Lesson #2 - *Careers That Work: Soil Scientist*

Subject: Application of Career Specific Skills

Grade Levels: 5th Grade - 12th Grade

Standards:
13.1.8.A: Relate careers to individual interests, abilities, and aptitudes.
13.1.8.B: Relate careers to personal interests, abilities and aptitudes.
13.1.11.A: Relate careers to individual interests, abilities, and aptitudes.
13.1.11.B: Analyze career options based on personal interests, abilities, aptitudes, achievements and goals.
3.3.7.A2: Explain land use in relation to soil type and topography.
3.3.7.A3: Explain and give examples of how physical evidence, such as fossils and surface features of glaciation support theories that the Earth has evolved over geologic time. Compare geologic processes over time.
3.3.8.A7:

- Compare and contrast scientific theories.
- Know that both direct and indirect observations are used by scientists to study the natural world and universe.
- Identify questions and concepts that guide scientific investigations.
- Formulate and revise explanations and models using logic and evidence.
- Recognize and analyze alternative explanations and models.
- Explain the importance of accuracy and precision in making valid measurements.

4.2.8.B: Explain the value of wetlands to other living things.
4.4.6.A: Explain how different plants and animals in the United States have specific growing requirements related to climate and soil conditions.

Vocabulary

- Soil - the upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles
- Bedrock - solid rock underlying loose deposits such as soil
- Topsoil - the top layer of soil
- Scientist - a person who is studying or has expert knowledge of one or more of the natural or physical sciences
- Forestry - the science or practice of planting, managing, and caring for forests
- Excavate - to make a hole by digging; extract material from the ground by digging
- Environment - the surroundings or conditions in which a person, animal, or plant lives or operates
- Wetlands - land consisting of marshes or swamps; saturated land
- Water Table - the level below which the ground is saturated with water
- Conservation - preservation, protection, or restoration of the natural environment and of wildlife
- Soil Horizon - layers of soil
- Soil Profile - arrangement of the soil horizons

Timeframe:
1 day depending on the prep time students are allowed prior to creation of project and presentations.

Suggested Learning Strategies:
Project Based Learning

Activities:
Students will be placed in groups of two or three and given the several tasks to complete after watching the video, *Careers That Work: Soil Scientist*

- Students will be broken into groups of two or three. Using Handout #3 provided (*Soil Profile: It's More Than Just Dirt!*), students will review the vocabulary and create a presentation with one large visual aid (poster, diagram, model, etc.) which illustrates and explains the soil profile and soil horizons.
- Working together in their groups, students will define the soil layers, illustrate the soil layers, and give a written and verbal explanation of the importance of each layer and its effect on the environment (i.e. organisms living in the soil, presence of wetlands, etc.).
- The students need to work together in order to not only define the soil profile and soil horizons, but also present their findings both orally and visually to the class. The project will be graded using the Performance Rubric provided.
- Students should include in the presentation the role of the soil scientist in assessing the soil profile and soil horizons. How they do so is their responsibility and should be a seamless part of the presentation. Creativity is a plus.

Performance Rubric: 50 points
Students understand the tools to use for completing this specific assignment. (10 points) **Reasoning Target**

Did the students understand the project? Did they work well together as a team? Did they use the information given to them to arrive at the expected results? (10 points) **Performance Target**

How well did students understand the scientific components of the assignment? Did they present the information effectively and accurately? Did they feel confident with their results? And did they feel they understood the soil scientist profession better? (10 points) **Performance Target**

Did each student contribute to the project? Do they have a better understanding of the responsibilities and expectations that are part of the soil scientist career? (10 points) **Knowledge Target**

How well did they explain the information and conclusions in the final presentation? Was research effective and accurate? (10 points) **Product Target**

Students will discuss the importance of soil scientists to our overall society and the environment. Do the students Strongly Agree, or Strongly Disagree? (10 points) **Disposition Target**

To assess the effectiveness of visual aid, the following rubric can be used.

Presentation & Visual Aid Rubric:

	Not Complete (0)	Partially Complete (2)	Mostly Complete (4)	**Complete (6)**
Visual Presentation of Soil Profile				
Soil Profile / Horizons Labeled				
Definitions Provided				
Living Organisms Presented in Visual Aid				
Visual Aid is Appealing				
Total Score:				