

# Light the Spark in Tomorrow's Engineers!

## About SparkShop

SparkShop empowers students to apply their skills to engineering challenges and see their value in **STEM** fields. The curriculum contains a dynamic mix of experiments, discussions, demonstrations, and problem-solving designed for **4th-5th graders**. We aim to build the initial enthusiasm that prepares students to pursue the STEM activities later in their learning careers.

SparkShop offers **3 NGSS-aligned programs**. Students receive a total of 3 hours with our staff and 3 additional hours of our curricula through pre- and post- lessons led by teachers. The bulk of the content is in two 90-minute, high-energy sessions led by Shonali and Tiernan, SparkShop co-directors and former industry engineers. They provide technical knowledge and access to equipment outside the normal reach of students.

SparkShop is a project of the **Science & Entrepreneurship Exchange (SEE)**, which has taught over 1000 kids in the Chicago-area since 2013. SEE's mission is to inspire and mobilize the next generation of America's innovators, inventors, entrepreneurs, engineers & manufacturing geniuses.

## The Need

- A recent study found that **84%** of executives agree that there is a severe talent shortage in STEM fields
- According to the US Department of Education, only **16%** of high school students are both proficient in math and science and are interested in pursuing a STEM degree. Of that, only half make it into industry jobs
- Businesses see "a loss of an average **\$14,000** per open position that goes unfilled" according to a study by The Manufacturing Institute and Deloitte
- STEM workers make a median annual wage of nearly **\$76,000**, over double that of the average worker (Bureau of Labor Statistics)

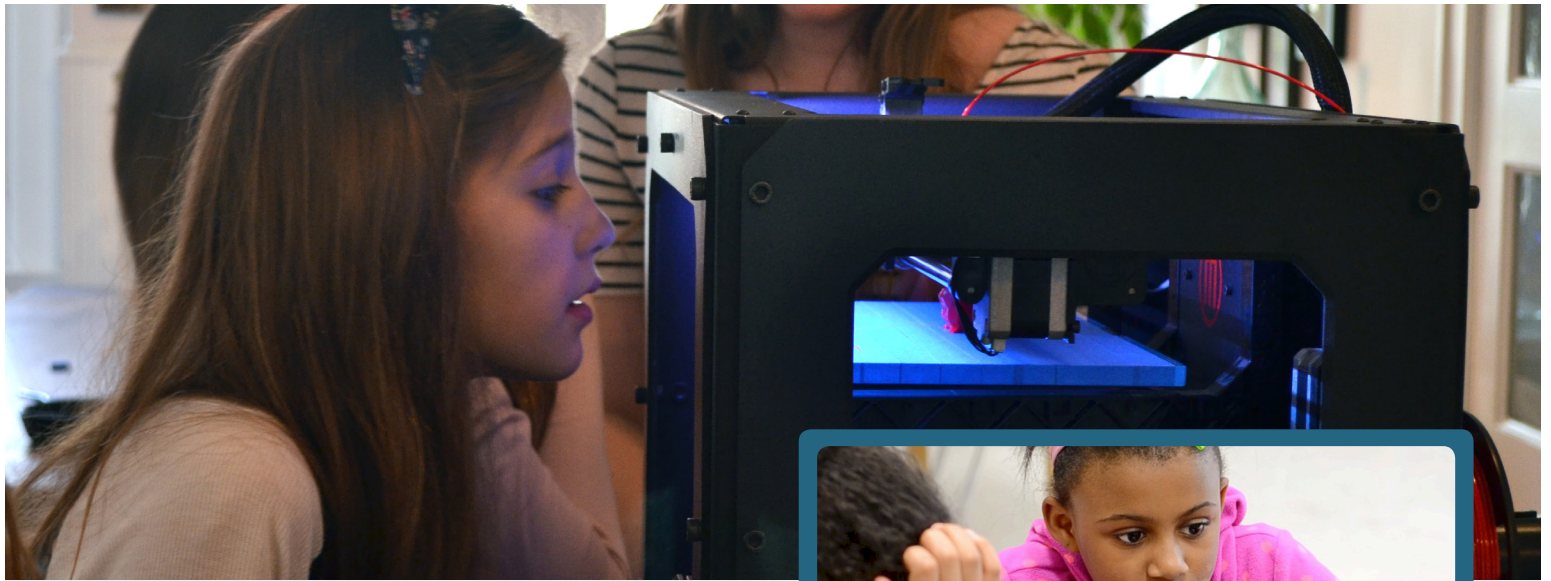
## Outcomes

Increased student **confidence** in science/engineering ability with projects

Increased student **engagement** in math and science classes

Increase in number of people **graduating** college with STEM degrees

Increased **diversity** in the workforce of engineers and manufacturers



## Our Format

SparkShop's instructors visit each classroom twice per program, bringing in technology, materials, and machinery to tackle complex content in a safe and fun way. Each program includes connected supplementary lessons for teachers in science, math, art, language arts, and social studies. **Our classes include:**

### APPLIED ENGINEERING

**Discover how engineers shape our world!** Students explore the **variety of skills engineers need** in the biomedical, electrical, mechanical, civil, chemical, and environmental fields.

### INNOVATION & TEAMWORK

**Apply the product development process!** Students build skills in **group brainstorming & problem solving** and develop new communication techniques through sketching and prototyping.

### MATERIALS & MANUFACTURING

**Explore how things are made!** Students examine how manufacturing turns raw materials into the products they see every day. Students follow the evolution of manufacturing over time, from ancient methods of **metalwork to digital rapid prototyping** technology.



## Who We Are

**Tiernan & Shonali** are Sparkshop's co-founders and directors. They both graduated from Northwestern's McCormick School of Engineering and went on to develop laser machinery and racecars. After working in industry, they were inspired to make engineering an approachable and attainable future for more students.

For more information or to schedule a workshop, email [hello@sparkshop.org](mailto:hello@sparkshop.org) or visit [www.sparkshop.org](http://www.sparkshop.org)

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