3D Printing

Printers & Materials

3D printers build physical objects one slice at a time. Printers typically sold to consumers use plastic filament. Engineers, medical professionals and other scientists are using more expensive printers that print with other materials including metals, concrete, plastics and even living cells. Two common types of plastic filament are:

- **PLA** (Polylactic Acid): A renewable bioplastic made from corn. FDA-approved as food safe and BPA-free. No toxic fumes emitted during printing.
- **ABS** (Acrylonitrile butadiene styrene): Lego plastic. Does emit fumes during printing. More durable and gives a better quality print.

Examples of consumer market printers:

- **Makerbot**: store.makerbot.com/replicator2 – Replicator 2 -$1995.00
- **Cubify**: cubify.com - Cube
- **Afinia**: www.afinia.com– H-Series ($1,599 at Brodart)

Things to Print

1. Download a Thing: (Easiest)

Thingiverse: www.thingiverse.com – A website where people share their designs for free. Thousands to choose from!

2. Design your Own Thing: (More skill required)

3D Design Software 101: www.makerbot.com/support/guides/design

Examples of Free 3D Design Software:

- **Tinkercad**: tinkercad.com
- **123D Design**: www.123dapp.com/design
- **Sketchup Make**: www.sketchup.com/products/sketchup-make

3. Scan Things: (Expensive equipment or lots of skill required)

As with printers, the really good 3D scanners are still very expensive, but the inexpensive scanners are rapidly improving. A lot of manipulation is still required to “fix” a scan before printing.

Examples of 3D Scanning Technology:

- **Makerbot Digitizer**: store.makerbot.com/digitizer.html - $949.00 (GCLS has one of these.)
- **NextEngine 3D Laser Scanner**: www.nextengine.com - $2,995.00
- **Hacked Xbox Kinect**: www.open-electronics.org/kinect-for-3d-scans
- **Free iPad App: 123D Catch**: www.123dapp.com/catch

What Libraries are doing

Mount Laurel Library (NJ)
http://www.mtlaurel.lib.nj.us/

Piscataway Public Library (NJ)
http://piscatawaylibrary.org/miy

Monroe Township Library (NJ)
http://www.monroetwplibrary.org/studio_m

Sparta Public Library (NJ)
http://spartalibrary.com/spaceatsparta/

Westport Library (CT)
http://westportlibrary.org/services/maker-space/3d-printers

Fayetteville Free Library (NY)
http://fflib.org/make/ffl-fab-lab/reserve-a-3d-printer

FAQ for Librarians at http://fflib.org/make/ffl-fab-lab/faqs-for-librarians

Halifax Public Libraries (Canada)
http://www.halifaxpubliclibraries.ca/computers/classes/3d-printing.html

More 3D Printing Resources

3D Printing
http://www.explainingthefuture.com/3dprinting.html

MAKE's 3D Printer Testing Results
http://makezine.com/magazine/guide-to-3d-printing-2014/3d-printer-overview-how-they-compare/

Make: Ultimate Guide to 3D Printing 2014 (costs $6.95)
http://makezine.com/volume/guide-to-3d-printing-2014

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Technology Speed Dating

Gloucester County Library System, Mullica Hill Branch—April 23, 2014
Ralph Bingham—rbingham@gcls.org