



OUT-OF-SCHOOL SETTINGS | GRADES 6-8

## Growing Up: Engineering Vertical Farms

### Unit Overview

It takes a lot of land to feed the world's population— since we can't to continue to grow out, why not grow up? Youth participating in this unit will become agricultural engineers as they use the Engineering Design Process to decide a vertical farm to feed a community.

### Engineering Application/Unit Goals

Youth will explore food production problems related to population growth. Youth will then engineer a model vertical farm as a potential solution to current food production limitations in a fictional location. Agricultural engineering applies science and technology to the cultivation of animals and plants for food and other products used to sustain human life. This broad engineering field encompasses many aspects of agriculture, including the management and conversation of soil and water, experimentation with crop production, and the design of new agricultural machinery.

**Engineering Everywhere** inspires learners in grades 6-8 to shape the world around them. Our twelve hands-on units were tested in afterschool, summer camp, and out-of-school time settings, and they are proven to engage learners in innovative problem solving. Each unit begins with a Special Report video, which sets the context for the engineering design challenge and explores problems like food scarcity, prosthetics, and disease control. As learners work through our design challenges, they'll sharpen 21st century skills like critical thinking, teamwork, and communication, preparing them for success in school and in life.



## Unit Map

### Prep Activity 1: What is Engineering?

Youth are introduced to engineering as they work in teams to engineer a tower that can support a container of water.

### Prep Activity 2: What is Technology?

Youth explore a definition of technology are presented with a challenge: to engineer a model vertical farm for a place called Greentown.

### Activity 1: Window Gardens

Youth engineer a window garden from recycled bottles.

### Activity 2: Design a Water System

Youth engineer a water pump system that can deliver water to different locations.

### Activity 3: It's Light and Mirrors

Youth design a lighting system to direct light to a specified area.

### Activity 4: Create a Vertical Farm

Youth work in groups to create a room for a vertical farm in Greentown.

### Activity 5: Improve a Vertical Farm

Groups test and improve their vertical farm rooms.

### Activity 6: City Council Presentation

Youth communicate their work to the Greentown City Council.

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