Lesson 3: Soil Helpers and Healthy Soil

Grade Level: Kindergarten

Time: 1 hour

Subjects: ELA, Science

Overview: This lesson is Lesson 3 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 3 serves as an integrated science and literacy lesson focused on a purposeful second read of *The Soil Neighborhood* to deepen student understanding of soil as a living system. Students build knowledge by identifying and discussing the roles of earthworms, bacteria, and minerals in maintaining healthy soil while engaging in structured discussions, multimedia exploration, and hands-on center-based activities. Through categorization, movement, observation, and oral language practice, students draw on their experiences with soil, land, and agriculture in Kansas. This lesson strengthens listening comprehension, vocabulary development, and collaborative conversation skills, supporting deeper learning and cross-curricular connections in subsequent lessons.

Skillset: Listening comprehension, rereading for understanding, collaborative discussion, vocabulary development, categorization, questioning and clarifying meaning, oral language, observation, modeling, soil health concepts, and place-based connections.

Kansas Academic Standards:
Kansas ELA Standards
RI.K.13 Actively engage in individual or group readings of informational text with purpose and understanding.
SL.K.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts.
SL.K.1.a Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking).
SL.K.1.b Continue a conversation through multiple exchanges.
SL.K.2 Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details.
SL.K.3 Ask and answer questions to seek help, get information, or clarify something that is not understood.
RI.K.12 With guidance and support from adults, explore word relationships and nuances in word meanings.
RI.K.12.a Sort common objects into categories to gain a sense of the concepts the categories represent.
RI.K.12.b Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites.
RI.K.12.c Identify real-life connections between words and their use.

RI.K.12.d Distinguish shades of meaning among verbs describing the same general action by acting out the meanings.

Science Standards
K-ESS3-1 Use a model to represent the relationship between the needs of plants and the places they live.
K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.
K-LS1-2 *(Supporting Standard)* Use observations to describe patterns in the natural world in order to answer scientific questions.

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 that soil is made of both living and nonliving parts.
- describe how earthworms, bacteria, and minerals help keep soil healthy.
- explain that healthy soil supports plant growth.

English Language Arts Objectives
Students will be able to:
- actively participate in a second read-aloud with a clear listening purpose.
- ask and answer questions about key details presented through text and media.
- apply new soil-related vocabulary during collaborative discussions.
- sort and categorize soil components to build conceptual understanding.
- participate in collaborative conversations by listening, taking turns, and building on others' ideas.

Materials Needed
- *The Soil Neighborhood* by Dan Yunk
- Chart paper and markers
- Smartboard or projector for YouTubeKids Video: Soil Is Alive! https://www.youtubekids.com/watch?v=Q-J2FErZHuA
- Plastic or rubber earthworms
- Clear plastic container or jar
- Soil (or layered sand/soil)
- Water
- Sorting cards and mats (living vs. nonliving soil components) provided below
- Student drawing paper
- Crayons or pencils

Lesson Procedures
1. Activating Prior Knowledge
    a. Gather students and explain: "In our last lesson, we explored how soil feels. Today, we are going to reread *The Soil Neighborhood.* This time, we are listening very carefully because we want to learn new information."

b. Explain the purpose of a second read: *"G*ood readers read books more than once. The first time we read to understand the story. The second time, we read to learn more details."
c. Ask students:
   - *"*What do you remember about the soil neighbors?"
   - "What do you think might be living in the soil?"

2. Purposeful Second Read-Aloud
   a. Set a listening purpose: "While I read today, listen for who or what helps the soil stay healthy."
   b. Read The Soil Neighborhood aloud.
      Pause at key pages to:
      - highlight illustrations,
      - clarify vocabulary,
      - ask brief questions.
   c. Ask students during reading:
      - "What is happening under the ground?"
      - "Who is helping the soil here?"
   d. After reading, ask students:
      - "What did we learn today that we didn't notice the first time?"
      - "Why is soil more than just dirt?"
3. Video Exploration: Confirming Understanding Through Media
   a. Introduce the video: *"*We learned more from our book *The Soil Neighborhood,* and now we are going to watch a short video that helps us see soil helpers we cannot see easily, like tiny living things."
   b. Set a viewing purpose: *"*While you watch, listen and look for who lives in the soil and what they do."
   c. Watch the video: SciShow Kids – *Soil Is Alive!* (YouTube Kids) https://www.youtubekids.com/watch?v=Q-J2FErZHuA
   d. Ask students:
      - "What living things did you see in the soil?"
      - "What did the video show that the book could not show?"
      - "What jobs do soil helpers do?"
   e. Invite questions:
      - "What does bacteria do?"
      - "Why do earthworms move through soil?"
   f. Explain to students: "Books and videos can teach us the same idea in different ways."
4. Hands-On Learning Centers: Modeling Soil Health
   a. Explain to students: "Scientists do not just read and watch videos; they observe, build models, and talk about what they notice. Today, we are going to work at different centers to help us understand how soil helpers keep soil healthy."
   b. Review expectations before beginning:
      - Use gentle hands with materials.
      - Talk quietly with your group.
      - Take turns and listen to others.
      - Stay at your center until it is time to rotate.
      - Keep your hands to yourself.
   c. Students rotate through centers in small groups. Each center lasts approximately 7-8 minutes.

Center 1: Earthworm Tunnel Model
Materials:

- Clear plastic container or jar
- Soil (or layered sand/soil if available)
- Plastic or rubber earthworms
- Small spray bottle with water (teacher-controlled)

Teacher Directions: Explain to students: “This container helps us see what usually happens underground where we cannot see.”

a. Model first:
   - Place the worm on top of the soil.
   - Slowly move it through the soil to create tunnels.
b. Student Task:
   - Students take turns gently moving the worm through the soil.
   - Observe how the soil changes when tunnels are made.
c. Guiding Questions:
   - “What happens to the soil when the worm moves?”
   - “What do the tunnels help water and air do?”
   - “Why would this be helpful in a garden or field?”
d. Explain: “Earthworms do this work every day in farm fields, pastures, gardens, and grassy land.”

Center 2: Living vs. Nonliving Soil Helpers Sorting
Materials:

- Picture cards:
  - earthworms
  - bacteria
  - plant roots
  - rocks
  - minerals
  - fungi
  - sticks
  - dead plants
  - bones
- Two labeled mats:
  - *Living Soil Helpers*
  - *Nonliving Soil Parts*

Teacher Directions: Explain to students: “This center helps us look closely at what is in the soil. Some things in soil are living, and some things are nonliving. Both are important.”

a. Model expectations:
   - Place the two mats on the table or floor.
   - Spread the picture cards face up.
   - Demonstrate sorting one living item (e.g., earthworm) and one nonliving item (e.g., rock).
b. Think aloud while modeling:
   - “This earthworm is living because it moves and grows.”
   - “This rock is nonliving because it does not grow or need food.”
c. Student Task:

- Sort cards into the correct category.
- Talk with partners about why each card belongs where it does.

d. Prompt students to explain their thinking:
   - "Why is this living?"
   - "How does this help soil?"

e. Guiding Questions:
   - "Do living and nonliving things both help soil?"
   - "What would happen if soil was missing one of these?"

Center 3: How Soil Helpers Move
Materials:

- Open space on the floor
- Verbs written on the chart: move, wiggle, dig, burrow

Teacher Directions: Explain: "Words help us understand how things work. Today, we are going to use our bodies to show what soil helpers do. We will move safely, take turns, and watch each other."

a. Review expectations:
   - Keep your body in your own space.
   - Move slowly and safely.
   - Take turns acting and watching.
   - Use quiet voices when talking.

b. Think Aloud While Modeling:
   - Hold up the verb card 'move' and say: "I see the word move. That tells me something is changing its place. I am going to move my body a little." Demonstrate a small movement.
   - Hold up 'wiggle' and say: "The word wiggle tells me the movement is small and twisty. Watch how my body wiggles." Demonstrate wiggling.
   - Hold up 'dig' and say: "The word dig means to move soil out of the way. I am going to pretend I am digging in the dirt." Demonstrate digging motions.
   - Hold up 'burrow' and say: "The word burrow tells me something is moving through the soil. This movement is slow and deep. Watch how my body moves low and close to the ground." Demonstrate burrowing motion.
   - Explain to students: "I noticed that these words all mean movement, but they are not the same. Some words tell us more about how something moves."

c. Student Task:
   - Act out each verb as it relates to earthworms.
   - Compare movements.

d. Guiding Questions:
   - "Which word shows the biggest movement?"
   - "Which word best describes how worms move underground?"
   - "Why does the word burrow tell us more than move?"

Center 4: Observation & Drawing – What's Under the Ground?
Materials:

- Drawing paper
- Crayons or pencils
- Optional real soil sample or photo

Teacher Directions: Explain to students: “At this center, we are going to look closely and draw what we think soil looks like under the ground. We will use careful eyes, quiet voices, and gentle hands.”

a. Review expectations:
   - Stay in your own space.
   - Use crayons or pencils carefully.
   - Draw first, then add details.
   - Be ready to talk about your drawing.

b. Think Aloud While Modeling:
   - Show a blank piece of paper and say: “I am thinking about what I learned from our book and video. I know soil has living helpers and nonliving parts.”
   - Begin drawing and narrate: “I am drawing the ground first because everything is under the ground. Now I am adding an earthworm because earthworms live in soil and help it stay healthy.”
   - Add another detail and say: “I am going to add rocks and minerals because they are part of the soil too. Even though rocks and minerals are not living, they still belong underground.”
   - Explain: “When scientists draw, they draw what they know. Scientists don’t rush; they add details that show their thinking.”

c. Student Task:
   - Draw what they think soil looks like underground.
   - Include at least one soil helper.
   - Students may label drawings with beginning sounds or dictate explanations to the teacher.

d. Guiding Questions:
   - “What lives under the ground?”
   - “Where are the worms?”
   - “What do the soil helpers help?”

5. Collaborative Discussion & Reflection. Gather students back together and explain: “Now that you have explored soil helpers at your centers, we are going to come back together to talk about what we learned.”

   a. Review discussion rules:
      - listening
      - taking turns
      - staying on topic

   b. Explain to students: “When we talk together, we listen to each other and build on ideas.” Ask students:
      - “How do earthworms help soil?”
      - “What other helpers did you learn about today?”
      - “Why do farmers, gardeners, and people who take care of parks care about healthy soil?”

   c. Model and prompt students to respond to classmates:
      - “I agree because…”
      - “I want to add…”

      If needed, scaffold by saying:
      - “Who can add to what ____ said?”
      - “Does anyone have a different idea?”

    d. Ask students:
        - “Which center helped you understand soil the most?”
        - “What is one new thing you learned about soil today?”
6. Kansas & Place-Based Connection
    a. Explain: “Kansas has many farms and ranches, but everyone depends on healthy soil. Soil helps farmers grow crops, helps grass grow for animals, and helps plants grow in gardens, parks, and schoolyards.”
    b. Show a simple map of Kansas and explain: fields grow food, pastures grow grass, and towns and schools use soil, too.
    c. Ask students:
        - “Where have you seen soil near your home?”
        - “Why is it important to take care of soil?”
7. Vocabulary Review:
    a. Prompt students: “Let’s review our vocabulary to help us remember what we learned.”
    b. Review:
        - Soil: loose material on the ground made of tiny pieces of rock and living things where plants grow.
        - Bacteria: very tiny living things in soil that help break down old plants.
        - Minerals: tiny pieces of rock in soil that help plants grow strong.
        - Earthworms: living helpers that move through soil and help keep it healthy.
    c. Have students use each word in an oral sentence.

Assessment:
Student understanding is assessed through formative and observational measures embedded throughout the lesson, including participation in rereading and multimedia discussion, vocabulary use, center-based exploration, categorization tasks, movement modeling, and student explanations of learning.

Author: Kelsy Sproul, Literacy Specialist, 2026 KFAC Teacher of the Year,
KFAC Curriculum Advisory Council, Former Elementary Teacher

Earthworm

Bacteria

Plant Roots

Sticks

Dead Plants

Bones

Minerals

Rocks

Fungi

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Living Soil Helpers

Nonliving Soil Parts