**Title:** Composition and Layers in Soil

4th Grade

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| **CONTEXTUAL FACTORS** (classroom factors) |
| **Contextual Factors:** 12 boys and 10 girls. No ELL, NO SpED. There are no IEPs.Student #1-has a hard time focusing her attention all the time.Several of the boys have a hard time sharing.**Classroom environment**: Desks are set up in groups of 4 and have students of mixed academic levels. There is no interactive whiteboard but there is a projector available for use |

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| **WALK-AWAY** (As a result of this lesson, what do I want the students to know, understand, and be able to do?) |
| **State Standard/Objective:** Science Standard3: Objective 3: A-B Observe and list the components of soil (Minerals, rocks, air, water, and living and dead organisms) and distinguish between the living, nonliving, and once living components of soil. Diagram or model a soil profile showing topsoil, subsoil, and bedrock, and how the different layers differ in composition. (SIOP 1: Content Objectives, 2: Language Objectives, 3: Content appropriate)**Content Walk-Away:** I will create a soil profile in order to show my understanding of soil layers.**Language Walk-Away:** I will discuss in groups and as a class different characteristics found in different soil layers.**Vocabulary**: Topsoil, subsoil, bedrock, soil profile |

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| **ASSESSMENT EVIDENCE** (What evidence do I need to show the students have learned the Walk-Away?) | **Modifications/Accomoda-****tions** (ELL, IEP, GATE, etc.) |
| **Formative Evidence (checking for understanding throughout the lesson):*** Pretest
* Pie chart showing the four parts of soil
* Students will share characteristics that they see

**Content Walk-Away Evidence (Summative):**\* Students will take a post-test**Language Walk-Away Evidence (Summative):**\* Students will discuss with one another the characteristics of soil\* Students will label the different layers of soil without help. | Before I give the pre-test, I will mention that it is okay if they do not know the answers since we haven't learned them yet in class. Hopefully this statement will lessen the chance of students getting frustrated. |

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| Approx.Time | **ACTIVE LEARNING PLAN** |
| 5 minSIOP 26:Pacing1min5 min3 minutes3 minutes5 minutes5 minutes< 5 min | **Activate/Building Background Knowledge**I will pass out the pre-test now. Students will be given no more than 5 minutes to complete it. On the board I will have the instructions: Put everything away except a pencil. When you have your desk cleared, I will give you a pre-test. When you get done with your test, hold it up for me to collect. If you finish before the 5 minutes is up, you may sketch a picture of what you think the lesson might be about (Strategy 32: Use the first 5 minutes productively).Last week you learned all about rocks and how they are formed. You also know that weathered rocks create soil. (SIOP 8: Link to past learning)Today we are going to learn about soil. (Read together the objectives) (SIOP 22: Language Skills: reading, writing, listening, and speaking). I will also read the vocabulary words that will be taught (SIOP 9: Vocabulary). (Strategy 18: Preview the lesson)*Formative assessment:*

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| Learning Goal | Success Criteria | Assessment Strategy |
| Activate previous knowledge | Students will complete the pre-test | I will see what the students already know by looking at their pre-tests. |

***Modification/accommodations: (ELL, IEP, GATE, etc.)***If there is a student who believes they don't know anything about soil, I will provide scaffolding by giving cues.**Focus Lesson (“I do it”)**Soil is similar to cake in that they both are made up of different “ingredients” and layers. I will show the students a picture of cake layers as well as soil layers. (SIOP 7: Linked to background) I will mention a time I had a layered cake and have students raise their hands to show if they have had a similar experience. (Strategy 16 Spark interest)Soil is made up of: 45% Mineral Matter (This includes minerals and rocks) “Remember all the different types of rocks we learned about last week? Those would all be classified in this part of soil” (Strategy 17: Link Lessons)25% air25% Water5% Organic MatterAll parts are non living except organic matter which can include bugs, plants, dead animals etc.A soil profile shows what the ground would look like if you dug straight into the Earth. (SIOP 10: Appropriate speech)( I will show a picture of a soil profile right now) (SIOP 4: Supplementary materials)Top soil: Is darker due to the high amounts of living and dead organisms. Creatures like to live here because it is rich in nutrients. When the organisms decompose more nutrients are created. Plants roots grow in this layer because it is where they can absorb water and nutrients. Remember, plants make their food from the sun, but nutrients are also necessary for the plant to remain healthy. The soil provides them with “vitamins” similarly to how we take additional vitamins with our food. (show picture) (SIOP 11: Clear explanation)Subsoil: Larger grains of rocks and in usually a lighter color. Plants do not grow well in subsoil because it is tightly packed and has fewer nutrients.Bedrock: Made up of different types of rocks. Bedrock eventually erodes and becomes topsoil (over thousands of years). This layer can be a few inches to several feet under the surface.Each layer of soil will have its own slide on the projector. The slides have the layer name written out in big letters along with characteristics and pictures (Strategy 29: Use visuals and graphics).***Formative Assessment:***

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| Learning Goal | Success Criteria | Assessment Strategy |
| Know what soil is made up of | Create a pie chart of the 4 parts of soil (SIOP 6: Meaningful Activities) | Students will each create their own, which they will hand in. (SIOP 12: A variety of techniques) |

***Modification/accommodations:****I will scaffold by starting the chart and by letting them figure the rest out on their own. (SIOP 5: Adaptation of content)***Guided Instruction (“We do it”)**I will put up some different pictures of the different layers and we will discuss different characteristics that we see (SIOP 18: Wait time). Since the Smart Board is no longer available, I will use the whiteboard to write our findings. Based on the characteristics we see, we will vote on which layer it is. (SIOP 23 Content objective supported, 24: Language objective supported) The right answer will pop up when I click the screen.***Formative Assessment:***

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| Learning Goal | Success Criteria | Assessment Strategy |
| Identify different characteristics in soil | Students will share characteristics they see. | I will watch as students vote for which soil layer they think it would be. |

***Modification/accommodations:***The voting will be very casual and just quick enough for me to get an idea of their understanding and not long enough for them to look around at other peoples votes.**Collaborative/Cooperative (“You do it together”)**Each table will discuss what they see in the soils on their desks. (SIOP 16 Interaction, SIOP 17- Grouping) As they are doing this, they will be writing their findings on their chart that was provided. They will assign each soil to a specific layer and describe why on their chart. After 7-10 minutes, I will gather their attention and I will ask each table what soil they thought each was.***Formative Assessment:***

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| Learning Goal | Success Criteria | Assessment Strategy |
| Students will show understanding of soil layers and their characteristics | Students will fill out their soil observation charts as tables | I will observe as they work together and I will also review their completed charts afterward. |

***Modification/accommodations:***I will observe to make sure students are sharing the bins of soil and are each contributing their ideas.**Independent (“You do it alone”)**Students will take what they learned about the different soil layers and to create their own soil profile with empty bottles (SIOP 21: Activities to apply content/language knowledge). They will first scoop in bedrock, followed by subsoil, and then topsoil. (SIOP 20- Hands-on Materials) I will explain to them the steps in detail while showing them with my own bottle. I will explain that it is important to fill the bottle all the way up so that the layers do not mix and I will show them what would happen (Strategy 30: demonstrate your words).I will tell the students that if they get done early that can read a book a brought about soil or one of their own books until the class is ready (SIOP 22: Language skills-reading)***Summative Assessment:***Students will be given a post-test similar to the pre-test. This test will show what they learned from the lesson, and what needs to be taught again. (SIOP 30- Assessment)***Modification/accommodations:***If I were to teach the succeeding lesson, I would make sure to go over the content that was often missed on the post-test.**Closure/Review of walk-aways, vocabulary, and essential questions** *(Note: Closure includes student interactions, reflection, and/or demonstrations.)*After students have handed in their post-test we will spend the last few minutes of the lesson reviewing the goals of the lesson. We will review the vocabulary and objectives by going over the answers of the posttest. (SIOP 27: Review vocabulary, 28: Review key concepts, 29: Feedback) |

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| **SIOP Indicators** *(Add SIOP number and description within the lesson plan)*Preparation: 1-Content objectives, 2-Language objectives, 3-Content appropriate, 4-Supplementary materials, 5-Adaptation of content, 6-Meaningful activitiesBuilding Background: 7-Linked to background, 8-Linked to past learning, 9-Key vocabularyComprehensive Input: 10-Appropriate speech, 11-Clear explanation, 12-Variety of techniquesInteraction: 16-Opportunity for interaction, 17-Grouping supports objectives, 18-Wait time, 19-Opportunity for L1 studentsPractice/Application: 20-Hands-on materials, 21-Activities to apply content/language knowledge, 22-Language skills: reading, writing, listening, speakingLesson Delivery: 23-Content objective supported, 24-Language objective supported, 25-Students engaged, 26-PacingReview/Assessment: 27-Review vocabulary, 28-Review concepts, 29-Feedback, 30-Assessment |

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| **TEACHING NOTES** |
| ***What do I need to remember to do?*** *Follow the lesson plan!****What materials do I need to have ready?*** *Books on soil for fast finishers, PowerPoint, separate bins of soil layers, 25 small containers for students' soil profiles, plastic spoons, magnifying glasses if available.* ***What is the approximate time needed for this lesson?*** *30 minutes* |

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| **REFLECTION AFTER LESSON** |
| *How can I use the assessment data to reflect on & evaluate the outcomes of teaching and learning? How can I transfer what I learned from teaching this lesson to future teaching? What was effective and not effective? What goals can I set to improve my practice and student learning?* |