Lesson 4: Building Soil Layers

Grade Level: Kindergarten

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, while engaging in hands-on modeling, structured discussions, phonics-based word analysis, and drawing and writing activities. This lesson strengthens foundational literacy skills, including phoneme–grapheme correspondence, high-frequency word recognition, and writing conventions, while reinforcing place-based connections to Kansas agriculture and the importance of healthy soil.

Skillset: Soil layers, sequencing, modeling, observation, phonemic awareness, vocabulary development, phoneme–grapheme correspondence, phonics, high-frequency words, oral language, comprehension, informative drawing and writing, proper use of uppercase and lowercase letters, spacing, and punctuation.

Kansas Academic Standards
Kansas ELA Standards
RF.K.3 Know and apply grade-level phonics and word analysis skills in decoding words.
RF.K.3.a Demonstrate basic knowledge of phoneme–grapheme correspondences of predictable consonants.
RF.K.3.b Associate the long and short sounds with common spellings (graphemes) for the five major vowels.
RF.K.3.c Read common high-frequency words (e.g., *the, of, to, you, she, my, is, are, do, does*).
RF.K.3.d Distinguish between similarly spelled words by identifying the sounds of the letters that differ.
W.K.3 Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events in sequence and provide a reaction.
W.K.11 Demonstrate command of standard English capitalization, punctuation, and spelling when writing.

Science Standards
K-ESS3-1 Use a model to represent the relationship between the needs of plants 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 soil layers as rock, clay, sand, and topsoil.
- explain that soil has layers that work together to help plants grow.
- utilize a model to represent soil layers.

English Language Arts Objectives
Students will be able to:
- apply phoneme–grapheme correspondence when writing soil-related words.
- associate long and short vowel sounds with common spellings.
- read and use common high-frequency words.
- draw and write a sequenced response describing soil layers.
- utilize capitalization, spacing, and punctuation in writing.

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)

Lesson Procedures
1. Activating Prior Knowledge (Connecting to *The Soil Neighborhood*)
    a. 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."
    b. Ask students:
        - "Who remembers Rocky, Clay, or Sandy?"
    c. 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: "We can read and write science words by listening for the sounds we hear in words and matching those sounds to letters."
   a. Say each word slowly and emphasize the beginning sound. Have students repeat the sound, then the word. Prompt students to identify the letter that makes each beginning sound.
      - rock → /r/
      - sand → /s/
      - clay → /k/
      - soil → /s/
   b. Explain that vowels can make different sounds. Say each word aloud and have students listen carefully.
      - short a → sand
      - long a → clay
   c. Ask students:
      - "Do these words sound the same in the middle or different?"

d. Similar word comparisons: say each pair aloud and have students listen for the sound that changes.
    - sand / land
    - rock / sock
e. Ask students:
    - *"Which sound changed?"*
    - *"Which letter changed?"*
f. Explain to students: "Some words are so common that we see them again and again when we read and write. Let's read these words together: the, is, my."
g. Read the words aloud to students.
h. Explain to students: "These words help our sentences make sense. We're going to use them when we write about our soil model."

6. Shared Writing & Conventions
    a. Write and track the sentence:
    "The soil has layers."
    b. Model:
        - uppercase letter at the beginning
        - spaces between words
        - period at the end
    c. Ask students:
        - "Where does the sentence start?"
        - "What does the period tell us?"
    d. Explain to students: "Now you will draw and write about your soil layers."
7. Student Writing Component. Explain to students: "First, draw your soil model. Then write your sentences."
    a. Provide options for students to choose from:
        - copy a sentence frame
        - label layers with beginning sounds
        - dictate ideas to the teacher
    b. Write sentence frames:
        - "Soil has layers."
        - "My soil has ____."
        - "The top is ____."
    c. Remind students to:
        - start with an uppercase letter
        - put spaces between words
        - end with a period
    d. Prompt students: "When you finish, put your pencil down and be ready to share one thing you noticed."
8. Collaborative Discussion & Reflection. Gather students and explain: "Now we're going to talk about what our soil model shows."
    a. Ask students:
        - "Which layer is best for plants?"
        - "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 grows 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 correct construction of the soil layer model, vocabulary use, phonics application, and sequenced drawing or writing demonstrating understanding of soil layers and writing conventions.

Supplemental Activities:
Have students color the soil layers coloring sheet provided below.

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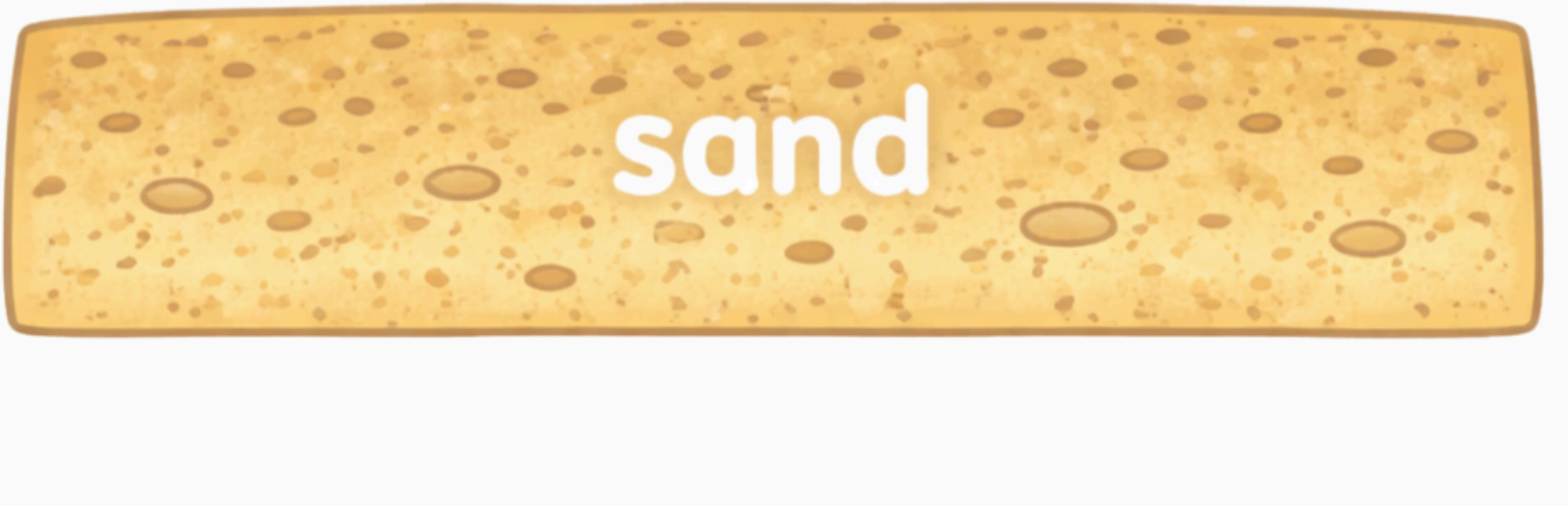
rock


clay


sand

topsoil

SOIL LAYERS