Health & Safety

Running this workshop at The Edge?.. You should familiarise yourself and your participants with:

- DML Risk Assessment
- Innovation Lab Risk assessment
- 3D Printer (FDM) SOP
- Print bed cleanse with isopropyl SOP

Preparation

Before the workshop you will need to check that

- you have a set of sample prints for participants to take away (see files at the bottom of the page)
- have prints set up, established and paused to show participants at Part 4 of the workshop
- have an example SVG file ready to demonstrate “import and extrude SVG” function in tinkerCAD
- * the 3D printers are functional and available for use
- Enough filament is loaded on the machines for everyone to print
- you have enough SD card and Card readers

References

[PDF of Powerpoint presentation inc facilitator notes Powerpoint Presentation](#)

[3d_printing_101_tinkercad_prusaslicer.pdf](#)

[Blender Vase](#)

Paint on supports in PrusaSlicer



Video

Support breakdown with Makers Muse



Video

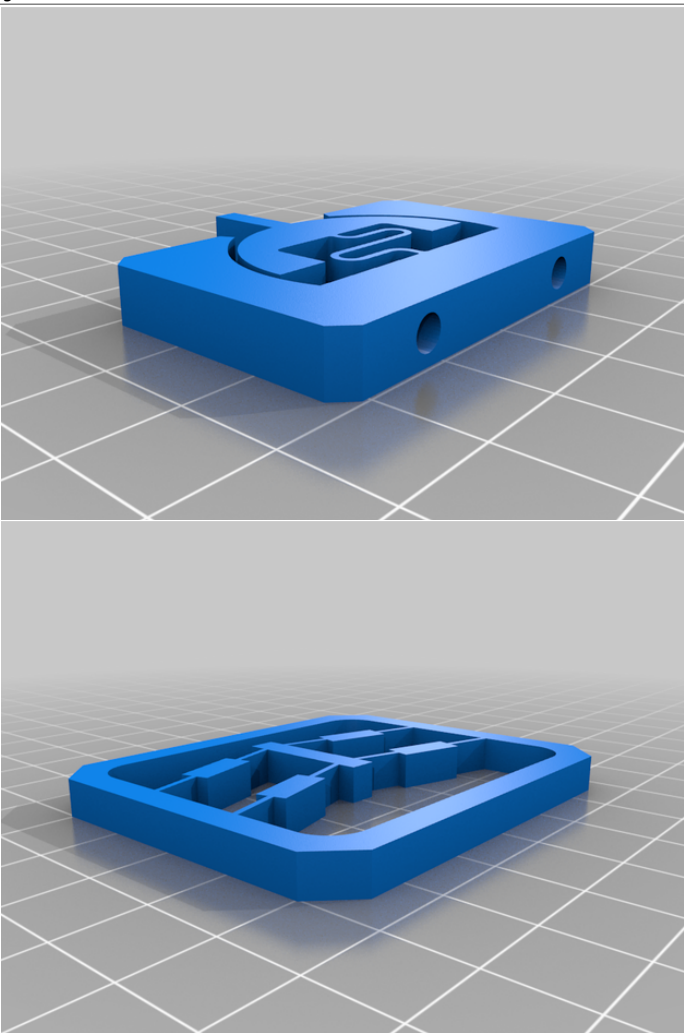
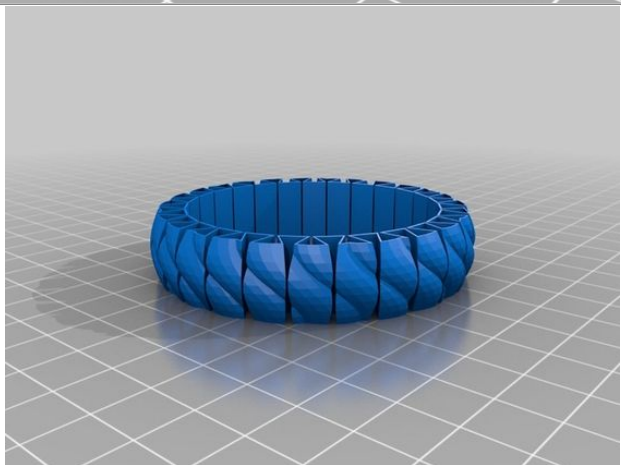
Smooth flat surfaces

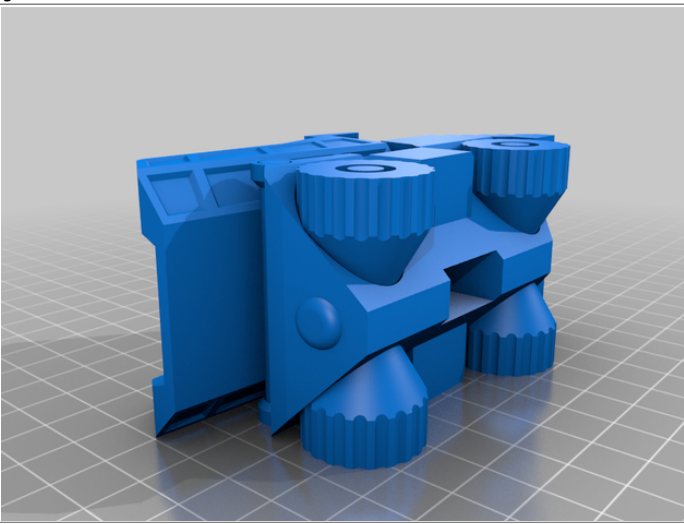
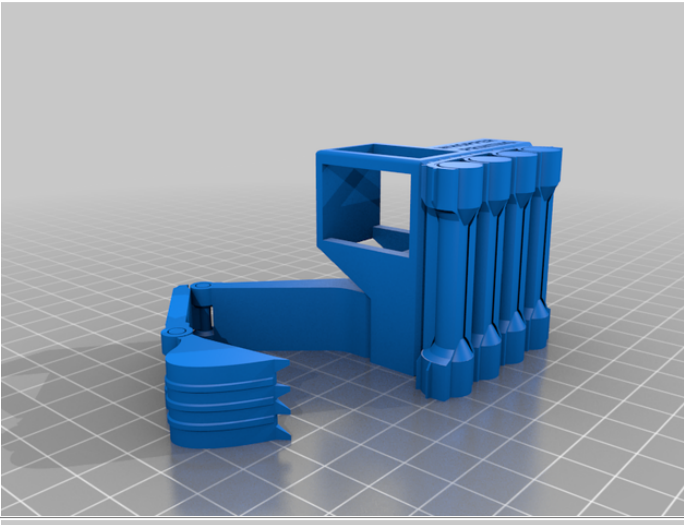
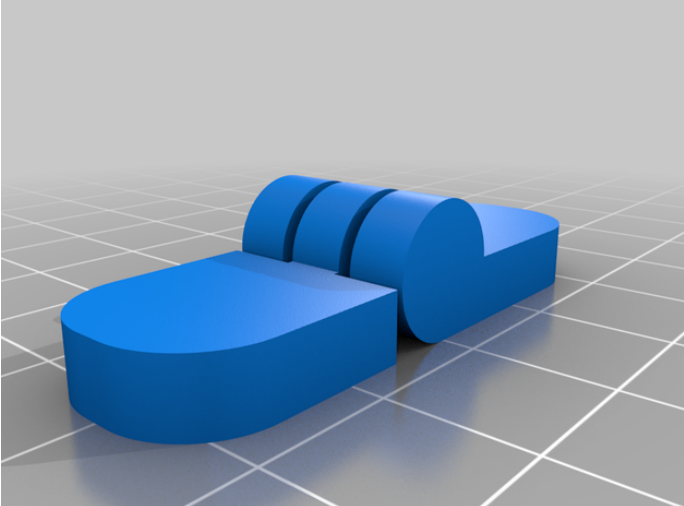


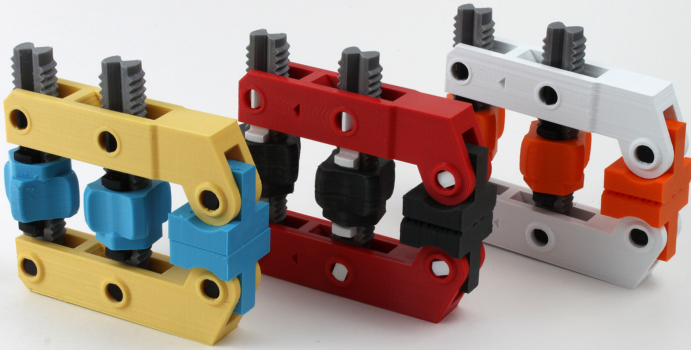
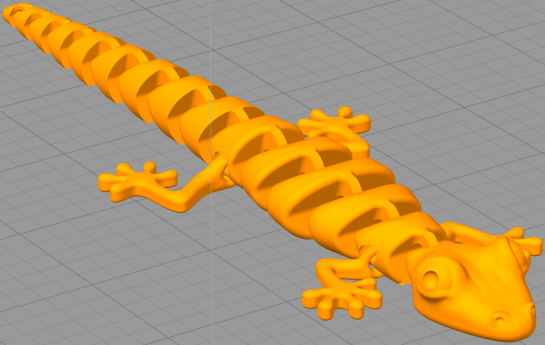
Video

Downloads

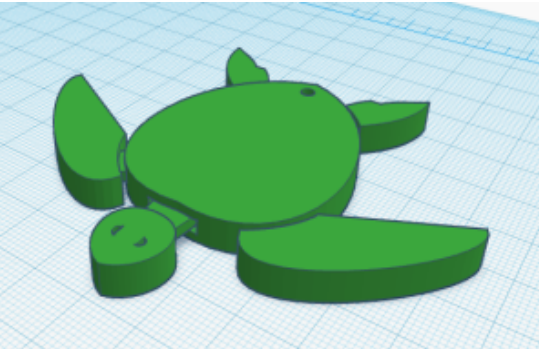
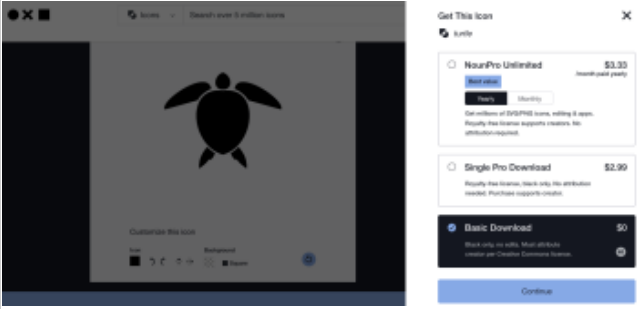
Sample Prints from Thingiverse

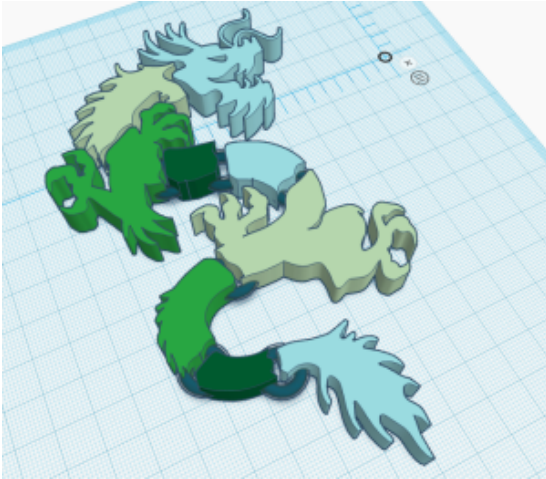
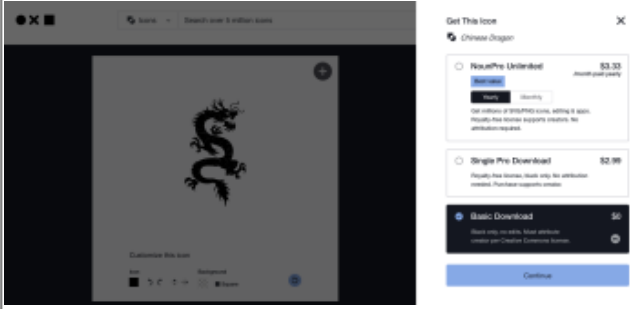
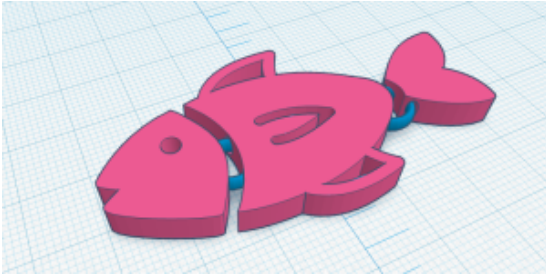
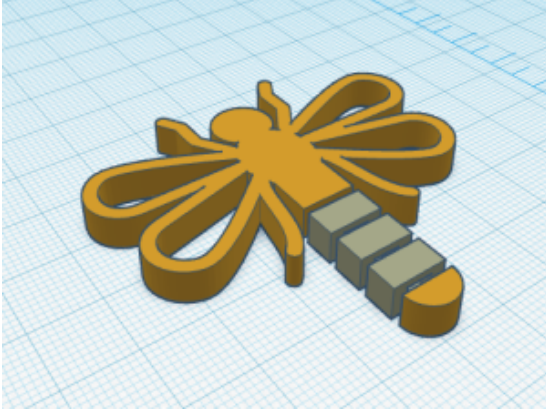
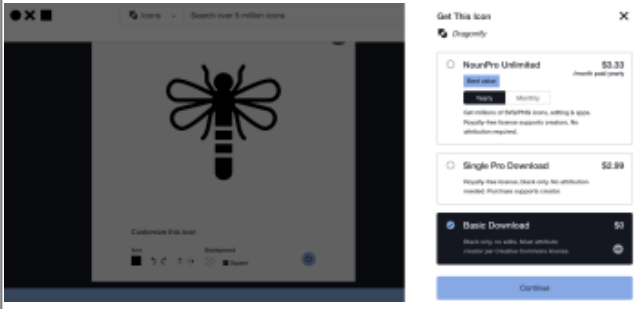
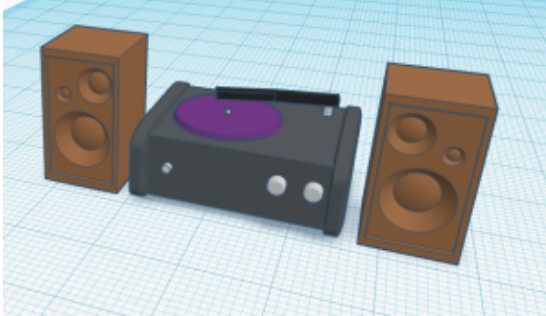
Description	Files	Image
<p>Demo of compliant mechanisms - handy for designing 3D printed switches and latches</p>	<p>compliant_mechanisms_rotational_joint_planar_translator_5872685.zip</p>	
<p>Vase Mode stretchy bracelet</p>	<p>stretchy_bracelet_13505.zip</p>	
<p>Print-in-Place flexible chainmail</p>	<p>hex_chain_scale_mail_255924.zip</p>	

Description	Files	Image
Print-in-Place dumptruck	print-in-place_dump_truck_5697698.zip	 A 3D rendered model of a blue print-in-place dump truck. The model is composed of several interlocking parts, including a large rectangular body, a dump bed, and several cylindrical components that likely serve as wheels or structural supports. The model is shown on a grey grid floor against a light grey background.
Print-in-Place digger	print-in-place_excavator_5449036.zip	 A 3D rendered model of a blue print-in-place digger. The model consists of a main body with a large rectangular opening, a curved arm, and a bucket-like end. Several cylindrical components are attached to the side, possibly representing hydraulic cylinders or structural elements. The model is shown on a grey grid floor against a light grey background.
Parametric butt hinge generator on Thingiverse	my_customized_parametric_hinge_5869950.zip	 A 3D rendered model of a blue parametric butt hinge. The model shows two rectangular plates with rounded ends, connected by a cylindrical pin or roller. The design is simple and functional, suitable for joining two surfaces. The model is shown on a grey grid floor against a light grey background.

Description	Files	Image
Incredibly strong (considering) screw clamp	hand-screw_clamp_2403756.zip	
Articulated Lizard	articulated_lizard_v2_3505006_2.zip	

Sample Prints from from Mick

Description	File	Source Material
Articulated turtle	 <p data-bbox="501 1722 608 1753">turtle.stl</p>	

Description	File	Source Material
Articulated Dragon	 <p style="text-align: center;">dragon_2_.stl</p>	
Articulated Fishy	 <p style="text-align: center;">fishy.stl</p>	
Articulated Dragonfly	 <p style="text-align: center;">dragonfly_3_.stl</p>	
Record Player	 <p style="text-align: center;">record_player_1_.stl</p>	

Vases

Blender Vase 01

Blender Vase 02

Tinkercad Vase 01