

3-D Printing

Teach-Tech-Talk IDEAS Workshop

24 October 2023

B. Toggerson

Physics

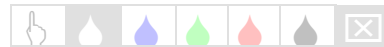
[Toggerson, Brokk K. "In Service of Equity: 3D-Printed Models in University Introductory Physics." *The Physics Teacher*, vol. 60, no. 7, Oct. 2022, pp. 565–68. DOI.org \(Crossref\), <https://doi.org/10.1119/5.0042458>.](#)



What and Where

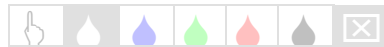
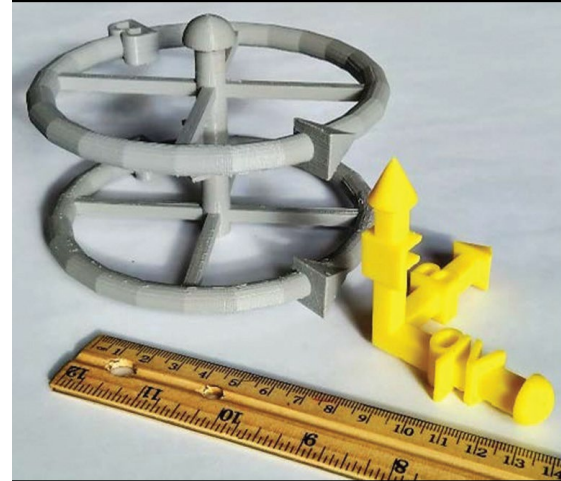
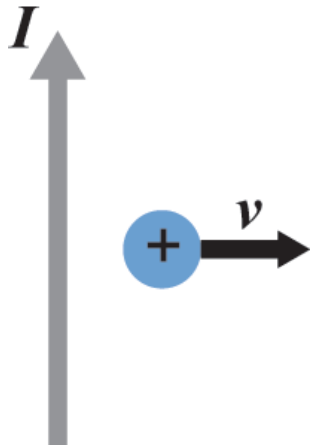
3D Printing works by laying down layers of polymer

Digital Media Lab's 3D Innovation Center



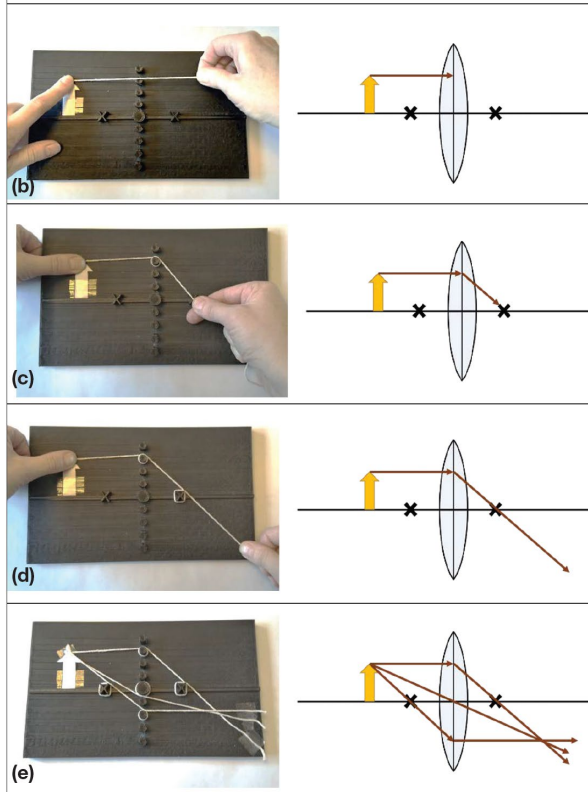
My #1 Use: Helping Students Learn to Think in 3-D

What is the direction of the force on the charged particle?



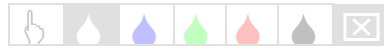
My #2 Use: Specifically for Accessibility

The flow of light through a lens

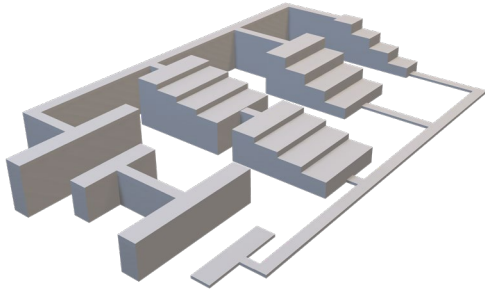


From our Assistive Technology Center

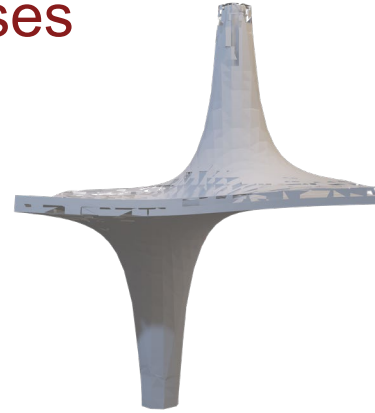
- No one reads Braille: don't bother.
- Even raised letters are dicey.
- Different tips



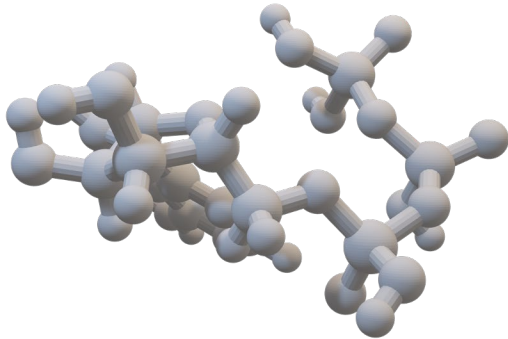
Other Uses



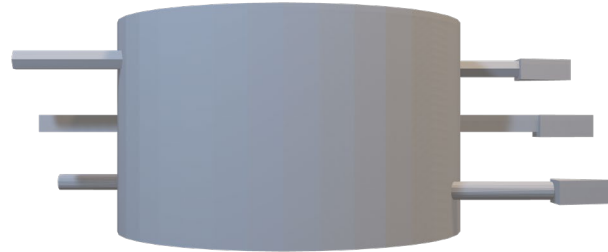
Height as analogy
(e.g. voltage)



Intrinsically 3-D
things like
mathematical
functions



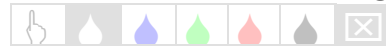
Molecules: 3d.nih.gov



Student work:
here a unit on
UDL in a physics
pedagogy course



[Cultural artifacts](#)



How

Find some models:

- thingiverse.com
- Lots of stuff already available across a lot of disciplines.
- Most Creative Commons! (OER!!!)
- Share your own.

Edit
(or make!)

- tinkercad.com
- Click and drop.
- Can be done by students with some minimal teaching.

Print

- \$0.15/g
- Usually print honeycombed so lighter.
- Can be more solid for class sets.
- The library folks are happy to help!

