Title/Author: *Dirt* by Steve Tomecek

Suggested Time to Spend: 6 Days

Common Core grade-level ELA/Literacy Standards: RI.1.1, RI.1.2, RI.1.3, RI.1.4, RI.1.5, RI.1.6, RI.1.7; W.1.2, W.1.8; SL.1.1, SL1.2, SL.1.3, SL.1.4, SL.1.5; L.1.1, L.1.2, L.1.4

NC Science Standards: 1.E.2.1, 1.E.2.2, 1.L.1.2, 1.L.1.3

Lesson Objective:

Students will listen to an informational book about dirt and use literacy skills (reading, writing, discussion and listening) to understand how soil helps us survive.

Teacher Instructions

**Before the Lesson**

1. Read the Big Ideas and Key Understandings and the Synopsis below. **Please do not read this to the students**. This is a description to help you prepare to teach the book and be clear about what you want your children to take away from the work.

Big Ideas/Key Understandings/Focusing Question

*Big Idea*: Soil is essential for survival.

*Focusing Questions:*

* Why is soil important?
* How does dirt help animals survive? Plants? People?
* How can plants, animals and people help soil?

Synopsis

This book provides a lot of facts about soil. It describes how soil is made and the different layers that compose the soil’s structure. The book tells how soil provides homes for animals, minerals to help things grow and the different uses for soil. The book concludes by explaining how soil contributes to the foods we eat and helps humans survive. There is an experiment described at the end that demonstrates how the soil is a part of an ecosystem.

1. Go to the last page of the lesson and review “What Makes This Read-Aloud Complex.” This was created for you as part of the lesson and will give you guidance about what the lesson writers saw as the sources of complexity or key access points for this book. You will of course evaluate text complexity with your own students in mind, and make adjustments to the lesson pacing and even the suggested activities and questions.
2. Read the entire book, adding your own insights to the understandings identified. Also note the stopping points for the text-inspired questions and activities. *Hint: you may want to copy the questions vocabulary words and activities over onto sticky notes so they can be stuck to the right pages for each day’s questions and vocabulary work.*
3. Consider pairing this series of lessons on *Dirt* with a text set to increase student knowledge and familiarity with the topic. A custom text set can be found[here](https://achievethecore.org/page/3041/dirt-with-companion-text-set)[.](https://drive.google.com/drive/folders/0B66A6Ds77LpiU3dIZVFxMFFkLUk) *Note: This is particularly supportive of ELL students.*

*Note to teachers of English Language Learners (ELLs): Read Aloud Project Lessons are designed for children who cannot read yet for themselves. They are highly interactive and have many scaffolds built into the brief daily lessons to support reading comprehension. Because of this, they are filled with scaffolds that are appropriate for English Language Learners who, by definition, are developing language and learning to read (English). This read aloud text includes complex features which offer many opportunities for learning, but at the same time includes supports and structures to make the text accessible to even the youngest students.*

*This lesson includes features that align to best practices for supporting English Language Learners. Some of the supports you may see built into this, and /or other Read Aloud Project lessons, assist non-native speakers in the following ways:*

* *These lessons include embedded vocabulary scaffolds that help students acquire new vocabulary in the context of reading. They feature multi-modal ways of learning new words, including prompts for where to use visual representations, the inclusion of student-friendly definitions, built-in opportunities to use newly acquired vocabulary through discussion or activities, and featured academic vocabulary for deeper study.*
* *These lessons also include embedded scaffolds to help students make meaning of the text itself. It calls out opportunities for paired or small group discussion, includes recommendations for ways in which visuals, videos, and/or graphic organizers could aid in understanding, provides a mix of questions (both factual and inferential) to guide students gradually toward deeper understanding, and offers recommendations for supplementary texts to build background knowledge supporting the content in the anchor text.*
* *These lessons feature embedded supports to aid students in developing their overall language and communication skills by featuring scaffolds such as sentence frames for discussion and written work (more guidance available* [here](https://achievethecore.org/page/3159/ell-supports-for-writing-and-discussion)*) as well as writing opportunities (and the inclusion of graphic organizers to scaffold the writing process). These supports help students develop and use newly acquired vocabulary and text-based content knowledge.*

The Lesson – Questions, Activities, and Tasks

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| **Questions/Activities/Vocabulary/Tasks** | **Expected Outcome or Response (for each)** |
| FIRST READING:  Read aloud the entire book (or chapter) with minimal interruptions using the document camera. There are several text features throughout this text so this will give students the opportunity to see them clearly. Stop to provide word meanings or clarify only when you know the majority of your students will be confused. | The goal here is for students to enjoy the book, both writing and pictures, and to experience it as a whole. This will give them some context and sense of completion before they dive into examining the parts of the book more carefully. |
| SECOND READING:  **Reread pages 4-13 of “What Makes up Soil”**  **QUESTIONS:**  **Vocab. Focus = soil, grains, clump, sediment, gritty**  p. 7 – Dirt is important in many ways. What does the author say about soil? How is soil important to the earth? What do scientists call dirt when they are describing it?  p. 8 Ask students to describe the process of how soil is created. You may even want to have students act this process out with “paper rocks” to help them internalize the concept. Give each student a small piece of brown paper and have them ball it up. Explain that the ball of paper represents a rock. As you reread the page, ask the following questions:  Show me what happens to your rock when rain, ice, and wind wear it away. What do these pieces turn into?  Follow up with, “What happens next?” as needed.  p.9 What are the types of sediment? How would you describe each type of sediment?  As students list the sediment types begin a chart like the one to the right including their responses.  p.10 – How does water move through sand? How does water flow through clay? Using what you know about the sediment types, why do you think this happens?  p. 12 – How is sediment important? What are minerals? How are minerals important?  p. 13 – What else is in soil besides sediments? How is this important?  Refer to the chart we created today. Draw each type of soil sediment. Use some of the words we learned to describe each type. | The focus of this part of the lesson is to have students use details from the text to understand the new vocabulary about soil.  Scientists call dirt soil.  Most soil starts as rock. The rock wears away, and is broken into smaller pieces by rain, ice, and wind. This forms sediment.  Students will tear pieces of paper off of their “rocks.”  Smaller pieces/sediment that make soil.   |  |  | | --- | --- | | *Type of Sediment* | *Description* | | Gravel | Biggest, like small rocks | | Sand | Size of grains of sugar, gritty | | Silt | Feels like flour, smaller grains | | Clay | Tiny grains, sticky when wet, hard clumps when dry |   Water flows easily through sand, but puddles up on clay. The sediment is larger in sand so there is more space between each piece for the water to flow through. Individual pieces of clay are smaller so the water cannot flow through.  Sediments give plant roots something to hold on to. Sediments contain minerals. Minerals are nutrients found in the soil. They are important because, they help plants grow.  Soil also contains organic matter which comes from living things. Organic matter puts nutrients in the soil. These nutrients help plants and animals grow. |
| THIRD READING:  **Reread Pages 22-25 – “Layers of Soil”**  Say: “Today we will read to find out about the different layers of soil and how they work together.”  Before reading use a document camera to show students pages 22-23. Point out the heading and cut-away text features. “What do we know about soil using these text features?”  Begin reading.  The author says, “Over time, sediment piles up to make different layers of soil. Look at the picture of the Star-Nosed Mole. She is wearing layers of clothing to help her stay warm. What do you think the word layer means? How can sediment create different layers of soil?  Why do scientists study the horizons?  Use the cutaways and the text to read about the different layers. Create a three-column chart like the one to right. After reading page 23, add details that describe the soil layers. After reading p.24 add details that tell how that layer is important.  Ask: “How are the different layers of soil important?” | The focus of this reading is to use details from text features and text to describe the layers of soil.  Layer means one thing on top of another. The Star- Nosed Mole has clothes on top of other clothes to keep her warm. The sediment has layers because it piles up on top of itself.  Horizons are the layers of the soil. Scientists can determine how old the soil is when they study it.   |  |  |  | | --- | --- | --- | | Soil Layer | Description | How it is Important | | Humus | Fluffy, dark brown, top layer, made of dead plants and leaves | Organic matter; provides a home for insects and worms; contains nutrients | | Topsoil | Rich, brown, under humus | holds the roots of plants; helps crops grow faster | | Subsoil | Red or yellow; below topsoil, heavy and hard | supports buildings/basements | | Parent Material | Rocks and sediment | Most supportive, foundations for buildings |   Have students refer to the third column to help formulate answers to this question. |
| FOURTH Reading:  **Reread p. 14-17 – What Lives in Soil**  Before Reading: Prepare a three column chart – what we learned from the text feature, what we learned from the text, what we now know. (See sample in right column)  Yesterday we read how soil was important because it provided a home for some animals. Today we read the section “What Lives in Soil” – p.14-17   * *Learning from the Cutaway on p.14-15*   Question: “Using the cut-away, what things would you find living in the soil?”  Begin completing the text feature column of the chart.   * Reread p. 14-15.   Question: “After reading the text why do you think the cutaway text feature was used?” What do you think it is showing? Add to the other two columns of the chart   * Learning from the Close-Up on p. 14   As a class examine the close-up text feature of the microbe on p. 14. What does this close-up show us about microbes? Why do you think the author used a close-up to show on this page?   * Learning from the cutaway up on p. 16-17   Say: “What can you learn from this cut away?”  Reread p. 16 &17    “Why are earthworms important for soil? | This lesson focuses on having students combine information from text features and text to learn more about soil.  Snakes, ants, worms, spiders, moles, beetles, plants  To make it bigger, it is part of the cutaway (a hole in the ground)  It is showing a magnified microbe   |  |  |  | | --- | --- | --- | | *Knowledge from the Text Feature(s)* | *Knowledge from the Text* | *What we Know from Both* | | Snakes, ants, worms, spiders, moles, beetles and plants live in soil. | Many things live in soil | Soil is important because it is a home to many living things. | | A microbe looks round, furry and is grayish/white | Microbes are too tiny to see | The close-up is showing what a microbe looks like because it is so tiny you can’t see it. A magnified microbe looks like a cocoon. | | There are many earthworms in the soil. They move through tunnels in the soil. | Earthworms eat soil. They poop out soil with more nutrients. | Earthworms help the soil by providing more nutrients. They also make tunnels for plant roots, water and air. | |
| FIFTH READING: (pages 18-21, 26-29)  Question: *Why do we need soil*?   * Reread page 18 - “Soil Helps Things Grow”   How do earthworms, insects and microbes help make life possible? Why are the nutrients important?  How do the plants help people?  Why does the author say, “You owe your meal to the soil”?  Reread pages 20-21- “How Soil Forms”  How long does it take for soil to form? How do living things help make soil?   * Reread pages 26-27 – “Soils Have Different Uses”   Ask: Why do soil scientists study soil horizons?  Why are soil maps important? How are soil maps helpful?   * Reread p. 28-29   Ask: How do people affect soil?  As students discuss the ways they affect soil, record their responses in a t-chart.  Why is it bad if topsoil washes away?  The author closes the book with this statement. “So next time you’re munching on an apple or an ear of corn, don’t forget to think about the soil. After all, dirt made your dinner!” What does the author mean when he says this? | Insects, earthworms, and microbes recycle nutrients in the soil. Nutrients help plants grow. Plants provide food and oxygen that people need to live.  Vegetables, fruits, etc. come from plants that grow in the soil. Meats such as hamburger come from animals. Animals eat the grass or other plants that grow in the soil to survive.  Soil takes hundreds and even thousands of years to form.  Plants add organic matter to soil. Lichens slowly break rocks down to make soil.  Scientists study soil horizons so that they can suggest how soil is used.  Soil maps show people where different soils are found. Then people can select the best soil location based on their needs.   |  |  | | --- | --- | | Human Effects on Soil | | | Cause | Effect | | People cut down trees. | Soil is stripped of plants. Topsoil washes away because there is nothing to hold it in place. | | People farm carelessly | | People protect forests and grasslands | This helps to protect the soil below |   We eat foods that are plants. Plants need dirt to grow. We also eat meat. Meat comes from animals like chickens, cows or pigs. These animals also eat plants which come from dirt. In some way, almost all of our food comes from soil. Humans and animals need soil to survive. |

FINAL DAY WITH THE BOOK - Culminating Task

Why is soil important to survival? Students will draw a picture illustrating how soil is important from what they learned from the text and will write a sentence explaining how soil is important. Students will then share their picture with the class, describing what they learned about soil.

Example: A student might draw a garden and explain that soil helps to grow the food we eat.

Tape the picture together on chart paper to create a mural. After completing the mural, ask: “What do you think the author was trying to teach us in the book?”

Vocabulary

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| **These words merit less time and attention**  (They are concrete and easy to explain, or describe events/  processes/ideas/concepts/experiences that are familiar to your students.) | **These words merit more time and attention**  (They are abstract, have multiple meanings, and/or are a part  of a large family of words with related meanings. These words are likely to describe events, ideas, processes or experiences that most of your student will be unfamiliar with) |
| Page 10- even mix-to put together equal parts of different things  Page 12- roots – part of a plant that lives in the soil  Page 12 – minerals - a substance formed in the earth that is not from an animal or a plant  Page 13 - decays – to slowly break down  Page 14 – microbes – living things that are too tiny to see  Page 15 - critters – a living creature or animal  Page 16 – nutrients – essential for life and growth  Page 21 – lichens- living things that grow on bare rocks  Page 22 - horizons – the different layers of soil  Page 22- layers- a thickness of something that is spread over a surface  Page 23 – humus – the top layer of soil. It’s dark brown and made up mostly of dead plants and leaves.  Page 23 – topsoil – a layer of soil that is just below the top layer. It’s usually a rich, brown color.  Page 23 – subsoil- the third layer of soil from the top. It is usually red or yellow and has a lot of clay in it.  Page 27 – soil maps- maps that show where different kinds of soils are | Page 7 – soil – the scientific word to soil  Page 9 - grains– the smallest part of a substance  Page 9- clump – a small ball of something stuck together  Page 8 - sediment – small pieces of rock that have worn away  Page 9 - gritty– scratchy, rough  Page 13- organic matter – things that came from living things like plants, twigs, and leaves.  Page 23 – parent material – the bottom layer of soil. It is rocky and hard.  Page 24 – foundation- the stone or concrete structure that holds up a building from beneath. |

Extension learning activities for this book and other useful resources

Websites:

1. This website has a great compilation of resources on soil and it is divided up by grade levels.

<http://www.soils4kids.org/>

1. This website contains links to games, videos, and activities about soil.

<http://forces.si.edu/soils/>

1. Great video about the layers of soil.

<https://www.youtube.com/watch?v=ysIm7ImsK6c>

Books:

Tops and Bottoms by Janet Stevens

Diary of a Worm by Doreen Cronin

Other extension activities:

1. Reading 2 - Types of Sediment**:** Provide several bags of each sediment type. Allow students to explore each type. While exploring ask the following questions to help them find meanings for vocabulary words.

*Sand* – When you are exploring the sand, what are the “grains”? Why is sand described as being “gritty”?

*Silt* – What does the author mean when he says silt feels like flour?

*Clay* – How do the grains of clay compare to the grains of sand? You have some clumps of clay in your bag. How does the clump of clay compare to the grain of clay? (demonstrate with other objects)  
*Note: This is particularly supportive of English Language Learners.*

1. Reading 3 - Label four sections of the room with the name of each soil layer. Ask students, “Which layer do you think is most important for human survival?” Have students move to that layer. Talk with others in your group to explain why you chose this layer. Then find a partner in another group and explain your reasoning to them.
2. Reading 5 - Watch soil conservation video clip “Soil Erosion Control and Conservation for Kids” <http://www.makemegenius.com/science-videos/grade_6/soil-erosion-control-and-causes-for-kids>
3. Create an earthworm farm so students can record notes and observations on how the earthworms interact with soil.
4. Make dirt cups using different ingredients for the different layers of soil.

**What Makes This Read-Aloud Complex?**

1. **Quantitative Measure**

Go to <http://www.lexile.com/> and enter the title of your read-aloud in the Quick Book Search in the upper right of home page. Most texts will have a Lexile measure in this database.

Most of the texts that we read aloud in K-2 should be in the 2-3 or 4-5 band, more complex than the students can read themselves.

2-3 band 420-820L

4-5 band 740-1010L

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1. **Qualitative Features**

Consider the four dimensions of text complexity below. For each dimension\*, note specific examples from the text that make it more or less complex.

The purpose of this text is to describe dirt and explain how it is essential to survival.

This text has a common informational text structure with sections headers that guided the reader as to the main topic of each section. There are several text features such as cutaways and close-ups that students may not have had exposure to prior to first grade. Some readings focus on these structures and what can be learned from them.

There is a lot of academic language throughout this text. The text can be used to determine the meaning of most words, but students will need opportunities to use the language often in order to internalize meanings.

Knowledge demands from this text expect students to have had some experience with dirt and how it is used.

**Meaning/Purpose**

**Structure**

**Language**

**Knowledge Demands**

\*For more information on the qualitative dimensions of text complexity, visit <http://www.achievethecore.org/content/upload/Companion_to_Qualitative_Scale_Features_Explained.pdf>

1. **Reader and Task Considerations**

What will challenge my students most in this text? What supports can I provide?

* The amount of new vocabulary and concepts will be challenging for students.
* Charts and visuals will assist students with new vocabulary.

How will this text help my students build knowledge about the world?

* Students will understand that dirt is essential to survival. They will learn about the impact that
* animals, humans, and the environment have on soil, both positive and negative.

1. **Grade level**

What grade does this book best belong in? Grade 1 as a read-aloud

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