

Using the 3D Printers in the Launch Pad

Chapter 1: How do the 3D printers work?

Narrator: This video will give you a quick overview. Please watch it fully once and then re-watch it, ready to pause for each step. You can also adjust the playback speed as needed.

How do the 3D printers in the Launchpad work? The Launchpad uses fused deposition modeling printers. That means that a 3D model is sliced on a computer like a stack of paper in different shapes. The machine prints one layer at a time by heating up plastic filament through a nozzle like a glue gun and drawing it onto a build plate, also known as the print bed. The printer can't print in midair, so it needs to build up support structures for anything hanging over the print bed.

Prints also need to be touching the build plate enough to not slide around during printing. If a model is not making enough contact, it will need brim to prevent it from sliding. You can picture this like cats on glass tables. The cat is the 3D model and the table is the build plate. You can see from below a cat standing on a table is only touching the table with its paws. This is low contact and is more likely to slide around, so it would need brim. A cat loafing on a table is touching more of the table at once and is less likely to slide around.

Chapter 2: Good printables for our services, Thingiverse

Narrator: The only filament we use is single color PLA. The filament is one solid color, but you can paint on top of it later on your own. PLA is lightweight, good for prototyping, and has a low melting temperature. This also means that PLA is not suitable for things that will be subject to force or excessive heat.

Now that you have an idea of how printing works, you can begin your 3D print submission. So, let's go through an example of finding and submitting a 3D print. First, go on to Thingiverse.com, a website that has lots of pre-made 3D models. In the search bar, let's look for a turtle. While searching for models, it's better to find objects that don't require many supports. You'll also want to avoid models made by AI as they will often fail.

Once you find a model, you can click through the images to see how the model will look when it's printed, as well as how the design will look before printing. To download your model, scroll down to find more information on your 3D model. Before you download your file, check the details section to make sure that your model is fit for our kind of 3D printing. If it says it's made for resin printing or if it was made by AI, you shouldn't download the model.

After reading the details section, click on files. Look for the file type that ends in STL. Click the download symbol on the right to download the STL file. If your model has more than one STL file, repeat this

process to download all the STL files for that object. You'll either have to combine those in Tinkercad or submit them separately.

Chapter 3: Printables.com

Narrator: Alternatively, you can go to printables.com, click the search bar, type your keywords, then hit enter or return on your keyboard. To the left of the search results are filters. Scroll down to view more filter options. Under show only models, check the box to exclude AI generated. You can also select licenses under this category.

Under G-code filtration, select PLA and set the maximums. Be sure to check our website for the most up-to-date limits. Click on your model of choice to be taken to the item page. Print data is visible on the right. Be aware that some models require multiple print files. Click download.

Under model files, not print files, you will see a preview and file name. The file type must be either OBJ or STL. Click download to the right of the item. Do not select download all model files unless you know how to unzip a folder to extract the files. As an extra step, you can move your files to the desktop so that it's easy to find later.

Chapter 4: Sending files to the library

Narrator: Now, go to indiantrailslibrary.org. Click on services, then the Launchpad. Scroll down to 3D printers, then click on 3D print form. Review the rules for submitting a 3D print. Rules may be updated at any time, so be sure to check all information on our website.

Scroll down to fill out the form. You can choose the color of your print and leave a note for library staff if you wish. To upload your submission, click on select files and find your file. It will either be in your downloads folder or your desktop, depending on where you saved it.

As the file uploads, a blue bar will move across the screen. Once it's uploaded, click submit. Congratulations, you've sent your file to the library. You will receive an email when your print is ready for pickup.