



Soil vs. Dirt

NGSS Addressed

K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.

3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.



Materials

Magnifying glasses, journals to record observations, samples of soil, copies for observation of soil (K-1).

Preparation

- Set up five to ten stations with different types of soil, or different things in the soil. You can set up six stations with three types of samples, so that students can move through the stations faster.
- Make sure at least one same contains living insects/organisms and one is lifeless dirt.
- Review the Things Plants Need teacher resource.

Success Skills

- **Collaboration** with their peers during their investigation and observation of different soil samples.
- **Communication** with peers as students discuss the observations of different types of soil. Students should be able to defend their opinion, based on the observations of the observation of samples.
- **Critical thinking** in the defense of their opinion about which sample would be the best to use when planting seeds.



Challenging Question

How can I make sure my seeds grow in the school garden?

(All Grades) Access prior knowledge

- Review the seed to table cycle with the class.

Ask: How can I make sure my seeds grow in our garden?

- Students may not know what a plant needs in order to grow. Chart what they know about taking care of plants in a defining Thinking Map (Circle Map).
- Draw attention to dirt or soil. If dirt/soil is not mentioned, guide students.

Ask: Where will we plant our seeds?



Explore

This is a hands-on activity where students will use magnifying glasses to observe different types of *dirt* and *soil*. They will learn that soil is full of living organisms, while dirt is lifeless decomposed rocks and minerals.

Kindergarten and First Grade Explore

- Teacher gives students a paper divided into three (or four, depending on the number of different samples students will observe) sections for students to draw their observations.
- Each station should have at least two magnifying glasses for students to share.
- Teacher explains the task to the students: You will stay with your group. I will remind you to record the sample number at the bottom of each section of your observation notes. The number is at each station. Write the number in the box here (point to place on the observation sheet).
- Each person will have one minute to look at the soil with the magnifying glass. I will tell you when to switch with your partner. You can also observe with your eyes.
- After each of you has had a time to observe with the magnifying glass, you will be given a few minutes to draw what you observed in the sample.
- Teacher should give students 1-2 minutes to draw their observations.
- Monitor students to see if they need more/less time. If students are more detailed in their drawings, reassure them they can have more time to finish their observation drawings independently.
- After students have rotated through the soil samples, have students come back to the carpet to share their observations. You can chart their observations for each sample, recording pictures or words they used to describe the sample.



- Support student by telling them that many of the bugs and organisms we find in the soil are *decomposers*. The job of decomposers is to help recycle plants and animals in the soil. When the decomposers do their job, it makes the soil richer.

Kindergarten and First Grade Revision and Reflection

Students respond to the following prompt: Which sample would be the best to grow living things, like a plant? Have students talk in their table groups and then record their answer in words and/or pictures in their response journal.

Second and Third Grade Explore

Teacher explains the task to the students:

- You will stay with your group. Remember to record which sample you are observing at each station in your notes/journal.
- Each person will have one minute to look at the soil with the magnifying glass. I will tell you when to switch with your partner. You can also observe with your eyes. After each of you has had a time to observe with the magnifying glass, you will be given a few minutes to draw what you observed in the sample.
- Please remember to write a description of each sample, since I will be asking you for those words when we discuss the different samples as a class.
- Teacher should give students 1-2 minutes to draw their observations and write a description of each observed sample.
- Monitor students to see if they need more/less time. If students are more detailed in their drawings, reassure them they can have more time to finish their observation drawings independently.
- After students have rotated through the soil samples, have students come back as a class to share their observations. Chart their observations for each sample, charting similar observations in the classroom.
- Support students by telling them that many of the bugs and organisms we find in the soil are *decomposers*. The job of decomposers is to help recycle plants and animals in the soil. When the decomposers do their job, it makes the soil richer.

Second and Third Grade Revision and Reflection

- Students respond to the following prompt: Which sample would be the best to grow living things, like a plant? Have students talk in their table groups and then record their answer in words and/or pictures in their response journal.
- Explain to students that their answer should include information from their observations of the samples.

Fourth and Fifth Grade Explore

Teacher explains the task to the students:

- You will stay with your group. Remember to record which sample you are observing at each station in your notes/ journal.
- Each person will have one minute to look at the soil with the magnifying glass. I will tell you when to switch with your partner. You can also observe with your eyes. After each of you has had a time to observe with the magnifying glass, you will be given a few minutes to draw what you observed in the sample.
- Please remember to write a description of each sample, since I will be asking you for those words when we discuss the different samples as a class.
- Teacher should give students 1-2 minutes to draw their observations and write a description of each observed sample.
- Monitor students to see if they need more/less time. If students are more detailed in their drawings, reassure them they can have more time to finished their observation drawings independently.
- After students have rotated through the soil samples, have students come back as a class to share their observations. Chart their observations for each sample, charting similar observations in the classroom.
- Support students by telling them that many of the bugs and organisms we find in the soil are *decomposers*. The job of decomposers is to help recycle plants and animals in the soil. When the decomposers do their job, it makes the soil richer.

Fourth and Fifth Grade Revision and Reflection

- Students respond to the following prompt: Which sample would be the best to grow living things, like a plant? Have students talk in their table groups and then record their answer in words and/or pictures in their response journal.
- Explain to students that their answer should include information from their observations of the samples.
- Do you think plants are able to grow in sub-standard conditions?



My Observations

Name: _____

