



Self-Watering Planter - Lesson Plan

Grade K-1

Subject

Earth and Space

Duration

Active Classroom

Time: 30 minutes

Experiment Run

Time: 2-3 weeks

Skills

Gathering information (observing, measuring)

Vocabulary

Flower, fruit, leaf, root, stem, seed

Science TEKS

Grade K: K.1(B), K.2(A-E), K.9(A), K.10(B,D)

Grade 1: 1.1(A-B), 1.2(A-E), 1.9(A), 1.10(B)

Math TEKS

Grade 1: 1.7(A)

For more lessons, activities, and to schedule a visit to EPWater's Tech2O Water Resources Learning Center visit:

tech2o.org

Lesson Overview: Creating a classroom garden can be quick, easy, and rewarding for students. This lesson will offer students a chance to watch the parts of a plant develop in the classroom. It also provides an opportunity to review material reuse and water conservation.

Objectives:

1. Introduce the parts of plants.
2. Review the needs of plants.
3. Review the importance of recycling, reusing materials and conserving water.

Engagement Questions:

1. Are seeds alive?
2. What do plants need to grow?

Making Connections: DIY self-watering planters are a fun way to connect material reuse, plant structures, and water conservation. It can be rewarding for students to plant a seed and watch it grow, but overwatering plants and landscapes is a major source of water waste in El Paso. Self-watering planters slow water loss due to evaporation and prevent overwatering. Using a discarded disposable water bottle offers students a glimpse into the underground world of plants. After completion of the unit, students can take their plants home or plant them outside.

Materials: (per student or small group)

- (1) 0.5L disposable water bottle (*cap and label removed, and cut in half*)
- (1) 0.5in x 12in strip of cotton fabric (*consider cutting old t-shirt or towel*)
- (2) cotton balls
- 1.5 cups of potting soil
- (1) ruler
- water
- permanent marker

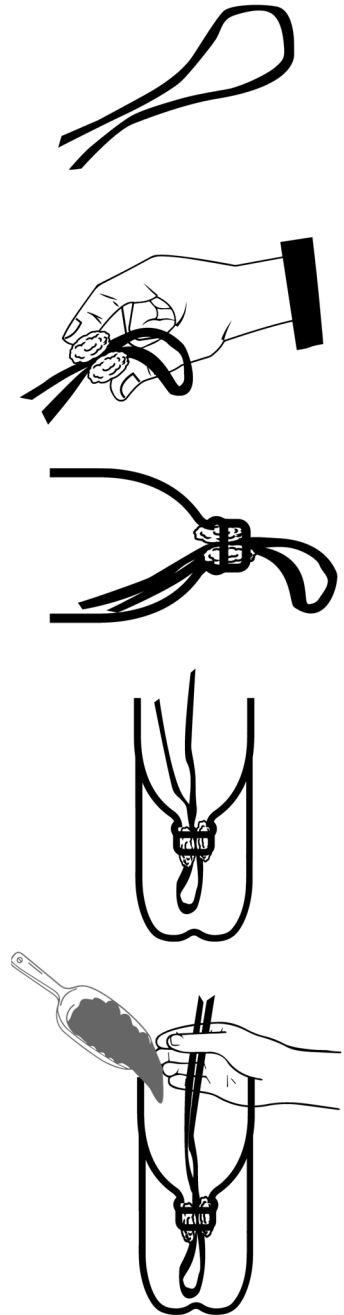
Procedure:

Pre-Activity Preparation (by an adult)

1. Remove the label and cap from a disposable water bottle.
2. Use a sharp blade to cut the bottle in half to create a top and bottom half.
3. Cut or tear an old cotton shirt or cotton fabric into 0.5in x 12in strips.
4. Obtain seeds. *Basil is easily and quickly grown in this style planter. Free seeds are seasonally available at El Paso Public Libraries. Seeds can also be purchased at a local garden center.*

Activity

- Begin by reminding students:
All the materials used in the classroom and at home come from nature, but some materials can be used exactly how they are, and some must be changed by people before they can be used. Materials changed by people are usually called “manmade.” Plastic and fabrics are great examples. Manmade materials are often produced in a factory.
- Complete the first page of the Self-Watering Planter worksheet.
- Construct the self-watering planter:
 - Fold the strip of cloth in half to make a loop.
 - Select a point in the middle of loop and sandwich the strip of cloth between two cotton balls.
 - Hold the (cotton ball)-cloth-(cotton ball) sandwich together with thumb and pointer finger.
 - Insert the sandwiched materials into the bottleneck so that the looped portion sticks out and the two loose ends are inside the pre-cut bottle.
 - Invert the top half of the bottle to rest in the bottom half of the bottle.
 - Hold the two strips upright in the top half of the bottle while filling the top half with potting soil.
 - Gently compact the soil.
 - Sprinkle seeds on top of the soil, or follow the planting instructions on your seed packet.
 - Fill the bottom half of the bottle with water up to the level of the inverted bottleneck.
 - Place the bottle in a windowsill or sunny location.
- Use the Self-Watering Planter worksheet to record observations and label plant structures.
- Use the Self-Watering Planter worksheet to record observations the next few weeks.
- Planters only need watering when the bottom is dry or nearly dry. When dry, add only enough water to the bottom half of the bottle to reach the cloth wick. The water level should be below the inverted bottleneck.*



Check for Understanding:

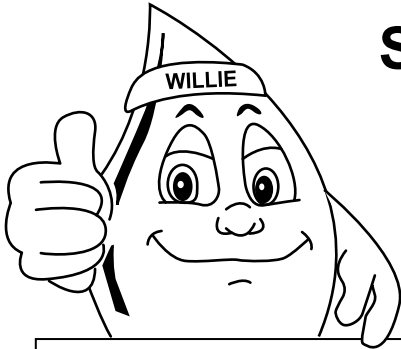
Did students meet the lesson objectives? Can they answer the engagement questions? Below are some key takeaways and questions that students should be able to answer following the lesson.

Key Takeaways:

- Some materials can be recycled or used in new ways.
- Plants need air, sunlight, soil, and water to grow.
- Identification of plants parts: flowers, fruit, leaves, roots, stems, and seeds.
- Some plants do not need to be watered every day.









Questions:

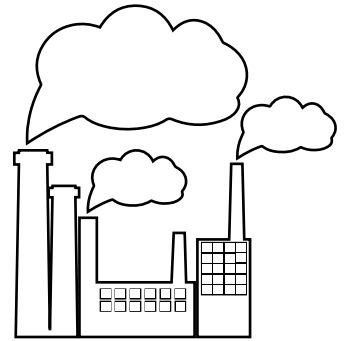
1. What manmade objects are being used in a new way instead of being thrown away?
2. What do all plants need to grow?
3. What plant parts will you be able to see in your self-watering planter.



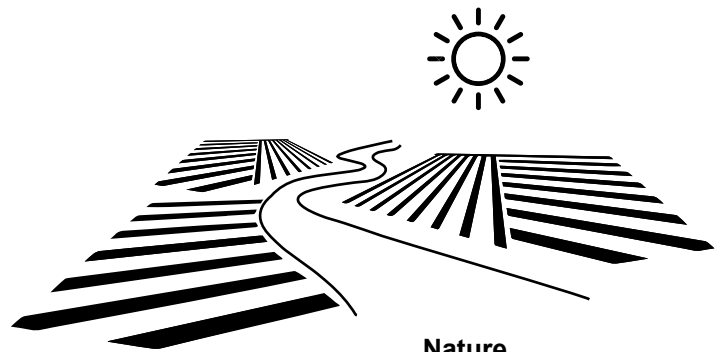
Self-Watering Planter - Worksheet

1. Draw a line connecting each item to its source.
2. Draw a circle around the item that is alive.
3. Describe how each item is used in the space provided.
4. Color each item needed to grow a plant.
5. Draw a star around each item made by plants.

	 plastic bottle
	 water drop
	 cotton ball
	 seed
	 soil
	 sun
	 cloth or shirt
	 CO ₂



Factory



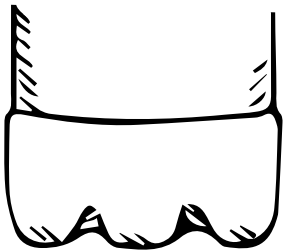
Nature

Some materials we might throw away can be recycled or used in a new way. Use these items to build a self-watering planter and help a seed grow.

Record Your Observations

Follow your teacher's instructions to set up your self-watering planter.

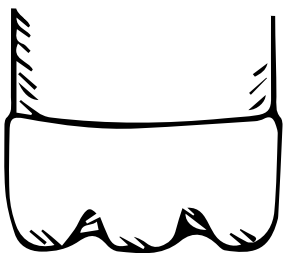
Draw a picture of your self-watering planter after planting a seed.



Type of seed _____ date _____

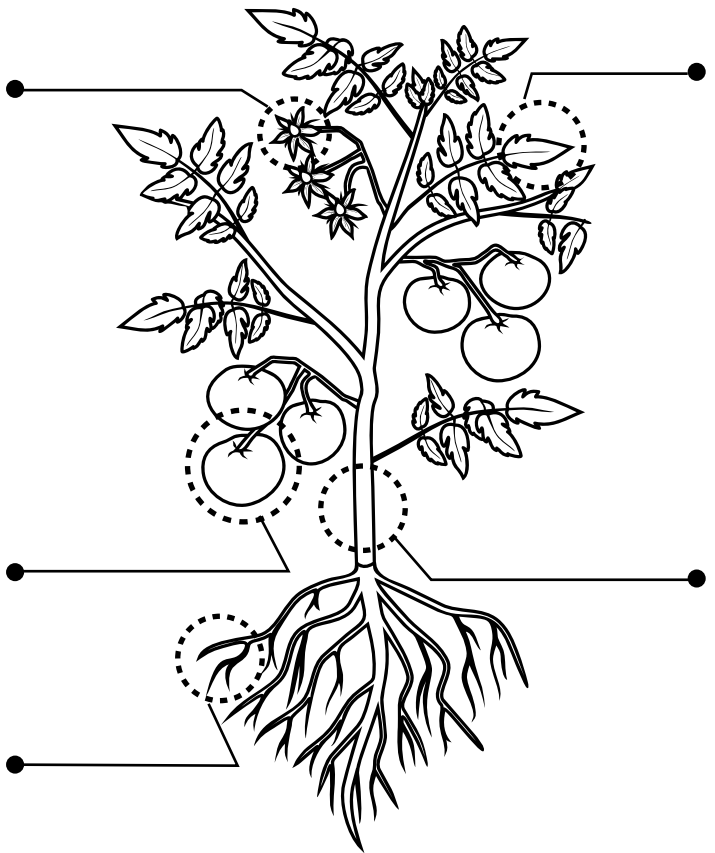
All plants need water, but overwatering can waste our most precious resource. Only add more water when your bottle is empty.

Draw a picture of your self-watering planter after 3 weeks.



Height of plant _____ date _____

Label each circled part of the tomato plant.

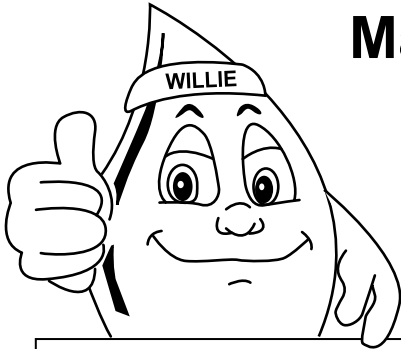


Inside every seed are the instructions to grow flowers, fruit, leaves, roots, stems, and more seeds, but seeds need a few more ingredients to grow into a healthy plant.

List what all plants need to grow?









Use a ruler to measure changes in the height of your plant and record on the table.

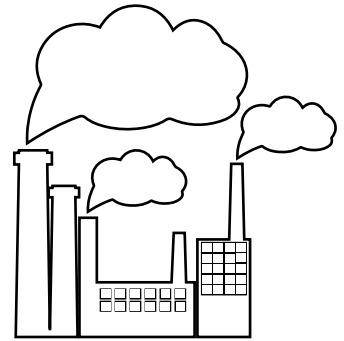
Date	Height of plant	Additional water needed yes/no



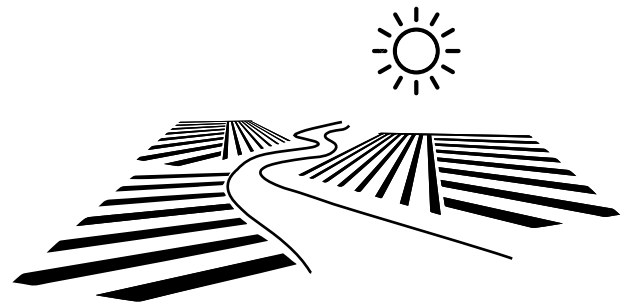
Maceta de Autorriego - Hoja de Trabajo

1. Dibuja una línea que conecte cada elemento con su lugar de origen.
2. Dibuja un círculo alrededor del elemento que está vivo.
3. Describa cómo se usa cada elemento en el espacio proporcionado.
4. Coloree cada elemento necesario para cultivar plantas.
5. Dibuje una estrella alrededor de cada objeto hecho por plantas.

	 botella de plástico
	 gota de agua
	 bola de algodón
	 semilla
	 tierra
	 sol
	 tela o camisa
	 CO ₂



Artificial



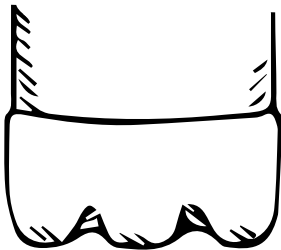
Hecho por la naturaleza

Algunos materiales que podríamos desechar se pueden reciclar o utilizar de una forma nueva. Usa estos artículos para construir una maceta de autorriego y ayudar a que crezca una semilla.

Registra Tus Observaciones

Sigue las instrucciones de su maestro para configurar tu maceta de autorriego.

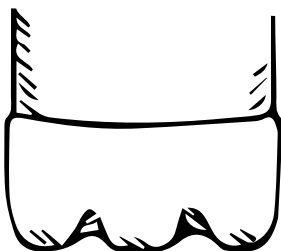
Dibuja tu maceta de autorriego después de plantar una semilla.



Tipo de semilla _____ fecha _____

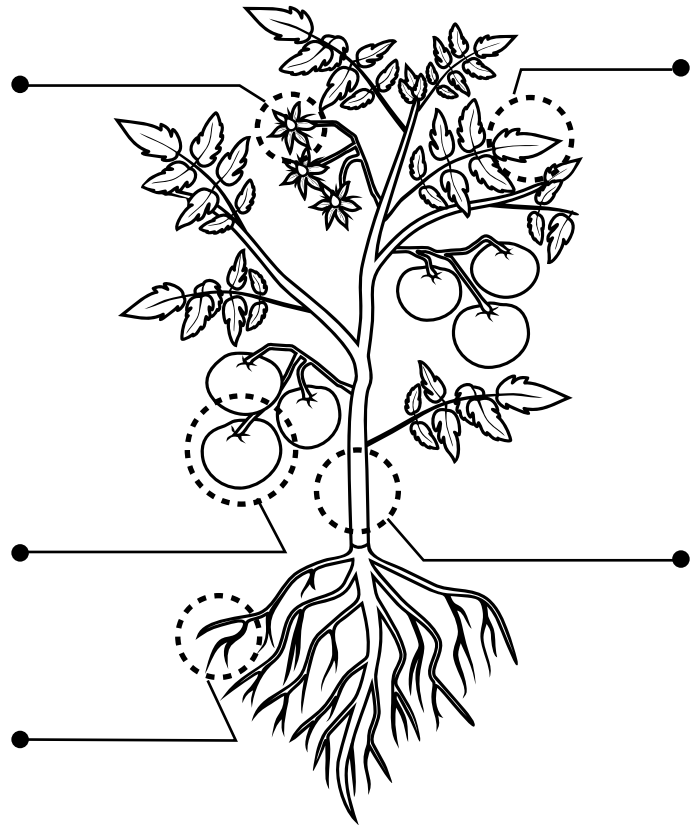
Todas las plantas necesitan agua, pero el riego excesivo puede desperdiciar nuestro recurso más preciado. Solo agrega más agua cuando tu botella esté vacía.

Dibuja tu maceta de autorriego después de 3 semanas.



Altura de la planta _____ fecha _____

Etiqueta cada parte encerrada en un círculo de la planta de tomate.



Dentro de cada semilla hay instrucciones para cultivar flores, frutas, hojas, raíces, tallos y más semillas, pero las semillas necesitan algunos ingredientes más para convertirse en una planta saludable.

Haz una lista de lo que todas las plantas necesitan para crecer.

Usa una regla para medir los cambios en la altura de tu planta y anótalos en la tabla.

Fecha	Altura de la planta	Agua adicional necesaria sí/no