Backwards Design Lesson Plan

Name: Shannon Koschik **Subject/Course: Science**
Topic: Soil Characteristics **Grade Level: 2**

Part 1: Identifying Desired Results

A. Essential Questions:

- How does the type of soil contribute to the success of the plant growth and the ecosystem in which the soil is in?
- How do soils provide water and nutrients to the atmosphere, earth, and surrounding plants?
- How does the investigation of soils help us understand our environment better?

State Standards:

3.1.2.A3: Identify similarities and differences in the life cycles of plants and animals.
3.1.2.A5: Explain how different parts of a plant work together to make the organism function.
3.1.2.A9:

- Distinguish between scientific fact and opinion.
- Ask questions about objects organisms, and events.
- Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known.
- Plan and conduct a simple investigation and understand that different questions require different kinds of investigations.
- Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information.
- Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge.
- Communicate procedures and explanations giving priority to evidence and understanding that scientists make their results public, describe their investigations so they can be reproduced, and review and ask questions about the work of other scientists.

B. Topical/Unit Questions:

- What is in soil?
- What are properties of different soils?
- How does water move through different soils?
- What are characteristics of local soil?

C. Declarative Knowledge:

Students should be able to…

- Plan and conduct a simple investigation.
- Use data to construct a reasonable explanation.
- Ask questions about an object, organism, and events in the environment.
- Communicate investigations and explanations.
- Objects have many observable properties, including sizes, weight, color, and the ability to react with other substances.
- Plants and animals have different structures that serve different functions.
- Soils have properties of color and texture, ability to retain water, and ability to support plant growth.
- Soils contain animals, plants, and their remains.

Procedural Knowledge:

Students will be able to…

- Explain that soils contain particles of different sizes. Soils also contain animals, plants, and their remains. Over time, dead plants become part of the soil.
- Perform simple tests to describe and identify soil components and identify that sand, clay, and humus are three of the basic components in soil.

- Interpret and reflect upon tests results to draw conclusions about soil composition.

Part 2: Determining Acceptable Evidence

- Students will be assessed through informal observation and questioning throughout each individual lesson.
- Students will create and maintain a science journal to record observations and ideas through the course of the lessons. A checklist of essential elements will be developed to assist students with construction and final presentation of journal.
- Students will self-assess their knowledge throughout the course of the unit using self-assessment cards that can be easily and quickly seen by the teacher throughout the instruction of the lesson.
- Students will use self-assessment and peer-assessment forms during investigations that require partner work.
- Lesson 1: Pre Unit Assessment: Students identify their prior knowledge of soils and allows student to determine what else they wish to know about soils. This will be recorded in their journal and as questions are answered they will record their answers.
- Lesson 8: Mystery Mixture: Students' knowledge of previously learned skills will be assessed through a course of experiments what the mystery mixture is.