



Lesson 4: Building Soil Layers

Grade Level: 1st Grade

Time: 1 hour

Subjects: ELA, Science

Overview: This lesson is Lesson 4 of 5 in *The Soil Neighborhood* unit within the *Growing Readers* micro-curriculum, based on a series of books written by Kansas author Dan Yunk. Lesson 4 serves as an integrated science and literacy lesson focused on building students' understanding of soil layers and how those layers work together to support plant growth. Students connect their learning to *The Soil Neighborhood* by recalling familiar soil neighbors and placing them within a layered soil model that represents rock, clay, sand, and topsoil. Through hands-on modeling, structured discussion, explicit phonics and word analysis, and sequenced drawing and writing, students deepen both scientific understanding and foundational literacy skills. This lesson emphasizes first-grade expectations for phonics application, oral language, and written expression while reinforcing place-based connections to Kansas agriculture and the importance of healthy soil.

Skillset: Soil layers, sequencing, modeling, observation, phonemic awareness, phonics, decoding one- and two-syllable words, oral language, vocabulary development, comprehension, informative drawing and writing, capitalization, spacing, punctuation, and sentence sequencing.

Kansas Academic Standards

Kansas ELA Standards

RF.1.3 Know and apply grade-level phonics and word analysis skills in decoding words.

RF.1.3.a Know the sound-spelling correspondences for common consonant digraphs

RF.1.3.b Decode regularly spelled one-syllable words.

RF.1.3.c Know final -e and common vowel team patterns for representing long vowel sounds.

RF.1.3.d Use knowledge that every syllable must have a vowel sound to determine the number of syllables in a printed word.

RF.1.3.e Use vowel patterns to decode two-syllable words by breaking the words into syllables.

W.1.3 Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.

W.1.11 Demonstrate command of standard English capitalization, punctuation, and spelling when writing.

Science Standards

1-LS1-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

1-LS-2 Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

1-ESS3-1 Use a model of the land to represent the relationship between the needs of plants and animals and the places they live.

National Agriculture Literacy Outcomes

Plants and Animals for Food, Fiber, and Energy

T2.K-2.e Identify the importance of natural resources (e.g., sun, soil, water, minerals) in farming.

Objectives:

Science Objectives

Students will be able to:

- identify and name the four basic soil layers (rock, clay, sand, and topsoil) using a visual and physical model.
- use a model to represent how soil layers are arranged and explain that plants grow best in the topsoil layer.
- describe how soil supports plant growth by explaining that soil provides a place for plants to live and grow.

English Language Arts Objectives

Students will be able to:

- apply phonics and word analysis skills to read and write soil-related words by identifying beginning sounds, vowel sounds, and sound–spelling correspondences.
- associate long and short vowel sounds with common spellings.
- recognize and read grade-appropriate and high-frequency words used in shared and independent writing.
- draw and write a sequenced response that describes soil layers using simple sentences and temporal order.
- demonstrate command of capitalization, spacing, and punctuation when writing about their soil model.

Materials Needed

Edible Soil Layers Activity

- Clear cups or bowls (one per student)
- Vanilla wafers (rock layer)
- Chocolate chips and butterscotch chips (mixed for clay layer)
- Toasted oats cereal (sand layer)
- Crushed Oreos (topsoil layer)
- Gummy worms
- Napkins and hand wipes

Instructional Materials

- Chart paper and markers
- Student drawing/writing paper
- Crayons or pencils
- Visual soil layer cards (provided below)
- Sentence frames for the writing section
- Displayed word list for the writing section

Lesson Procedures

1. Activating Prior Knowledge (Connecting to *The Soil Neighborhood*). Gather students and explain: “Today, we are using what we remember from *The Soil Neighborhood*. We are not rereading the book, but we are connecting our learning back to the soil neighbors.”
 - a. Ask students: “Who remembers Rocky, Clay, or Sandy?”



- b. Explain: "Those soil neighbors don't all live in the same place. Today we're going to learn where they belong underground, in soil layers."
2. Introducing Soil Layers. Explain: "Soil is made of layers stacked on top of each other."
 - a. Introduce the layers in order using visual soil layer cards. Stack the cards as you name each layer to help make the idea of layers easier to see and understand.
 - Rock (bottom layer)
 - clay
 - sand
 - topsoil (top layer)
 - b. Ask students:
 - "Which layer is on top?"
 - "Which layer is on the bottom?"
 - c. Explain to students: "Next, we're going to build a model to show these layers."
3. Edible Soil Layers Activity. Explain to students: "This is a science model first. We build first, then we eat after we complete our research at the end of the lesson."
 - a. Review expectations:
 - build carefully
 - keep materials in your cup
 - wait to eat until the teacher says
 - b. Model building the layers while naming each one:
 - Vanilla wafer → rock (bottom layer)
 - Chocolate and butterscotch chips → clay
 - Toasted oats cereal → sand
 - Crushed Oreos → topsoil (top layer)
 - Gummy worms are placed on top
 - c. As students build, ask:
 - "Which layer did you add first?"
 - "Which layer is where plants grow best?"
 - d. Prompt students: "When your model is finished, set it down and look at me. If you need help, raise your hand."
4. Vocabulary & Oral Language Development. Explain: "*Now that we have a model, we are going to use science words to talk about what we built.*"
 - a. Review vocabulary:
 - Rock – big, hard pieces at the bottom of the soil
 - Clay – smooth, sticky soil
 - Sand – tiny, gritty pieces of soil
 - Topsoil – the top layer of soil where plants grow best
 - b. Ask students:
 - "*What layer is on the bottom?*"
 - "*What layer is best for plants?*"
 - c. Explain to students: "*Next, we're going to listen for sounds in our soil words, just like readers and writers do.*"
5. Phonics & Word Analysis. Explain: "*Readers and writers use letters and patterns in words to help them read. Today, we are going to read our science words by looking at the letters and using phonics.*"
 - a. Display the words on chart paper or a pocket chart. Point to each word as students read it.
 - Rock

- Sand
 - Soil
 - Dirt
 - Plant
- b. Have students:
 - Track the word with their finger
 - Read the words aloud together
 - Blend the sounds
 - c. Ask students:
 - “Is this a one-syllable word?”
 - “Let’s clap the syllables as we read it.”
 - d. Explain to students: “Vowels can make different sounds. Let’s look at the vowel pattern and listen to the sound when we read the word.”
 - e. Underline the vowel pattern in each word as students read.
 - Sand (short a)
 - Clay (long a, vowel team ay)
 - Soil (vowel team oi)
 - Rock (short o)
 - Dirt (r-controlled ir)
 - Plant (short a)
 - f. Ask students:
 - “What vowel sound do you hear?”
 - “Is the vowel short or long?”
 - g. Display and read the following words together.
 - Rock
 - Sand
 - Clay
 - Garden
 - Topsoil
 - Dirt
 - Plant
 - h. Have students underline the vowel(s), clap, and count syllables.
 - i. Explain to students: “Every syllable has a vowel sound. We can count the vowel sounds to help us count syllables.”
 - j. Ask students:
 - “How many vowel sounds do you see?”
 - “How many syllables does that make?”
 - k. Write the words and visually divide them into syllables.
 - Top/soil
 - Gar/den
 - l. Have students read each syllable, then blend the word.
 - m. Explain: “When a word looks long, we break it into parts, read each part, and then read the whole word.”
 - n. Explain to students: “Now that we’ve read these words, we can use them when we write about our soil model.”
6. Shared Writing & Conventions
 - a. Write and read three sequenced sentences aloud, tracking print.
 - “First, the rock is at the bottom.”

- “Next, the sand and clay are in the middle.”
 - “Last, the topsoil is on top.”
- b. Model and think out loud:
- uppercase letter at the beginning of each sentence
 - spaces between words
 - period at the end of each sentence.
 - Temporal words (first, next, last) to show order
- c. Ask students:
- “Which word tells us what happened first?”
 - “Which word tells us what happened next?”
 - “Which word tells us the ending?”
- d. Explain to students: *“Writers use order words to tell what happened first, next, and last. Now you will draw and write about your soil layers in order.”*
7. Student Writing Component. Explain to students: *“First, draw your soil model with the layers in order. Then write two or more sentences to tell what happened first, next, and last when you built your soil model.”*
- a. Provide options for students to choose from:
- Write using sentence frames with order words
 - Write original sentences using first, next, and last.
 - Label layers and write one sequenced sentence
 - Dictate one sentence and write another independently
- b. Provide sentence frames (posted or available):
- “First, I put ____.”
 - “Next, I added ____.”
 - “Last, I put ____ on top.”
 - “Finally, my soil model is finished.”
- c. Remind students to:
- start with an uppercase letter
 - put spaces between words
 - use order words
 - end with a period
- d. Prompt students: *“When you finish, reread your writing. Check that your sentences are in order. Then put your pencil down and be ready to share one sentence.”*
8. Collaborative Discussion & Reflection. Gather students and explain: *“Now we’re going to talk about what our soil model shows and what we learned.”*
- a. Ask students:
- “Which soil layer is best for plants to grow?”
 - “Why do farmers care about soil?”
- b. Encourage peer responses:
- “I agree because...”
 - “I want to add...”
- c. Explain to students: *“We learned that soil layers help plants grow. Plants don’t just grow in our classroom; they grow in gardens, fields, and pastures where people take care of the land. In our state of Kansas, many people use soil every day to grow food and raise animals. Let’s think about how soil layers help farmers here in Kansas.”*

9. Kansas & Place-Based Connection. Explain: *“We talked about how soil layers help plants grow in gardens and fields. In Kansas, many people depend on healthy soil every day. Kansas is a farming state, and farmers need healthy soil layers to grow crops and grass for animals.”*
 - a. Ask students:
 - *“Where have you seen soil near your home?”*
 - *“What plants or crops grow in Kansas fields?”*
 - b. Prompt: *“To help us remember what we learned, let’s review our soil words one more time.”*
10. Vocabulary Review
 - a. Review each word with a simple definition as students look at their soil model:
 - Rock – big, hard pieces at the bottom of the soil
 - Clay – smooth, sticky soil
 - Sand – tiny, gritty pieces of soil
 - Topsoil – the top layer of soil where plants grow best
 - b. Prompt students: *“Point to the layer I say on your model.”* Say the names of each layer.
11. Eating the Soil Model
 - a. Explain expectations clearly to students before eating: *“You did a great job building your soil model and using science words. Now that we’ve conducted our research, you may eat your soil model.”*
 - b. Review expectations:
 - *“Eat your own model.”*
 - *“Use gentle hands.”*
 - *“Stay seated while eating.”*
 - *“Raise your hand if you need help.”*
 - c. Reinforce learning while students eat. Ask students:
 - *“What layer are you eating now?”*
 - *“Which part was on the bottom?”*
 - *“Which layer helps plants grow best?”*
 - d. Explain to students: *“Today, you were soil scientists. You learned that soil has layers and that those layers help plants grow in Kansas and all around us.”*

Assessment:

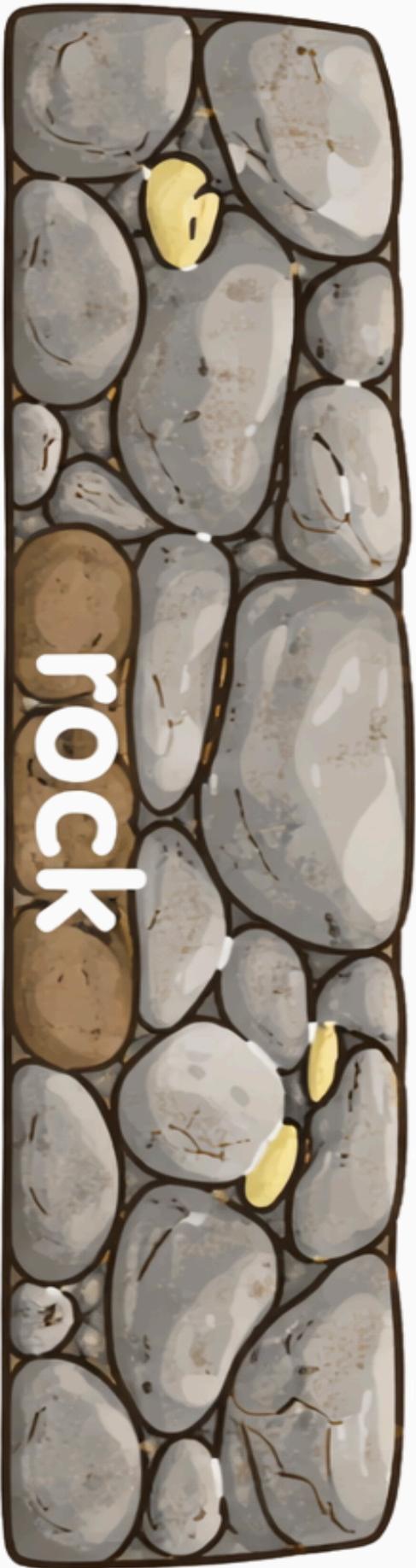
Student understanding is assessed through ongoing formative and observational measures embedded throughout the lesson, including accurate construction of the soil layer model in correct sequence, appropriate use of soil vocabulary, application of phonics and word analysis skills when reading soil-related words, and sequenced drawing and writing using temporal words and writing conventions to demonstrate understanding of soil layers and how they support plant growth.

Supplemental Activities:

Have students color the soil layers coloring sheet provided below.

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SOIL LAYERS

