

Soil Erosion Challenge

Grade levels 2-4

Program Description:

Students will investigate how water can change the shape of land. They will begin by exploring the properties of materials and how they interact with water. Using this knowledge, they will design and create a model and test its effectiveness in preventing soil erosion.

Massachusetts Curriculum Standards:

Grade 2: Earth and Space Sciences

ESS2. Earth's Systems

2-ESS2-1. Investigate and compare the effectiveness of multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

2-ESS2-4(MA). Observe how blowing wind and flowing water can move Earth materials from one place to another and change the shape of a landform.

Grade 2: Physical Science

PS1. Matter and Its Interactions

2-PS1-1. Describe and classify different kinds of materials by observable properties of color, flexibility, hardness, texture, and absorbency.

2-PS1-2. Test different materials and analyze the data obtained to determine which materials have the properties that are best suited for an intended purpose.

Grade 2: Technology/Engineering

ETS1. Engineering Design

2.K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same design problem to compare the strengths and weaknesses of how each object performs.

Grade 3: Earth and Space Sciences

ESS3. Earth and Human Activity

3-ESS3-1. Evaluate the merit of a design solution that reduces the damage caused by weather.

Grade 3: Technology/Engineering

ETS1. Engineering Design

3.3-5-ETS1-1. Define a simple design problem that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost that a potential solution must meet.

3.3-5-ETS1-2. Generate several possible solutions to a given design problem. Compare each solution based on how well each is likely to meet the criteria and constraints of the design problem.

Grade 4: Earth and Space Sciences

ESS2. Earth's Systems

4-ESS2-1. Make observations and collect data to provide evidence that rocks, soils, and sediments are broken into smaller pieces through mechanical weathering and moved around through erosion.

Grade 4: Technology/Engineering

ETS1. Engineering Design

4.3-5-ETS1-3. Plan and carry out tests of one or more design features of a given model or prototype in which variables are controlled and failure points are considered to identify which features need to be improved. Apply the results of tests to redesign a model or prototype.

4.3-5-ETS1-5(MA). Evaluate relevant design features that must be considered in building a model or prototype of a solution to a given design problem.



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