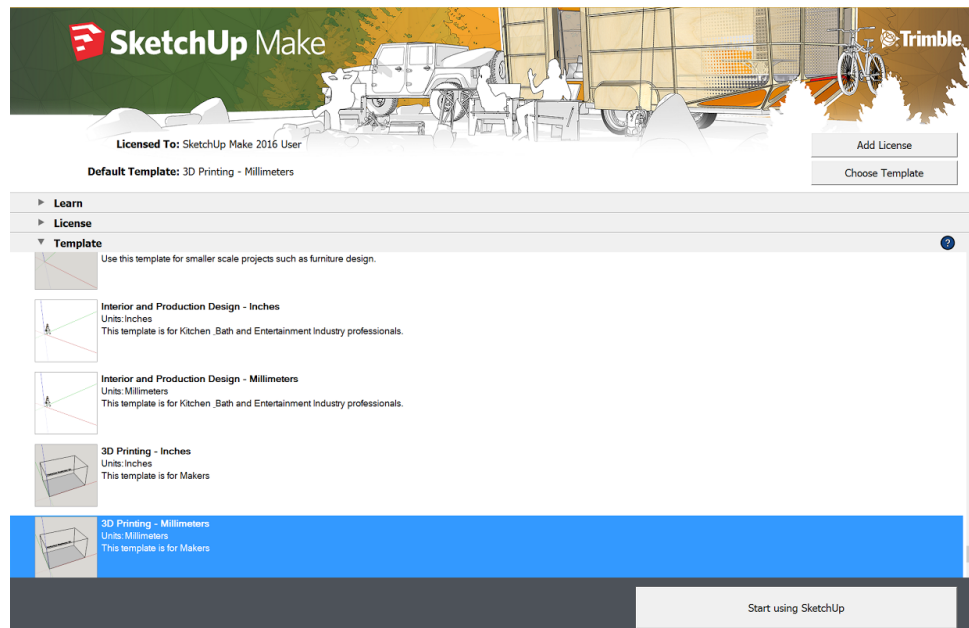
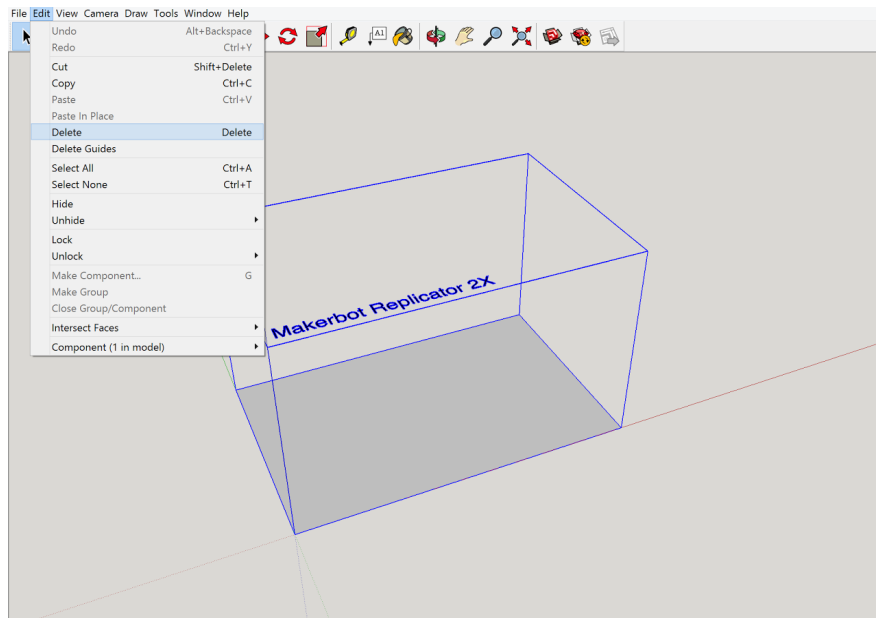


Hapkit Handle Personalization Using SketchUp

1. Download Sketch-Up for K-12 (<http://www.sketchup.com/download>)
 - Click on Educational Use
 - For K-12 Students and Educators, please download SketchUp Make, which is free. For college students and professionals, SketchUp Pro has options available to work with other 3-D software (Solidworks, Fusion 360, etc.), and has a free 30 day trial. However, it is not necessary for the basic personalization presented here.
2. Download the .skp files from the folder at hapkit.stanford.edu for Hapkit 3.0.
3. Once downloaded, open SketchUp. A page will open that says “Welcome to SketchUp”. Scroll down to the Template drop-down menu, and select “3D Printing - Millimeters”.

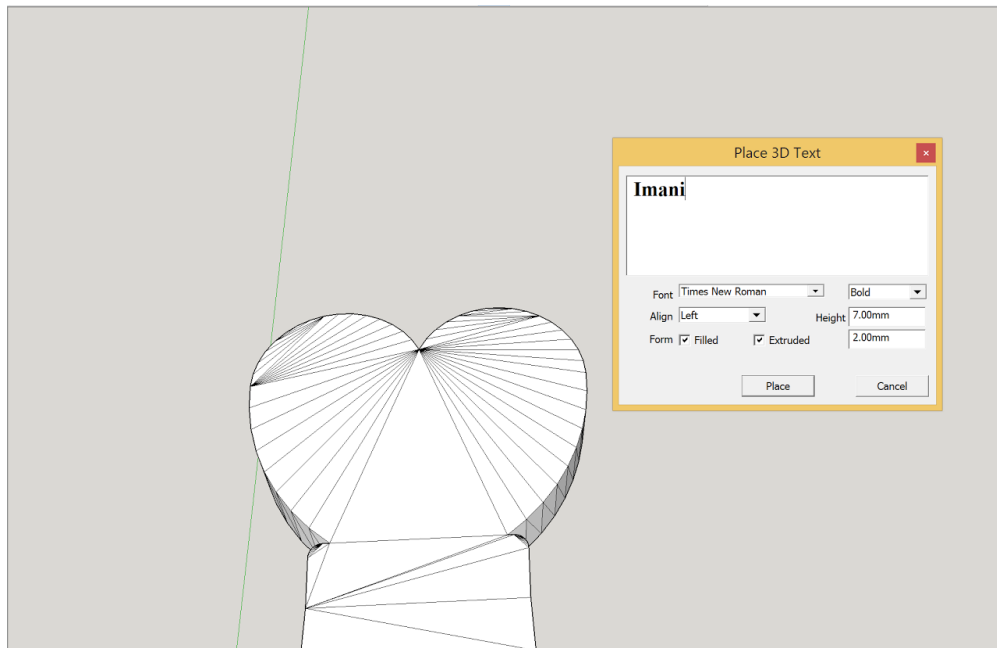


4. Once the new document is open, you will need to delete the pre-installed box that is labeled "MakerBot Replicator". Go to Edit -> Delete to remove it.



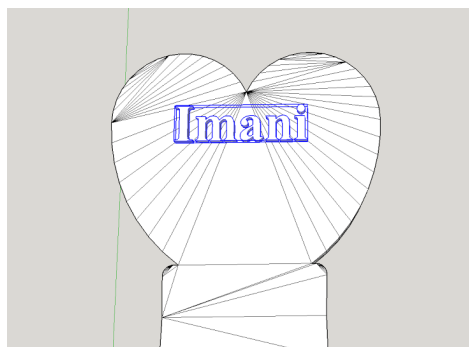
5. You will now have the opportunity to personalize your Handle. Open the .skp file of the handle you wish to customize. There are a few options of Handles already provided online: The Heart, The Star, The Atom, The Gear, The Apple, The Water, and The Normal Circle. **For advanced users:** Both versions of SketchUp have the tools to design your own handle shape. If you would like to do this, consider selecting the Normal Circle Design as a basis.

6. **Add your name:** To add 3-D Text, Click on Tools -> 3D sketch. A pop-up box should appear. Click on the text that says “Name” and enter your name. Ensure the following specifications are selected:



- a. Times New Roman
- b. Bold
- c. Align: Left
- d. (Checked): Filled, Extruded
- e. Height: 7mm
- f. Extruded: 2.0 mm

Place your name on the face of the handle, in the center of the design. Make sure your text does not exceed the dimensions of the handle.





Note: If your name does not fit on the handle, try using Height: 5.999988mm, 1.499997

7. There is space below your name to have your own unique design. Ensure you draw on the same face as you extruded your name. Be wary of the length you extrude your design, make it no more than 2.0 mm extruded. To learn about how to make and extrude shapes, go here (<http://www.sketchup.com/learn/videos/58>)

a. Note: You can insert your own image (mascot, company logo, etc..) on SketchUp, but you will need to trace the outline in order to extrude it.

8. Export your document to a .stl to be ready to 3-D print. Go to File -> Export STL. A box will appear. Click on OK and you should be able to use it on the 3-D printer. The object should be rotated to lay flat on the bed of the makerbot software, but please make sure that this is true on your 3-D printer software for a successful print.