Soil: The Wealth Beneath Your Feet!

SUBJECT AREA: Science – Earth Science, Environmental Science.

GRADE LEVEL: Sixth through eighth.

DURATION: 30 to 90 minutes, depending on student needs; staff will require 30 minutes to set up demonstration.

AUDIENCE SIZE: 30 students at one time; larger groups can rotate through stations if participating in shorter program.

OVERVIEW: In this lesson, students step into the shoes of environmental scientists! They will have the opportunity to get their hands dirty studying the characteristics of the different soil types. The purpose of this investigation is to provide a firsthand look at how soil scientists utilize field methods and lab analysis techniques to identify soil types. Students will be able to compare various scientific methods to draw conclusions regarding soil samples. They also will be able to study the characteristics of the major soil types and test the properties of soil field samples.

OBJECTIVES:

The student will:

- Utilize a soil texture triangle to identify different soil types.
- Utilize field verification techniques to identify different soil types.
- Compare and contrast field verification and lab analysis techniques to identify different soil types.
- Take part in the scientific method to draw conclusions regarding soil samples.
- Relate the geosphere (soil characteristics) to the biosphere (plants and ecosystems as a whole).

DIFFERENTIATION:

This program is differentiated into various levels/activities. Below is a description of each section. Department staff can mix and match this program to cater to the needs of students.

PART A: Use field verification methods and lab analysis to determine textures of various soil samples. Compare and contrast scientific methodology when drawing conclusions.

PART B: Relate soil characteristics to the soil texture determined in Part A.

PART C: Conduct additional field methodologies to determine organic content of soil. Relate organic content percentage to plants and the ecosystems categorization.

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SUNSHINE STATE STANDARDS:

SC.6.N.1.2 - Explain why scientific investigations should be replicable.

SC.6.N.1.2 - Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.

SC.6.N.1.4 - Discuss, compare and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.

SC.6.E.7.4 - Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere and biosphere.

SC.7.N.1.3 - Identify the benefits and limitations of the use of scientific models.

SC.7.N.1.5 - Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology and physics.

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SC.8.N.4.1 - Explain that science is one of the processes that can be used to inform decision making at the community, state, national and international levels.

SC.8.N.1.2 - Design and conduct a study using repeated trials and replication.

ELA.K12.EE.1.1 - Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations.