



OUT-OF-SCHOOL SETTINGS | GRADES 3-5

A Slippery Slope: Engineering an Avalanche Protection System

Unit Overview

In this unit, India and Jacob; a fictional, world-traveling brother and sister duo; are in Peru exploring the Andes Mountains when they learn a town is in danger from a potential avalanche. India and Jacob guide kids through the engineering activities as they design a series of barriers and catches to hold or divert massive amounts of snow away from the town. Kids use their creativity and knowledge of avalanche engineering to create an avalanche protection system. Kids test their designs using a large-scale model mountain, before presenting their ideas in an Engineering Showcase.

Engineering Application/Unit Goals

Kids will use each step of the Engineering Design Process as they become avalanche engineers and design an avalanche protection system for a model village in Peru. Avalanche engineers design technologies, like catches and barriers, that stop or direct the flow of avalanches. Avalanche engineers strategically place these technologies on mountains to protect structures and people who use the area for shelter and recreation. In this unit, kids are introduced to avalanches and some of their major causes and investigate ways to stop and divert falling objects.

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 discuss the definition of technology based on objects they are challenged to engineer.

Adventure 1: Look Out Below!

Kids investigate a major cause of avalanches.

Adventure 2: Good Catch!

Kids investigate ways to stop falling objects by creating a catch that can stop a series of model boulders.

Adventure 3: A New Direction

Kids engineer barriers to direct multiple model boulders rolling down a slope into different catches.

Adventure 4: Create an Avalanche Protection System

Kids engineer a series of catches and barriers to protect a model village from an avalanche.

Adventure 5: Improve an Avalanche Protection System

Kids improve their avalanche protection systems and try to protect the village against an avalanche with even more snow and debris.

Adventure 6: Engineering Showcase

Groups present their designs and share how they used the Engineering Design Process to engineer their avalanche protection systems.

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