



Lesson 4: Building Soil Layers

Grade Level: 2nd 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 integrates science and literacy by engaging students in building a layered soil model to deepen their understanding of soil structure and its role in supporting plant growth. Students recall familiar soil neighbors from *The Soil Neighborhood* and represent rock, clay, sand, and topsoil in a hands-on model. Through structured discussion, shared narrative writing, and independent narrative writing, students describe the sequence of events involved in building the model, incorporate descriptive language and feelings, and reflect on the importance of soil for plants and farming in Kansas. The lesson emphasizes second-grade expectations for narrative writing, use of adjectives and adverbs, and clear sequencing, while reinforcing place-based connections to agriculture and land use.

Skillset: Soil layers, sequencing events, modeling, observation, oral language, vocabulary development, listening and reading comprehension, descriptive language, narrative writing, use of temporal words, adjectives and adverbs, expression of thoughts and feelings, revising, editing, and place-based reasoning related to agriculture.

Kansas Academic Standards

Kansas ELA Standards

RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

W.2.3 Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.

W.2.5 With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.

W.2.10 Demonstrate command of the conventions of standard English grammar and usage when writing.

W.2.10.e Use adjectives and adverbs, and choose between them depending on what is to be modified.

Science Standards

2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.

2-ESS2-2 Develop a model to represent the shapes and kinds of land and bodies of water in an area.

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 physical model.
- Develop and use a model to represent how soil layers support plant growth, particularly the role of topsoil.
- Explain how soil is part of the land and helps support living things, making connections to farming and land use in Kansas.

English Language Arts Objectives

Students will be able to:

- Describe the connection between the steps used to build the soil model and how soil layers are arranged.
- write a well-elaborated, sequenced narrative describing how the soil layers were built using temporal words and a sense of closure.
- revise and edit writing with guidance, focusing on clarity, detail, and conventions.
- use adjectives and adverbs appropriately to describe soil layers in writing.
- demonstrate command of capitalization, punctuation, and spelling in final written responses.

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
- Pencils and crayons
- Visual soil layer cards (provided below)
- Posted sentence frames for sequenced narrative writing
- Displayed academic vocabulary list (rock, clay, sand, topsoil)

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?*”
 - “*What do you remember about their jobs in the soil?*”



- b. Explain: *“Those soil neighbors don’t all live in the same place. Today we’re going to learn how they are arranged underground in soil layers and why where they live matters for plants.”*
2. Introducing Soil Layers. Explain: *“Soil is made of layers stacked on top of each other, and each layer has a different job.”*
- 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)
 - Ask students:
 - “Which layer is on top?”*
 - “Which layer is on the bottom?”*
 - 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.”*
- Review expectations:
 - build carefully
 - keep materials in your cup
 - wait to eat until the teacher says
 - 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
 - As students build, ask:
 - “Which layer did you add first?”*
 - “Which layer is where plants grow best?”*
 - 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: *“Good writers use strong words to help the reader picture what happened. Today, we’re going to use science words and describing words to talk about our soil model before we write our soil story.”*
- Review vocabulary: As students look at their soil models, review the core vocabulary and emphasize the underlined descriptive language.
 - Rock – large, **hard** pieces at the bottom of the soil
 - Clay – **smooth, sticky** soil
 - Sand – **tiny, gritty** pieces of soil
 - Topsoil – **dark, rich** soil where plants grow best
 - Explain: *“These describing words are called adjectives. They help tell what the soil is like.”*
 - Ask students to respond in complete sentences.
 - “Describe the rock layer using one adjective.”*
 - “Which layer feels gritty or smooth?”*
 - “How would you describe the topsoil?”*
 - Model a response if needed:
 - “The topsoil is dark and crumbly.”*

- e. Explain and model to students: *“When we tell a story, we also describe how actions happen. Words that describe actions are called adverbs.”*
 - f. Model orally using student models:
 - *“I **carefully** placed the rock layer in my cup.”*
 - *“I **slowly** added the sand.”*
 - g. Ask students:
 - “How did you add the clay?”
 - “What word could tell how you placed the topsoil?”
 - h. Prompt students to orally rehearse a sentence they might write.
 - “Turn to your neighbor and tell one sentence about your soil model using an adjective.”
 - “Tell them a sentence using an adverb.”
 - i. Use example student frames (oral only):
 - “The ____ soil was ____.”
 - “I ____ added the ____ layer.”
 - j. Explain to students: “You just practiced the words writers use to tell a story. Keep these describing and action words in your mind as we write about building our soil model.”
5. Shared Writing & Conventions. Explain to students: *“Today, we are not just explaining soil layers—we are going to tell the story of how we built our soil model. Writers tell events in order and include details about what they did and how they felt.”*
- a. Write and read a short narrative together, tracking print as students follow along:
 - “First, I carefully placed the hard rock layer at the bottom of my cup.”
 - “Next, I slowly added the smooth clay and gritty sand in the middle.”
 - “Then, I gently sprinkled the dark topsoil on top, and I felt excited because my soil looked real.”
 - “Finally, my soil model was finished, and I was proud of my work.”
 - b. Model and think out loud to highlight narrative elements. Model and name:
 - temporal words (first, next, then, finally)
 - actions (placed, added, sprinkled)
 - adjectives (hard, smooth, gritty, dark)
 - feelings (excited, proud)
 - a clear ending
 - c. Explain to students: “Good narratives don’t just tell what happened—they tell how it happened and how the writer felt.”
 - d. Guide students to analyze the writing. Ask students:
 - “Which words tell us the order of events?”
 - “Which word describes how the soil looked or felt?”
 - “Where did the writer share a feeling?”
 - “How does the writer end the story?”
 - e. Explain to students: “Now you are going to write your own soil story. You will tell the events in order, use descriptive words, and end your story clearly.”
6. Student Writing Component. Explain to students: *“First, draw your soil model. Then write a short story about building your soil model. Your story should tell what you did, how you did it, and how you felt.”*
- a. Students will write:
 - One short narrative paragraph (4-6 sentences)
 - Events in logical order

- Temporal words to show sequence
 - Adjectives to describe soil layers
 - Adverbs to describe how actions happened
 - At least one feeling connected to the experience
 - A sentence that provides closure
- b. Provide sentence starters with feelings that can be used or adapted by students:
- “First, I carefully placed the ___ layer, and I felt ___.”
 - “Next, I slowly added the ___ layer because it was ___.”
 - “Then, I ___, and I felt ___.”
 - “Finally, my soil model was finished, and I felt ___.”
- c. Explain and remind students: *“Writers don’t just tell what happened — they tell how they felt. Think about how you felt when your soil model started to look finished.”*
- d. Post examples:
- Excited
 - Proud
 - Happy
 - Curious
 - Surprised
- e. Model orally if needed.
- *“I felt proud when my soil model was finished.”*
- f. Explain and remind students: *“Remember, adjectives describe nouns like soil layers, and adverbs describe how actions happen. Feelings help your reader understand why the event mattered.”*
- g. Post examples:
- Dark topsoil
 - Gritty sand
 - Carefully placed
 - Slowly added
- h. When finished, ask students to reread and check:
- “Did I tell events in order?”
 - “Did I describe at least one soil layer?”
 - “Did I include a feeling?”
 - “Did my story have a clear ending?”
- i. Prompt students: *“When you finish, choose one sentence that shows a feeling. Be ready to share it with the class.”*
7. Collaborative Discussion & Reflection. Gather students and explain: *“Now we’re going to talk about what our soil model shows, tell the story of how we built it, and think about why soil is important for farmers.”*
- a. Ask students:
- *“What did you do first when you started building your soil model?”*
 - *“What part was easy or tricky for you?”*
 - *“How did you feel when your soil model was finished?”*
- b. Ask students:
- *“Why is soil important for plants?”*
 - *“Why do you think farmers care about healthy soil?”*
 - *“What might happen if the soil was not healthy or did not have good topsoil?”*
- c. Encourage peer responses:
- *“I agree because...”*

- *“I want to add...”*
 - *“I think soil is important because...”*
- d. 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.”*
8. 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?”*
9. Eating the Soil Model. Explain expectations clearly to students before eating: *“We’ve talked about how soil helps farmers grow food here in Kansas. The model you built shows how soil works in the real world. Now that we’ve finished our learning, it’s time to enjoy the model we made.”*
- a. Review expectations:
- *“Eat your own model.”*
 - *“Use gentle hands.”*
 - *“Stay seated while eating.”*
 - *“Raise your hand if you need help.”*
- b. 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?”*
- c. 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:

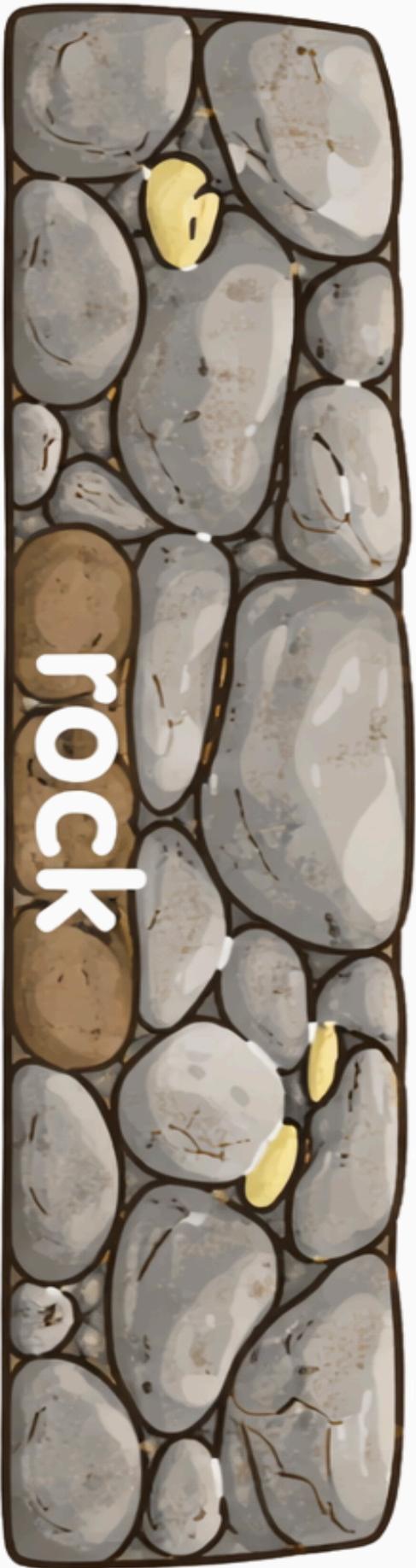
Student understanding is assessed through ongoing formative and observational measures, including accurate sequencing of the soil layer model, appropriate use of academic soil vocabulary, participation in reflective discussion about soil and farming, and a well-elaborated narrative writing piece using temporal words, descriptive language, and feelings to demonstrate understanding of soil layers and plant growth.

Supplemental Activities:

Have students color the soil layers coloring sheet provided below.

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SOIL LAYERS

