Level 1: Novice

If you want to learn how to use the 3D printers, you are already a novice! Congrats!

**Certification Levels**

3D printing is the process of making three dimensional solid objects from a digital file. The objects are created via an additive process by laying down successive layers of material (usually plastic) until the object is created. In the Middle School Makerspace, we have Prusa Mini printers.

**3D Printers**

Level 2: Competent

You have reached this level if you know how to:

* Download a file from Thingiverse or TinkerCAD.
* Export your design from TinkerCAD as a .stl file
* Upload, slice, and save the gcode of your file in Prusa Slicer
* Choose your printer and start the print
* Monitor your print for problems and flag a teacher for troubleshooting if needed

Level 3: Proficient

You have reached this level if you know how to:

* Create your own original designs in TinkerCAD
* Change the name of your file in TinkerCAD correctly (Your name, description of design)
* Monitor your print for problems and troubleshoot them on your own, if you can
* Diagnose and troubleshoot adhesion problems
* Advise and help others at the novice level

Level 4: Advanced

You have reached this level if you know how to:

* Design and create a 3D printed project that improves the makerspace
* Calibrate the printer with help from an adult
* Change the filament
* Advise and help others at the novice through proficient levels

Level 5: Expert

You have reached this level if you know how to:

* Use Codeblocks (in TinkerCAD), OpenSCAD or BlocksCAD to design a 3D object using coding
* Diagnose and fix filament and adhesion problems without help from an adult
* Repair broken printers
* Advise and assist others in the novice through advanced levels