

OUT-OF-SCHOOL SETTINGS | GRADES 6-8

Don't Runoff: Engineering an Urban Landscape

Unit Overview

When it rains, it pours—and when water can't soak through pavement, rain collects pollution that washes into rivers, lakes, and oceans. Youth participating in this unit will learn about different technologies that can help minimize storm water runoff. Youth will use each step of the Engineering Design Process as they become environmental engineers and redesign a model city.

Engineering Application/Unit Goals

Youth will collaborate to design ways to reduce storm water runoff in a model city. Runoff is a term used to describe water that flows over the surface of a landscape during and after a rainstorm. Runoff in cities can be particularly harmful to the environment. Reducing runoff in cities requires being creative about how to absorb rainwater into the city landscape. Environmental engineers often work alongside city planners and civil engineers to ensure that new structures, such as roads and buildings, are constructed with minimal impact and are designed to minimize transfer of pollutants into the environment.

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

Prep Activity 2: Technologies at Work

Youth engage in several activities to help them define the word technology and understand how engineers brainstorm improvements to technologies.

Activity 1: The Pollution Solution

Youth learn about their engineering challenge and use a model city to explore what happens to polluted runoff.

Activity 2: Green Possibilities

Youth create their own green roofs and investigate the properties of natural materials.

Activity 3: Passing Through

Youth investigate permeable pavement technology by engineering pavement that will meet certain criteria.

Activity 4: Create an Urban Landscape

Youth work with their groups to plan, create, and test a solution to their environmental engineering challenge.

Activity 5: Improve an Urban Landscape

Groups improve their designs to better meet the criteria.

Activity 6: Engineering Showcase

Youth communicate their work to visitors.

Ready to create a generation of problem solvers? Contact sales@mos.org