3D Printing: Engaging the Liberal Arts in Physics

Eric Bubar
Marymount University
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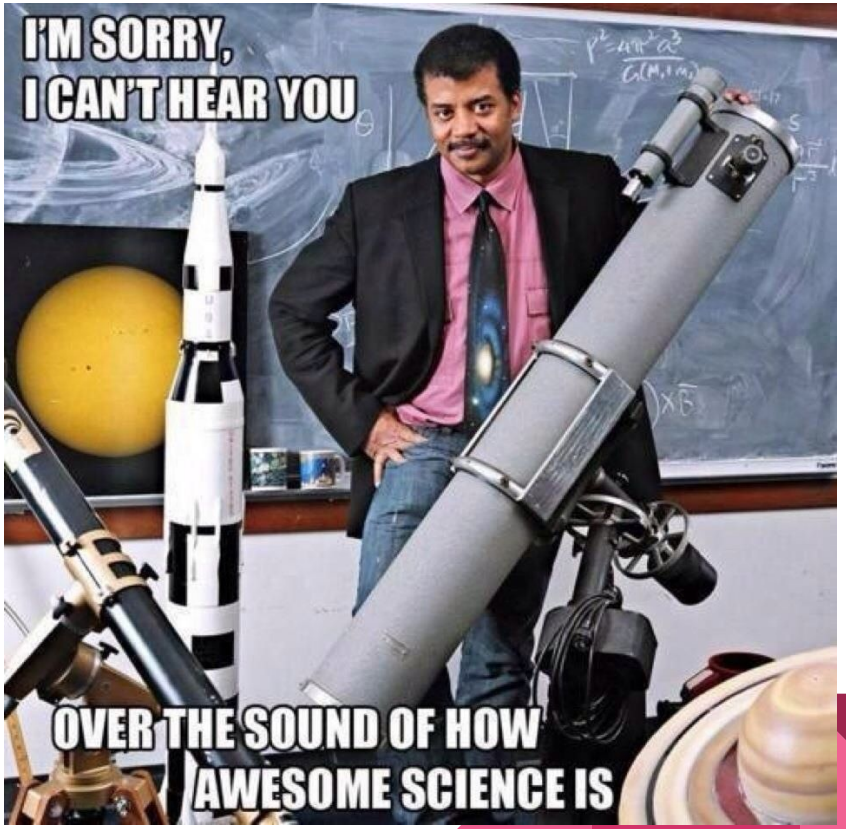
Student Population

Liberal Arts students -

Art, biochemistry, biology, business, communications, cybersecurity, education, fashion design/merchandising, graphic design, pre-PT, history, IT, journalism, mathematics, politics, psychology, sociology, undeclared

(~28 majors - NONE physics)



Incite REAL LIFE excitement!

Most students are (often) “into” tech

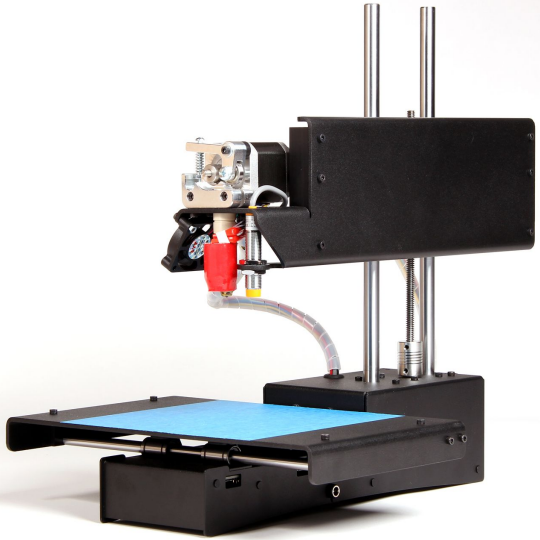
Use TECHNOLOGY as a springboard to science interest/engagement

Find a technology that students (almost) universally are interested in

Find a technology that has some social good (a PRIMARY aspect of many Marymount student interests ESPECIALLY the more liberal artsy ones!)

SOURCE: Mitch.blogspot.com

How to get students EXCITED about science?



printrbot.creativetools.se

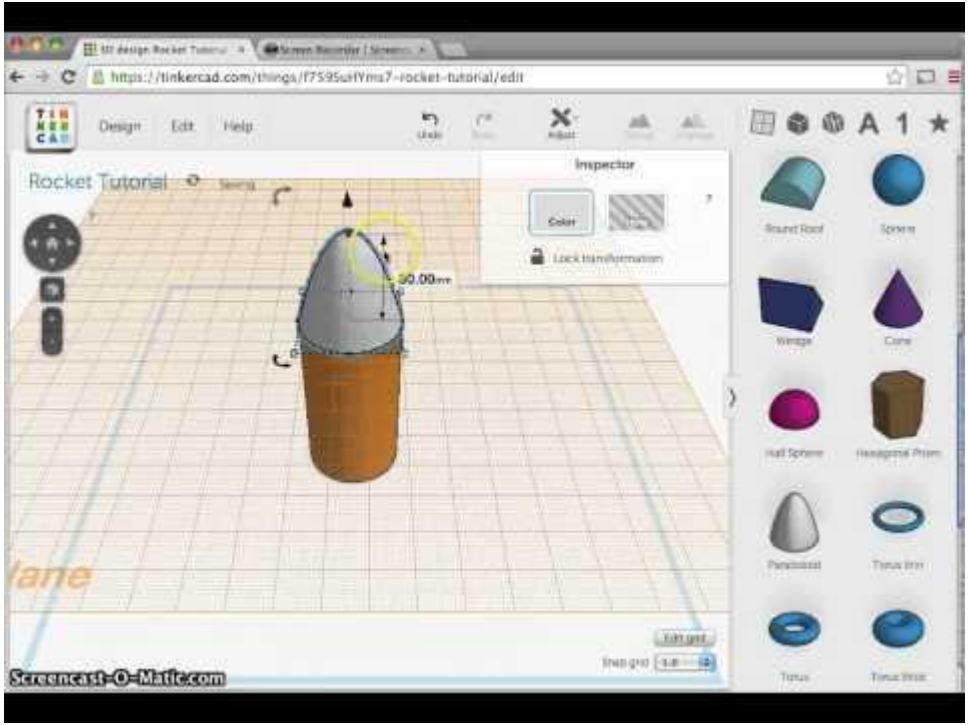
Finding Objects to Print - Give Students a Goal!

3D Design

Introduce to 3D design software

(tinkercad, Fusion 360)

- Vector Mathematics
- 3D perception
- Programming
- Scaling
- Unit Conversions



3D Scanning

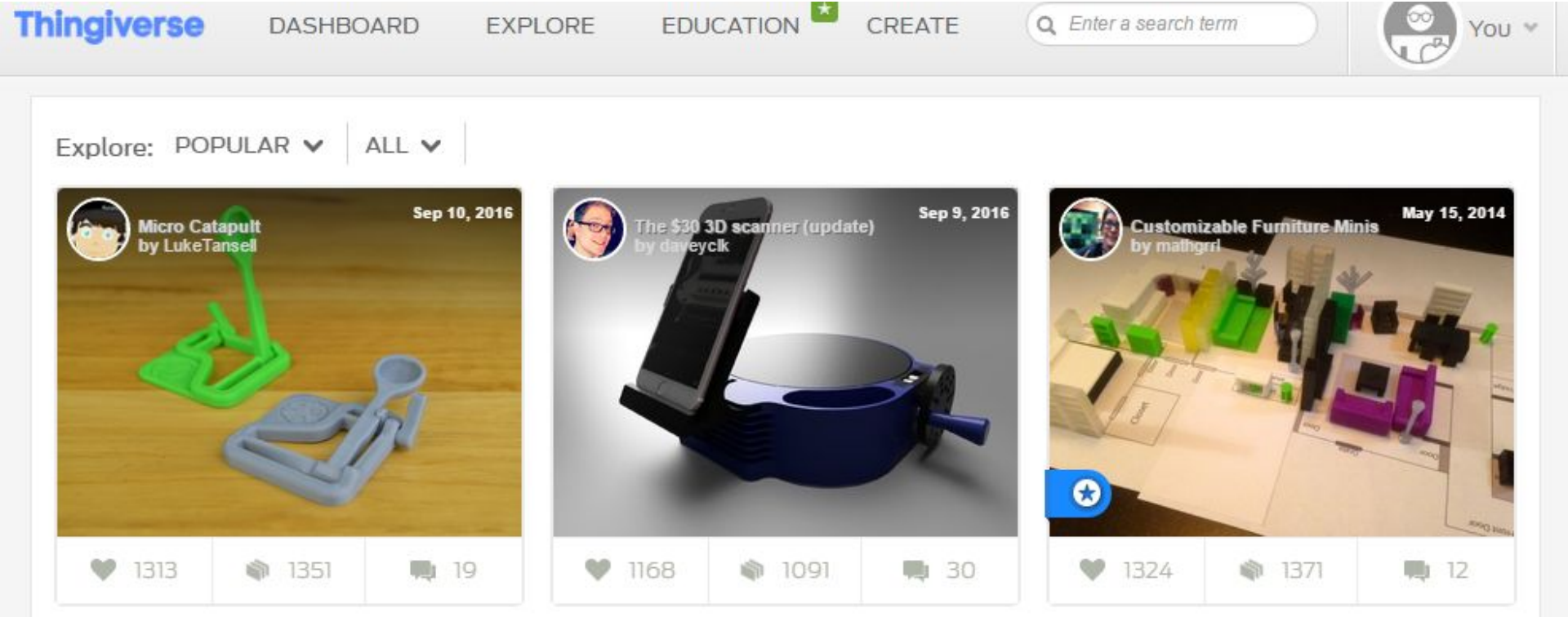
Introduce to 3D scanning

(Occipital Structure, Intel real sense)

- Point Clouds
- Infrared cameras
- EM Radiation - IR
- Depth Sensing
- MORE Vectors
- CALCULUS!
- Computer programming

3D Models

Thingiverse, Shapeways
- TONS of models
- REALLY motivates students to want to learn



Give them a higher purpose

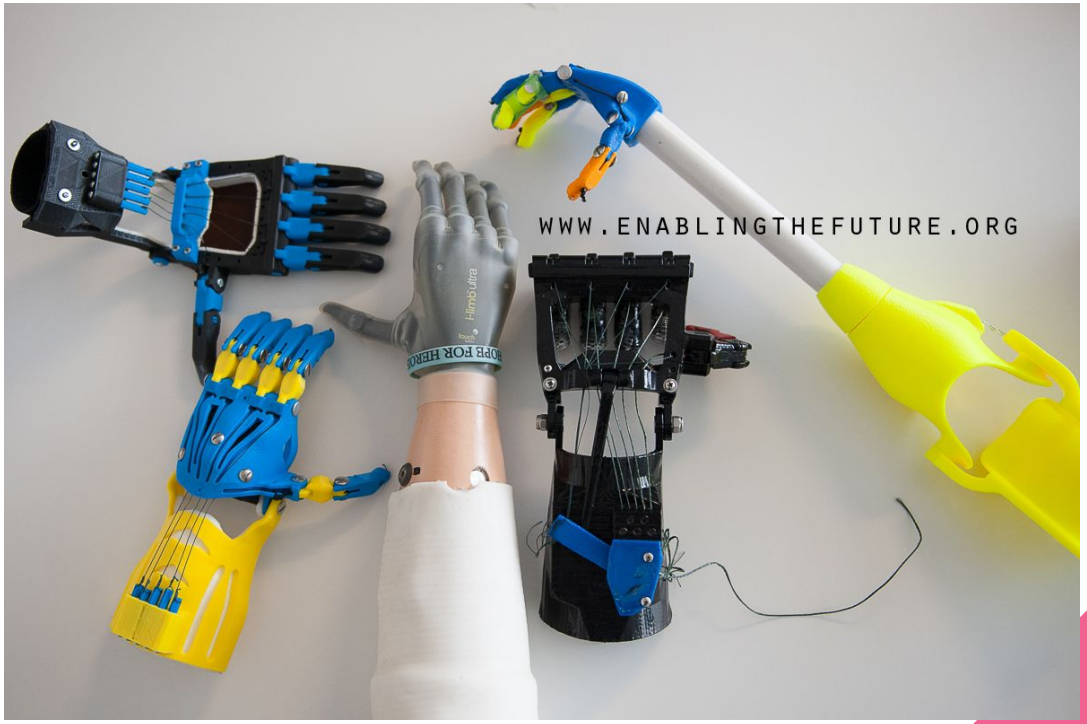
- SHOW students the impact

They can have with BASIC

Science applied to technology

- Enabling the Future

VARIETY of designs



3D Printed hands as a lab practical

Students must APPLY physics to assess hand functions

- Force
- Tension
- Torque
- Rotational Motion
- Friction
- MOST of 1st semester intro mechanics!

Does it Work - VERY Preliminary...