



Curriculum Units by Fellows of the National Initiative
2021 Volume V: Human Centered Design of Biotechnology

The Curb Cut Effect: A Local and Global Citizen Bioengineering Challenge

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The American medical system is an agglomeration of some of the best, most innovative minds in the world. Unfortunately, these fantastic innovations are usually only accessible if you have expensive, employer sponsored medical insurance or are wealthy. The US Census Bureau found that 27.5 million did not have health insurance in 2018.¹ Fortunately, there are a growing number of innovators who are designing low cost, rugged, and sustainable medical technology for those in vulnerable populations. Many of these innovations are so useful and well-designed that they are mainstreamed to the general public. This happened with curb cuts, the dip in the sidewalk where one can access crosswalks. These were originally designed for those in wheelchairs, but they benefit the whole population: baby carriages, delivery persons, bikes, etc. Helping the larger population by designing for the most vulnerable is called The Curb Cut Effect.² This unit will prepare the next generation of innovators to innovate accessible and valuable medical technology.

James Lick Physiology (grades 11 and 12) students will work with various organizations to identify a local population that could benefit from rugged and sustainable medical technology. The students will interview and empathize with that population (or experts who care for that population), define a health issue that could be improved through innovative engineering, and build a prototype of the technology.

Notes

1. US Census Bureau, “Health Insurance Coverage in the United States: 2018”.
2. Ryan Sprott, “Curb Cuts and Texting Might Change the Way You Design Projects” in PBL Works.

(Developed for Physiology, grades 11-12; recommended for Physiology and Engineering, grades 11-12)

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