



OUT-OF-SCHOOL SETTINGS | GRADES 3-5

## Light Up the Night: An Electrical Engineering Challenge

### Unit Overview

In this unit, India and Jacob; a fictional, world-traveling brother and sister duo; visit Iceland, and are invited to design a display for the annual Light Festival! India and Jacob guide kids through the engineering activities as they explore circuits and sculpting materials. Kids then use their creativity and knowledge of electrical engineering to design a light display that replicates the colors and patterns of the Northern Lights.

### Engineering Application/Unit Goals

Kids will use each step of the Engineering Design Process as they become electrical engineers and design a stunning light display. Electrical engineers use their knowledge of electricity to create a range of technologies, from computer microchips to pacemakers. In this unit, kids are introduced to basic circuits that can turn on LEDs and use materials to create effects that can change the appearance of light.

**Engineering Adventures** engages learners in grades 3-5 in fun, creative problem solving. Eleven hands-on units are low-cost and flexible to meet the time and budget constraints of out-of-school settings, including afterschool and summer camp. Each unit centers on meaningful, open-ended problems with a global context. Learners find out more about the role engineering plays in their lives and the world around them as they're introduced to real engineering challenges and asked to design solutions with an engineering design process. Throughout each unit, kids learn to collaborate, communicate, solve problems, and share their solutions with their peers.



## Unit Map

### **Prep Adventure 1: What is Engineering?**

Kids engineer a tower and are introduced to the Engineering Design Process as a problem-solving tool.

### **Prep Adventure 2: What is Technology?**

Kids explore the idea that they, as engineers, can design and improve technology.

### **Adventure 1: It's Electric!**

Kids learn about electrical circuits by investigating different materials that allow electricity to move through them.

### **Adventure 2: Sculpture Circuits**

Kids use sculpting materials to create circuits that can turn on a light.

### **Adventure 3: All of the Lights**

Kids create circuits that can turn on multiple lights at once.

### **Adventure 4: Light Show**

Kids explore a variety of materials that can change the appearance of light.

### **Adventure 5: Create a Light Display**

Kids engineer a light display that mimics the colors and patterns of the Northern Lights.

### **Adventure 6: Improve a Light Display**

Kids work with their groups to improve their light displays.

### **Adventure 7: Engineering Showcase**

Kids present their designs and share how they used the Engineering Design Process to engineer their light displays.

Ready to create a generation of problem solvers? Contact [sales@mos.org](mailto:sales@mos.org)