

Do You See What I See?

Description

In this activity, students observe a terrarium and brainstorm what the roles of rocks, soil, and water play in the terrarium.

Time Frame

1 lesson (45 minutes)

Correlation to Texas Essential Knowledge and Skills

During this activity, students will be exposed to the following Texas Essential Knowledge and Skills:

Note: Some TEKS statements below end with a ; or *and* and nothing thereafter—this indicates that further TEKS statements follow but are not included here.

(2.10) Science concepts. The student knows that the natural world includes rocks, soil, water, and gases of the atmosphere. The student is expected to:

- (B) identify uses of natural resources.

Note: The TEKS listed here are the main content TEKS for this activity; however, this activity may also cover additional content and process skills included in other TEKS.

Materials

Classroom terrarium for display
Terrarium journal for each student
Chart paper
Markers (3–4 different colors)

Materials Notes

A terrarium is an ideal closed system for studying the interactions of plants and possibly animals with rocks, soil, and water. While observing the terrarium the students should see evidence of the water cycle. They will also note that the plants need the soil (at this grade level they may not nor should they recognize that there are nutrients in the soil that plants need) and sunlight in order to grow.

Several days in advance, build a terrarium large enough for the class to observe. Assemble the following materials:

- Empty 3-liter soda bottle
- Scissors
- Packing tape
- Terrarium plant
- Pea gravel

Potting soil or sandy loam garden soil
Water

To make the terrarium, secure the cap of an empty 3-liter soda bottle and cut off the top 1/5 of the bottle. Save this piece so that it can be reattached later. Place a 1- to 2-inch layer of pea gravel at the bottom of the container; cover this with 4–6 inches of potting soil or sandy loam garden soil.

Plant selected plants in the layered soil. Use plants that are relatively hardy such as Pothos ivy, succulents such as jade plants, and most tropical plants. Water the soil until you see some water collect in the pea gravel layer. You do not want the water to saturate the pea gravel, however, as this could result in root rot.

Securely reattach the top of the bottle with packing tape, and place the terrarium near a window but not in direct sunlight. There should be visible water droplets on the sides and/or top of the terrarium. The terrarium should be a closed system, meaning that it will not be opened once everything is set up and the top closed.

Background Information for the Teacher

Approximately 71% of the earth is covered by water. Water evaporates when energy is added. Water condenses when it loses energy. The loss of energy causes the water to cool. Small drops of condensed water suspended in the air can become enlarged as the droplets come together. When they become too heavy, the water precipitates (falls from the air).

Evaporation, condensation, and precipitation that occur in the water cycle are abstract concepts. Because water vapor is an invisible gas, teachers and students may use the terms, but in this activity the purpose is to observe and describe the processes rather than to explain how or why it occurs.

Advance Preparation

Create a terrarium journal by stapling together 4–5 sheets of paper for each student.

Procedures

1. Display the terrarium and have students make observations.
2. Create a KWL chart about the terrarium and discuss the question “What do you know?”

Note: A KWL chart is a type of graphic organizer used to help students think about a topic. K represents what students *know* about a topic before a lesson; W represents what students *want* to know; and L represents what students *learned* about the topic during the lesson.

Ask questions such as, “What are some things you notice about this terrarium?” Student responses may include, “It has plants in it. It has a lid. It’s closed. It has water on the inside. It has dirt at the bottom.”

3. Guide the students into “What do you want to know?” by asking, “What are some things you want to know about the terrarium that you can't observe?” Anticipated responses may include, “How long have you had it? How long will it live? Will we have to open it to water the plants? Where did the water on the side come from? What will happen if...?” Record teacher questions as well as student questions.
4. Have students describe the reasons the rocks (gravel), soil, and water are needed in the terrarium. Pose questions such as, “Do we need all three resources? What would happen if we leave one out?”
5. Give each student a terrarium journal. Have students title the first page “The Class Terrarium,” and help them list the questions about the terrarium they want answered.
6. Take the class on a nature walk around the schoolyard and compare the schoolyard to the terrarium. Ask about the role rocks, soil, plants, and water play in the schoolyard. When back in the classroom, record on the KWL chart the examples and additional questions that arose during the walk. Have students record these examples and questions in their terrarium journals.

Students should also write down ways their schoolyard is like and unlike a terrarium. Have the students draw and label in their journals the terrarium and the schoolyard.

7. Have the students identify the basic needs of the plants such as sunlight, water, air, and nutrients. Ask how these needs are met in the schoolyard and how were they met in the terrarium.