

# Activity 1: Explore “Use it!” Inventions

## Introduction

Have you ever been curious about how products in stores are made? Most products have gone through product design processes. Product designers identify a need or a problem, conceptualize an idea or solution to meet the need, create a prototype (this is basically what inventors do), conduct a thorough evaluation of the idea (e.g., scalability, market), and finally put the idea into mass production.

Product design and invention share lots of similarities. They both are human-centered. That is, both inventors and product designers think about the needs of potential users or customers. Their roles include combining art, science, technology, and engineering to turn ideas into tangible inventions and products. The “Use it!” inventions specifically focus on technology-based inventions that involve consumer devices; that is, inventions that customers can purchase and use in their daily life.

In this activity, you will explore a few “Use it!” inventions created by students in high schools, colleges, and graduate schools. You will read about their inventions and think about what kind of users may benefit from their inventions. You’ll also think about what you may want to invent to improve people’s lives!

## Activity Instructions

**Explore the following four “Use it!” inventions created by students. Think about these questions:**

- a. What is interesting about these inventions?
- b. Who are the users of these inventions? Do you think you or members of your community may be interested in using these inventions?
- c. Think about how these inventions help address bigger challenges. We have added the alignment with the NAE’s Grand Challenges for Engineering (GCE) and the UN’s Sustainable Development Goals (SDG) for these inventions in the table below (the fourth column labeled “Alignment with GCE or SDG”).
  - You can check the [Grand Challenges for Engineering](#) and the [Sustainable Development Goals](#) for more information about the big challenges we face.

- d. Does your local community have similar problems? How might some of these inventions be modified or changed to make them useful to your community?

<b>Invention name (and inventors)</b>	<b>What does the invention do?</b>	<b>Resources for exploration</b>	<b>Alignment with GCE or SDG</b>
<p>Tactile: A Real-Time Text-to-Braille Converter</p> <p>(a group of undergraduate students from MIT; 2017 Lemelson-MIT Student Prize Undergraduate Team Winner)</p>	<p>A portable device that translates printed text into braille, the raised-dot system that allows blind people to read via touch.</p>	<p><a href="#">The Lemelson-MIT Student Prize introduction of the invention</a> (the page includes an introduction of the invention, inventors and an introduction video)</p> <p><a href="#">Report from the Fusion YouTube channel</a></p>	<p>GCE: Advance Personalized Learning.</p> <p>SDG 4.A: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.</p>
<p>Circuit Scribe</p> <p>(Analisa Russo, a graduate student from University of Illinois, Urbana-Champaign; 2014 Lemelson-MIT Student Prize Finalist)</p>	<p>A rollerball pen with conductive ink for sketching circuits on paper.</p>	<p><a href="#">The Lemelson-MIT Student Prize introduction of the invention</a></p> <p><a href="#">Analisa's video</a></p> <p><a href="#">The Circuit Scribe website</a></p> <p><a href="#">The Circuit Scribe's YouTube channel</a></p>	<p>GCE: Advance Personalized Learning.</p> <p>SDG 4.A: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.</p>
<p>Electromagnetic Locking Device for Trash Cans</p>	<p>A device that can keep trash can lids closed when the trash cans are</p>	<p><a href="#">The InvenTeam blog</a></p>	<p>GCE: Restore and Improve Urban Infrastructure.</p>

<p>(the Granada Hills Charter High School InvenTeam, Granada Hills, CA; 2019 Lemelson-MIT InvenTeam grant recipient)</p>	<p>knocked over.</p>		<p>SDG 12.4: Ensure Sustainable Consumption and Production Patterns.</p>
<p>Faucet-mounted Water Meter with Adjustable Aerator</p> <p>(the Archer School for Girls InvenTeam, Los Angeles, CA; 2016 Lemelson-MIT InvenTeam grant recipient)</p>	<p>A compact kitchen faucet attachment that monitors water usage and encourages positive water-saving behaviors.</p>	<p><a href="#">The Archer School for Girls InvenTeam blog</a></p> <p>The Archer School for Girls InvenTeam <a href="#">Twitter</a>, <a href="#">Instagram</a>, and <a href="#">Facebook page</a></p>	<p>GCE: Provide Access to Clean Water.</p> <p>SDG 6.4: Ensure availability and sustainable management of water and sanitation for all.</p>