



Science

Quarter 4 – Module 1: **"Types and Characteristics** of Soil"



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Quarter 4 – Module 1: "Types and Characteristics of Soil"



Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-bystep as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.



What I Need to Know

This module was designed and written for you to enjoy while learning. This will help you know the nature of soil, its types, and characteristics. The activities and exercises provided for you will develop your skills and will be able to apply specific skills from this lesson. You will also enjoy every activity even though you're away from school. So good luck and have fun!

The module will focus on:

• Lesson 1 – Soil: Its Types and Characteristics(S4ES-IVa-1)

After going through this module, you are expected to be able to:

- 1. identify the different types of soil based on their physical characteristics; and
- 2.compare and contrast the characteristics of the different types of soil.



What I Know

A. Directions: Identify the types of soil shown in the picture. Choose your answer from the box below and write it in your science notebook.



- **B. Directions:** Read and answer each question. Write the letter of the correct answer in your science notebook.
 - 1. It is a small particle of rocks that contains decayed tiny organisms and plants.

a. clay	c. sand
b. loam	d. soil

- _____2. The kind of soil that is sticky when wet and has the finest texture.
 - a. clay c. humus
 - b. loam d. sand

- __3. It is a mixture of sand and clay.
 - a. clayc. humusb. loamd. sand
- 4. It is a dark color organic material which is made up of decaying plants and animals found in the uppermost layer of the soil. a. clay c. humus
 - b. loam d. sand
- ____5. The particles of this soil are coarse and loose.
 - a. clay c. loam b. humus d. sand
- **C. Directions**: Choose the different characteristics of the soil from the box and write them in the triad diagram below. Do it in your science notebook.
 - coarse and loose
 contains humus
 - has the finest texture
 mixture of sand and clay



Good job!! It's a good start.

Lesson

"Types and Characteristics of Soil"

Soil is the land part of the Earth that we usually walk on. It is home to many living organisms like animals, plants, and humans. Soil also plays a vital role on the things that causes changes in the environment as it interacts with the existing elements in our surroundings and atmosphere.

Have you tried touching different types of soil? What have you noticed while looking or touching them? Do all types of soil have the same characteristics? You will be familiarized and enlightened as you perform the succeeding activities in this module. Let's start.



What's In

Directions: Read the statements very carefully. Write "**T**" if the statement is true and "**F**" if it is not. Do it in your science notebook.

- 1. Sound is produced through vibrations.
- _____2. Refraction happens as the light bends.
- _____3. The bouncing of light is called reflection.
- _____4. All materials allow light to pass through them.
 - 5. Sound wave is absorbed when it bumps a hard smooth object.

Perfect! You got it right. You can now proceed to the next activities.



What's New

Note to Parent/Guardian: Guide your children while doing the various activities in this module. Remind them to observe precautionary measures and to be careful in handling the materials while performing the activity.

To the Learner:

Directions: Perform each activity and answer the questions that follow. Write your answers in your science notebook.

Activity 1: "Can You Identify Me?"

What you need:

- 3 clear plastic cups of the same size
- 3 popsicle sticks
- 3 plastic spoons
- hand lens (optional)
- 3 sheets of used bond paper or any used paper
- hand shovel
- permanent marker
- a pair of gloves

What to do:

- Get three samples of soil from different areas (sandy area, garden area and muddy area) and place each on separate container.
- > Label each sample as A, B, and C.





Illustrated by: Jotham D. Balonzo

- > Take at least two tablespoons of soil from each sample.
- > Place each sample on a separate sheet of paper.
- Using a hand lens (optional) and a popsicle stick, observe each sample.
- > Write your observations in the table similar to the one below.

Soil Characteristics				
SoilSample	Color	Texture	Odor	
A - Sand				
B - Clay				
C - Loam				

Guide Questions:

1. What characteristics did you observe in comparing your soil samples?

2. Which soil sample has the darkest color? The finest texture? and the strongest odor?

3. What science idea can you infer about different soil samples?

Activity 2: "Where do We Differ, Where are We Same?"

Directions: Look at the pictures of the different types of soil and write their similarities and differences in the Venn diagram. Write your answer/s in your science notebook.





What is It

Points to Remember:

Soil covers most of the land part of the Earth. You find plants, animals, houses and other organisms on the soil. We live on the soil and it helps us in so many ways.

Soil is made up of smallest particles of rocks, which contains decayed matter of plants and animals. Humus comes from decaying plants and animals. Different types of soil have different physical characteristics. Each soil type differs in color, texture, odor and its ability to hold water. Some soils are good for planting while others are not. The presence of the different kinds of vegetative plants in a place is an evidence of a good quality of soil in the area or locality.

There are three different types of soil in our environment as shown in the table below.

Types of Soil	Common Characteristics	
1. Clay	The particles are packed together tightly. It is sticky when wet and has the finest texture. It holds much water.	
2. Loam	It is a mixture of sand and clay. It has a fine texture. It can hold enough amount of water and contains large amounts of decaying plants and animals and organisms which make it best for planting and growing crops.	
3. Sand	It does not hold water well because the particles are coarse and loose.	

Illustrated by: Jotham D. Balonzo

Soil is a system into which energy and matter from the Sun, the atmosphere, and living organisms penetrate and interact. It is a system because it is composed of many different parts and layers. Each of the layers has unique characteristics and has special function to perform.

The main layers of the soil are organic, topsoil, subsoil, parent rock, and bedrock.

Layers of Soil

Organic – consists of dried leaves, twigs, small rocks, surface organisms and decaying plants and animals.

Topsoil (A Horizon) – is often rich in humus (decayed or decomposed plants and animals) and minerals.

Subsoil (B Horizon) – is poor in humus but rich in minerals.

Parent rock (C Horizon) – has little or no plant or no animal life.

Bedrock (R Horizon) – consists of large solid mass of rocks.



Illustrated by: Jotham D. Balonzo

Layers of the Soil Profile

The soil is arranged in layers or horizons during its formation. These layers or horizons are known as the soil profile. It is the vertical section of the soil that is exposed by a soil pit. The layers of soil can easily be identified by the soil color and size of soil particles. Each layer has its own characteristics.

The Organic (also known as O – Horizon). This is the upper layer of the top soil which is mainly composed of organic materials such as dried leaves, grasses, twigs, fallen trees, small rocks, surface organisms, and other decomposed organic matter. This layer is often black brown or dark brown in color and this is mainly because of the presence of organic content. This layer is thin in some soils, thick in others and not present at all in other soils.

The Topsoil (A-Horizon). This is the uppermost layer of the soil. This layer is rich with organic materials and is called as the **humus layer**. Humus comes from decaying plants and animals. It is also rich in soil minerals which are needed for plant growth. The soil's dark color is a sign of the presence of humus. Several kinds of plants can be seen growing on this layer. Small organisms such as earthworms, centipedes, fungi, algae, and microorganism like bacteria are living in this layer. The topsoil is soft and porous to hold enough air and water.

The Subsoil (B-Horizon). This is located just below the top soil and above the parent rock. It is composed primarily of clay, mineral deposits which drain from the topsoil, loosely arranged rocks and organic matter. This layer contains less humus and organic matter but rich in minerals. This layer holds water than the top soil and is lighter brown due to the presence of clay soil. It is comparatively harder and compact than top soil. When the top soil is washed out, the sub soil alone cannot support plant life.

The Parent Material or Rock (C-Horizon) is composed of large rocks or slightly broken-up bedrock. It is called the parent material because upper layers developed from this layer. Plant roots do not penetrate into this layer. It does not contain organic matter, necessary nutrients and water needed for plant growth. It is exposed to very little weathering.

The Bedrock (R-Horizon) is the bottom layer several feet below the surface. It is made up a large solid mass of rock or undisturbed large boulders. Bedrock is made up of igneous, sedimentary, or metamorphic rocks. This layer contains materials good for constructing buildings and making roads. No plant life can survive in this layer.

Great learning! And now, let's have more activity.



What's More

Activity 1 "Match and Learn"

Directions: Match the pictures in Column A to its name in Column B. Write your answer in your science notebook.

Α	В
1	a. subsoil
2	b. sand
3	c. parent rock
4	d. clay
5	e. bedrock
e Stilling and de ares danks	f. loam



Illustrated by: Jotham D. Balonzo

Activity 2 "Which is Which?"

Directions: Put the following symbols before each number that describes the characteristics of soil. Write your answer in your science notebook.



Activity 3 "Compare and Contrast"

Directions: Compare and contrast the different characteristics of soil. Write your answer in your science notebook.



Size of particles: Texture: Color:

Size of particles: Texture: Color:

Size of particles: Texture: Color:



What I Have Learned

Directions: Fill out the graphic organizer below by writing the needed information. Do it in your science notebook.



Great answers! You learned well in these activities. Now it's time for you to apply what you have learned.



What I Can Do

Directions: In your science notebook, write your answer based on the situation below.

The local *barangay* of *Minasag* will conduct a Tree Planting activity. You would like to join the said event. What kind of seedlings will you choose if the kind of soil in your *barangay* is loam? Why?

Yes! You really are doing great. I know you are having fun so let's check this one.



Assessment

A. Directions: Read the statements very carefully. Write **YES** if the statement is correct and **NO** if it is not. Do it in your science notebook.

- 1. Soil covers most of the land part of the Earth.
- 2. All types of soil have the same characteristics.
- 3. Some soils are good for planting, while others are not.
- 4. The three types of soil are clay, loam, and sand.
- 5. Soil is made of small particles of rocks and contains humus.
- 6. Sand contains large amount of decaying plants and animals.
- 7. Clay is the type of soil where particles are packed together tightly.
- 8. Loam is good for growing plants because it cannot hold water well.
- 9. Humus contains the right amount of nutrients needed for growth of plants.
- 10. Each soil type differs in color, texture, odor, size of particles, and its ability to hold water.

B. Directions: Fill out the table correctly with the characteristics of the different types of soil. Do it in your science notebook.

	TYPES OF SOIL			
	Clay	Loam	Sand	
Characteristics				

That's incredible! You did well in this lesson.



Directions: Prepare these materials:

- 3 jars or recycled plastic containers
- 3 types of soil (clay, sand, and loam)
- marking pen
- mongo seeds or any available seeds
- water

Reminder: Keep safe all the time.

- 1. Get samples of the three types of soil.
- 2. Place on a separate containers and label them "Clay," "Sand," and "Loam."
- 3. Sprinkle water on each container until each soil gets wet but not to submerge the soil samples.
- 4. Put some mongo seeds or any available seeds in each of the containers and observe them every day.
- 5. After three days, observe which jar did mongo seeds or other seeds you used germinate.

Congratulations! You did well in this module. Good luck in your next journey.



Answer Key





References

- Abutay, Lelani R., et. al. *Science 4 Learner's Material*, 224-248. Pasig City: Department of Education, 2015.
- Abutay, Lelani R., et. al., *Science 4 Teacher's Guide*, 287-293. Pasig City: Department of Education, 2015.

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