Peterson, Jaden

Mr. Pointer

Comp Sci, Period 4

20 March 2018

Our Journey in 3D Printing

Made by Jaden Peterson and Anthony Tran

Pricing

Deployment

Instructions

https://docs.google.com/document/d/1Qpn4KZUOdPuFXTHGMi1xRgkqYs9_mX6GZeWKdmJ92Go/edit#bookmark=id.3fsvcb1pp1nj

	A	B	C	D	E	F	G	H	I
1	Item Name	SKU	Use	Description	Quantity	Price	Discount	Other Fees	Total
2	Simple Pro	1220	Learn 3D printing, expand creativity	3D printer with heated bed, WiFi, touch screen	14	$699.00	15%	0	$9,004.34
3	Ninjaflex SemiFlex Snow	1782	Materials for printing and learning 3D printing	1.75mm filament/210-225C/Works most brands	1	$35.00	10%	0	$34.10
4	Ninjaflex Gold	1760	Materials for printing and learning 3D printing	1.75mm filament/210-225C/Works most brands	1	$42.00	10%	0	$40.92
5	Ninjaflex Midnight	1758	Materials for printing and learning 3D printing	1.75mm filament/210-225C/Works most brands	1	$42.00	10%	0	$40.92
6	You're My Boy Blue PLA	1787	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
7	Infra-Red PLA	1770	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
8	Keep Tahoe Blue PLA	1771	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
9	Rocket Red PLA	1738	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
10	Jade Green PLA	1772	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
11	Natural PLA	1745	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
12	Black is the New Black PLA	1747	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
13	Gun Metal PLA	1746	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
14	Violet PLA	1785	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
15	Honeycomb Yellow PLA	1774	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
16	Slime Green PLA	1743	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
17	Bright Blue PLA	1744	Materials for printing and learning 3D printing	1.75mm PLA filament/190-220C/Works most brands	1	$11.99	10%	0	$11.68
18									
19	Discount (Education)	15% (Printers), 10% (Filament)							
20									
21									
22	Tax Fee (Lincoln, CA)	8.25%							
23	Shipping Fee (Priority Mail®)	$7.38							
24									
25	Total Price	$9,267.83							
26	Expected Price	$9,193.92							
27									

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Hello PrintrBot,

Whitney High School is looking to spend some money on new 3D printers for a computer science class, and I would appreciate a quote for the cost of this purchase. I am looking to buy 14 Simple Pros (with heated beds), 3 rolls of NinjaFlex (regardless of color), and 11 rolls of PLA (also regardless of color). Our address is 701 Wildcat Blvd, Rocklin, CA 95765.

Thank you,

Jaden Peterson

https://schoology.rocklinusd.org/course/1161043442/materials/gp/1527352183

Description	Qty	Unit price	Total price
Assembled Simple Pro w/ heated bed	14	$594.15	$8,318.10
.5kg PLA Filament (assorted colors)	11	$10.79	$118.69
.5kg NinjaFlex Filament (assorted colors)	3	$35.70	$107.10

Notes: quote good for 30 days

Warranty: Printers are warrantied for 60 days from purchase.

Please see: https://printrbot.com/warranty/

Subtotal	$8,543.89
CA tax	$619.43
Shipping	$30.00
Total	$9,193.32

Payment Terms: net30 with PO or prepay

https://docs.google.com/document/d/1pygc6jws5ICJhPixZ2Zt__7H_FGAEeJm-nlFcuJlWJc/edit

1. Quote
2. Email
3. We should put the printers themselves next to the desktop computers and the supplies on top of the platforms above. This would allow for easy cable management, a clean workspace, and stable support to eliminate possible breakage. We should utilize wireless connectivity for the Chromebooks, but also utilize wired connectivity for the desktop computers. This would allow for easy access, but also a stable solution in the event that wireless connectivity did not work.
4. Physical deployment costs are irrelevant with our placement plan because do not have to drill or cut anything. The necessary holes already exist within the workstations.
5. We will need Fusion 360, slicing software, generator software, vendor-specific software, and drivers installed on all desktop computers (and possibly Chromebooks) in order to create, slice, generate, and deploy models. The computer sleep-time should not be an issue because once the G-Code is deployed, the computers are irrelevant. We can decide on any additional packages once we are able to use the printers.
6. Although we are ordering printers and filament, we may want to order possible replacement parts in the event of a failure or breakage. These would be stored in cabinets or on top of the workstation platforms.

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While most groups plan to locate the printers somewhere near the desktop computers, our group is different. We intend to spend a portion of the grant money on a print server, a system capable of efficiently allocating prints among our set of printers. This would be largely beneficial if we decide to create a print shop or expand our stock in the future.

First of all, we will be placing the printers in the back area, a mostly uninterrupted area. This reduces the chance of breakage and allows for a convenient and accessible location. Although we could place them on the floor, the tables would be a more sanitary and applicable location for human interaction. This will also save room for the other hardware required.

Every printer should have one ethernet cable, all connecting to a central switch, then into the main server. Not only does this reduce the hassle of WiFi, but it ensures that connections will be fast and direct. In addition, power cables should connect to one or even multiple surge protectors. In the event of a power surge, this would prevent disaster. Before deployment, it would be necessary to ensure that these materials are accessible to us.

Like the printers, filament should be organized and kept in the proper conditions. Multiple boxes would be optimal for different colors, and all should be stored in a central location. A cooler or refrigerator may be necessary, though our budget and overall purchase plan will determine if this is a viable option. Additionally, filament should be properly wrapped to avoid any tangling or damage, which would cost us money and time.

Like most materials listed previously, tools replacement and parts are crucial for functioning printers. These should be added to our purchase of filament and printers. In the event of a malfunction, replacement parts would save us the time and money one would spend at a repair shop, while educating us about the internals of a printer.

District approval should only be necessary for the print server's use of WiFi. Ideally, a web server will be implemented. In order to be accessible throughout the school's network, access from the technical department for a static IP and port forward is required.

All software should be free of cost, as we have access to the Autodesk Education Pack. Most slicing software we researched is free as well.

NOTE: We have changed directions. As of now, we are placing each printer next to a computer. However, we plan to put them and the computers in the back room to make room for newer, faster computers.

https://docs.google.com/document/d/1gbhbgGof3wsjp9MLTZROC_-bYf0m-1HBQSl_jIGtEwY/edit

Good morning / evening,

My name is Jaden Peterson and I am a student at Whitney High School. I attend a computer science class in which we are using part of a district grant to buy 3D printers. As a class, we brainstormed various uses for our remaining funds. I proposed a printer server to manage our various printers through a web interface. In order to make this a possibility, I need your permission to forward the web server over the school's WiFi using a provided static IP address. This would allow us to easily control the server through Chromebooks or class computers and would improve our productivity overall. I would greatly appreciate it if you took my request into consideration.

Thank you for your time,

Jaden Peterson

https://docs.google.com/document/d/1BbxFYFBJAU9WbYqe2-ctB-u7PkuoQPW43XVS0eGoQAw/edit?usp=sharing

Simple Metal Pro Instructions

Welcome, user! In this infographic you will find the procedures involved in preparing and using your Printrbot Simple Metal Pro. Additional resources, including Printrbot instructions and various software can be found in the “Additional Resources” page.

You will need:

- A screwdriver

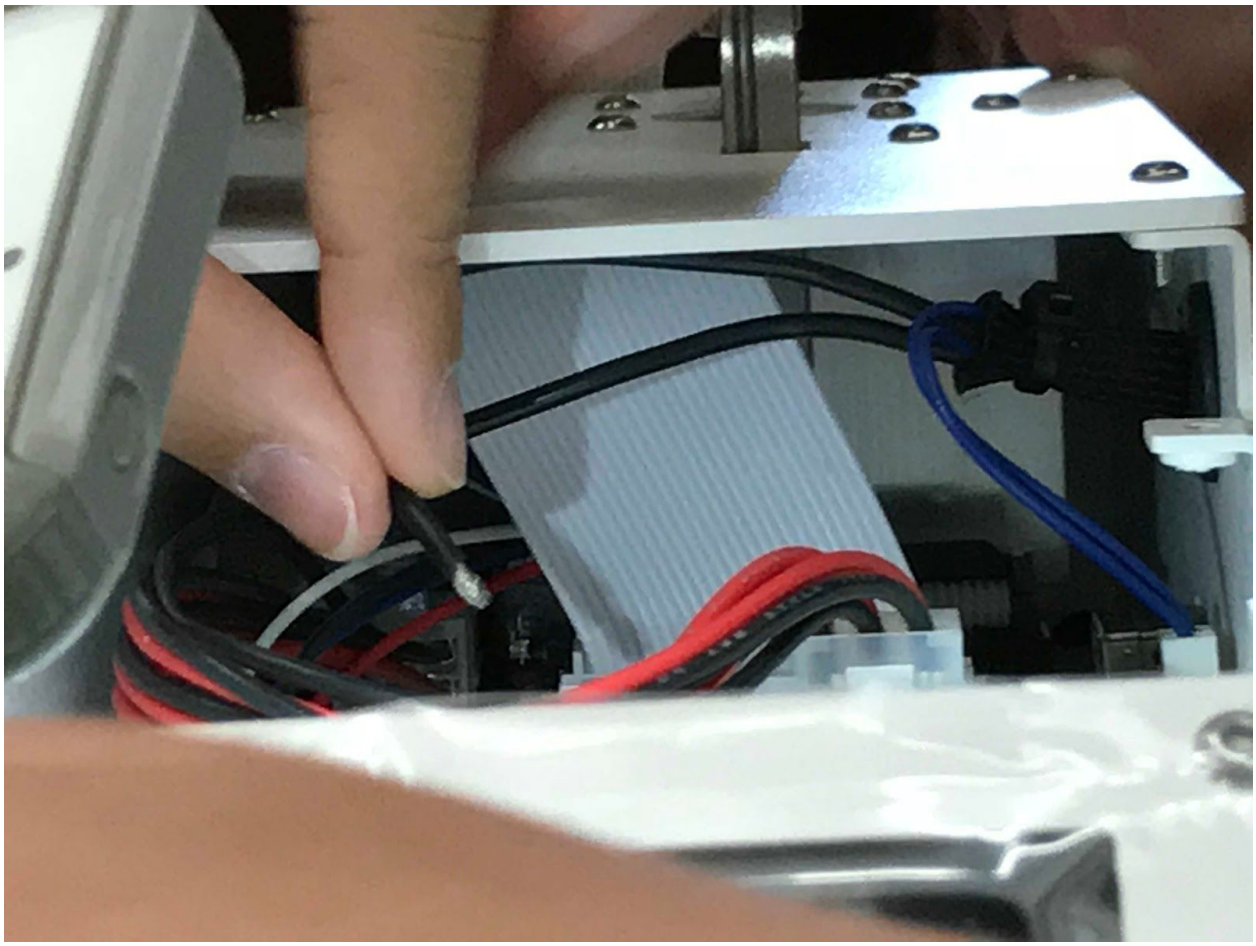
Assembly - Step 1

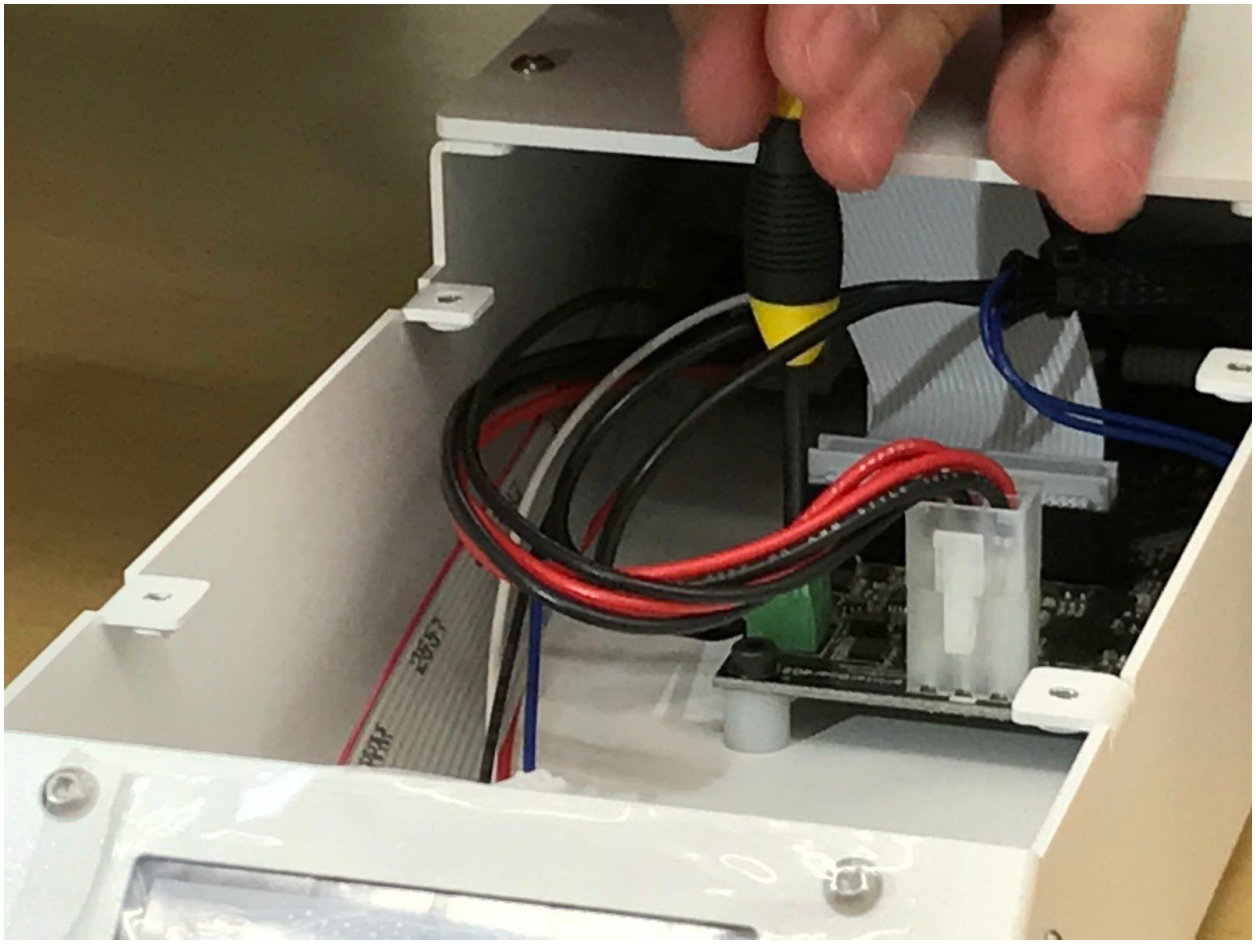
In the package you will find a long, white platform with various cables attached. This is the heated bed upon which all prints will rest on. You should also find a small hole on the lower side of the base. Locate the cables attached to the bed and direct them through the hole on the base.

Assembly - Step 2

On the circuit board inside the base, you will find various plastic, white connectors. Locate the small, unoccupied square one and attach the blue cable connector from the heated bed to it.

You should also see a small, rectangular green connector on the circuit board. Stick the red cables from the bed through the holes in the connector and tighten the screws above with a nearby screwdriver.





Assembly - Step 3

Inside the base you will find a loose connector with red, white, and blue cables. Locate the motor on the bed and attach the connector in the base with the connector on the motor.

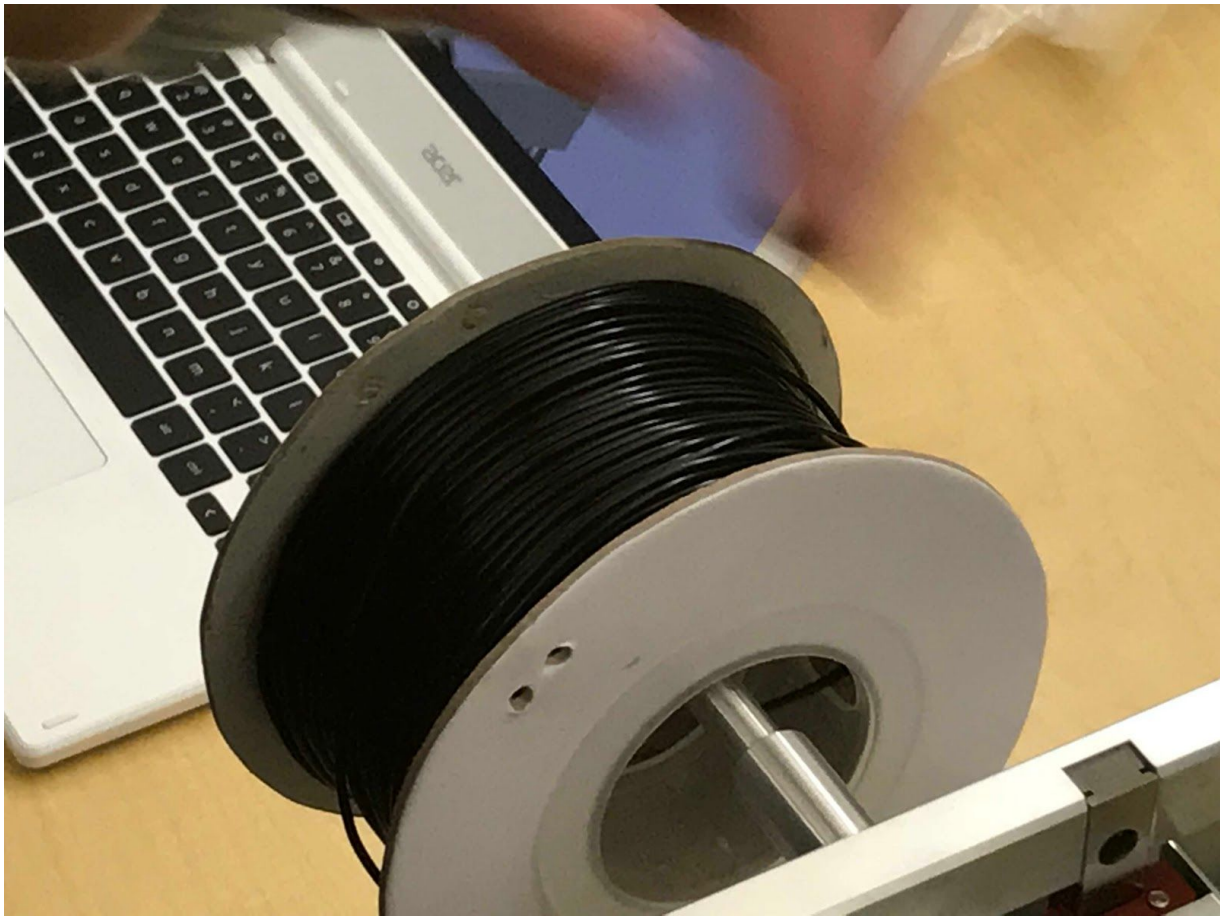
On the bed is a yellow and black connector. Find the connector on the base labeled “END-STOP” and connect the bed connector to the base connector.

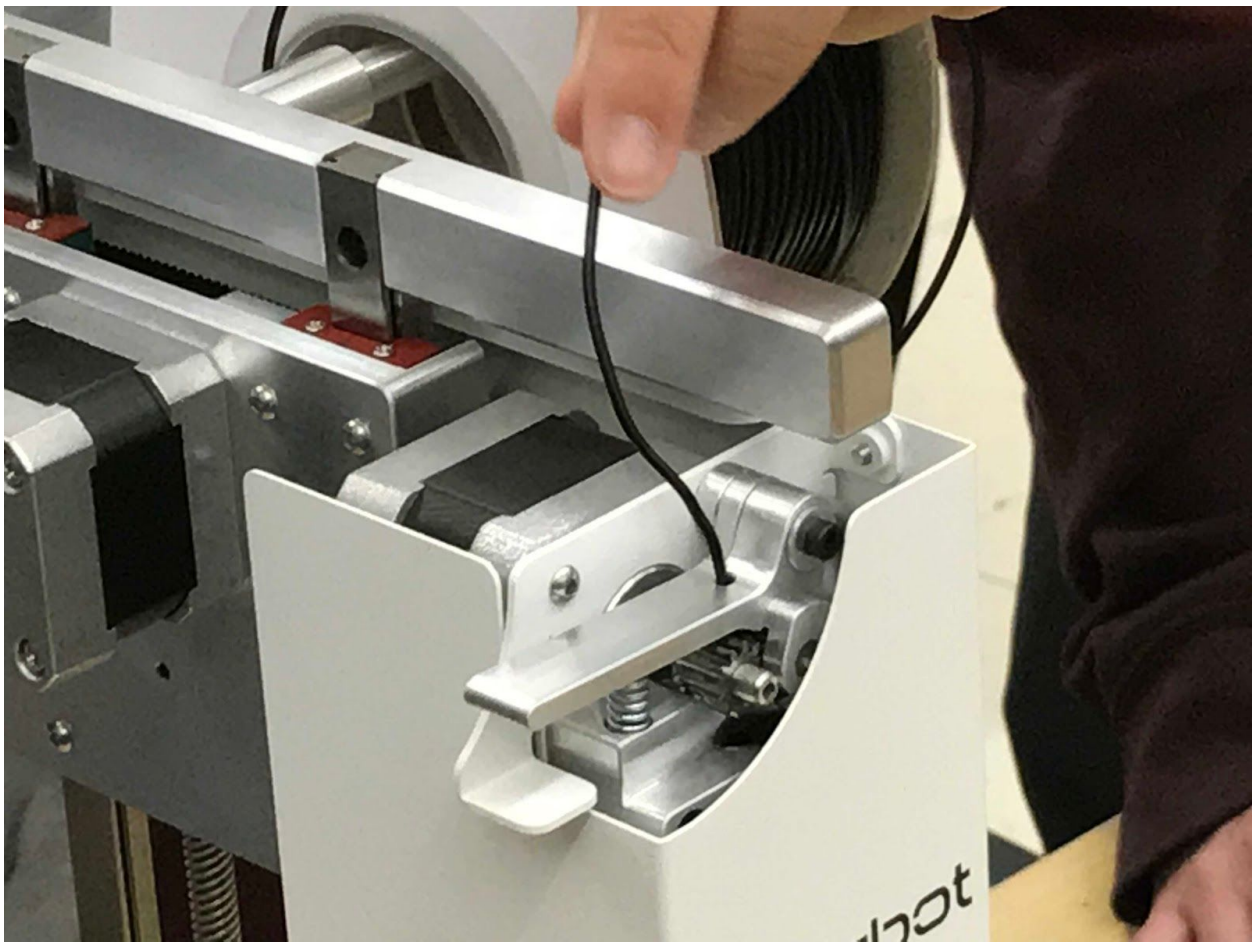
Assembly - Step 4

Position the bed on the base so that the holes are aligned. Then, use the included 2mm allen wrench to screw on the included screws.

Assembly - Step 6

Attach the spool rack near the top handle and turn it counter clockwise. After, position the included PLA spool onto the rack. Finally, hold down the metal tab and push the PLA cord into the gap with force.





https://drive.google.com/file/d/16bN747gxwgoctCYRTABOs7SJTKPfHqD0/view?usp=sharing

https://docs.google.com/document/d/1L1S69zqmJvgei2dP9yZ6BFKws33kppeuFW-zge6w0tA/edit

There are many resources that one can access. From modeling software to slicers, the tools below have helped us throughout our journey and hopefully they will be of use to you as well.

Printer Resources

- https://printrbot.com/project/2016simple/
- https://printrbot.zendesk.com/hc/en-us/articles/115000151583-Printing-via-USB-on-Cura-2-with-Your-Printrbot-Simple-Pro
- https://printrbot.zendesk.com/hc/en-us/articles/115002992746-Getting-Started-with-the-Heated-Bed-Upgrade-on-Your-Simple-Pro
- https://printrbot.zendesk.com/hc/en-us/sections/203324566-2016-Simple-Troubleshooting

Modeling Software

- Autodesk Free Software - Various desktop/cloud software, free for students and educators.
- Blender - "the free and open source 3D creation suite," Blender is a cross-platform desktop software used by professionals and hobbyists alike. It does take a bit of learning, however.
- SketchUp - A free, intermediate software available for Windows and macOS.

Slicing Software

- Cura - Free, cross-platform desktop slicer
- Slic3r - A great open-source alternative
- Astroprint - A professional cloud slicer platform with free options available