Activity Duration: 1-30 days	Ages: 10-18	Theme: Earth-based Isolated and Confined Environments & Functional Space Communities

Sustainable Terrarium

Who would love to build their own mini garden inside? A terrarium is your solution to growing a garden if you don't have much space available or your climate doesn't provide you with an opportunity to grow certain plants or foods.

Activity Overview

Terrariums are a great way to get into gardening! They can be made from any clean container that can be sealed and opened easily. Objects such as old aquariums that don't leak, jars, plastic bottles and containers may be used as a terrarium for this project. Using items around your house is a great way to recycle plastic and glass that you may otherwise throw away. Watch this video on how easy it is to create your own tiny little world inside of a bottle with supplies that you may have laying around your home. Click on https://www.youtube.com/watch?v=0vu4wdHNo4Q to view the video.

Activity Objectives

Students will meet these goals in their explorations:

- Apply concepts of area and composite figures to a real-world situation
- Examine the parts and life cycles of plants
- Determine planting and growth requirements of selected plants
- Investigate the career fields of horticulturist and botanist
- Develop skills in logical thinking, problem solving, and communication Learn about the different types of terrariums you can create. Click on the link to learn about them https://www.homestratosphere.com/types-of-terrariums/
- If you choose to plant an edible garden, what nutritional value does that plant have and what types of foods can you create with what you have grown? Research the different plants that you can use. Clink on this link for more ideas. https://gardeningsoul.com/gardening-bottle-8-edible-plants-can-grow-terrarium/
- Once your activity has been completed, choose a way to display your project. You can take a video of your creating your terrarium, create a collage of the different plants you used for it, draw or paint a picture of your creation and post your completed project on https://contest.sciartexchange.org/XpandYourHorizon-2020-001-design-your-habitat/entry_form/.

Activity Background

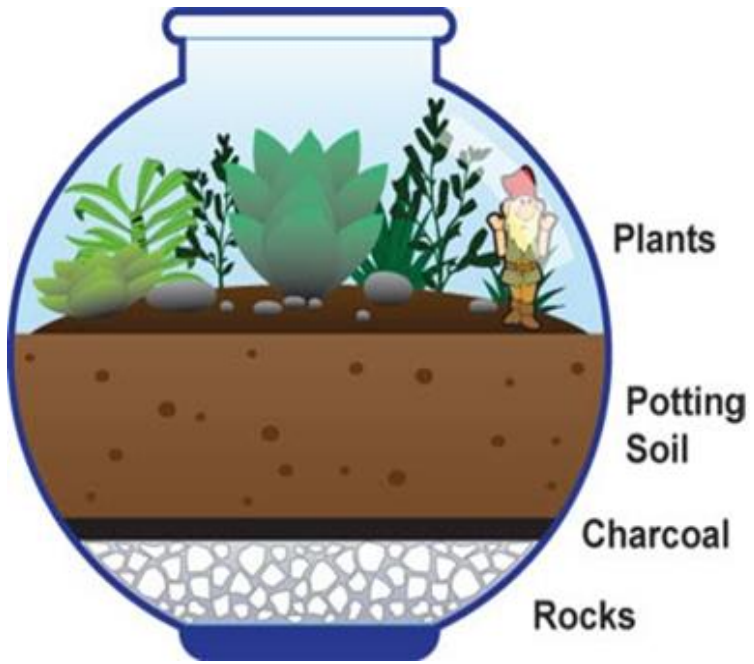
A terrarium creates its own mini-climate. A terrarium is a small indoor greenhouse container that has a small opening or sometimes even a lid to completely close the container that allows the sunlight to go through the glass so that it warms the soil, air and plants. It does the same thing as the sunlight when it comes to the atmosphere to warm the Earth's surface. The glass holds the heat and humidity the same way as Earth's atmosphere. See how NASA discusses how the climate is affected by plants. Click on https://climatekids.nasa.gov/mini-garden/.

Things to Know Before You Grow

Seed packets contain information that helps gardeners know how to take care of their plants. Please read the back of the seed packet and record the information below.

Plants Name	
DAYS TO GERMINATION (plants sprout out of soil)	
DAYS TO HARVEST (fruit or vegetables is ready to pick)	
PLANTING DEPTH (how deep to plant seeds)	
PLANT SPACING (how far apart to plant the seeds)	
PLANT HEIGHT (how tall the plant grows)	
Draw a picture of your plant with the fruit or vegetable that it will produce.	

How to Create Your Own Terrarium



Sample of how to layer your terrarium.

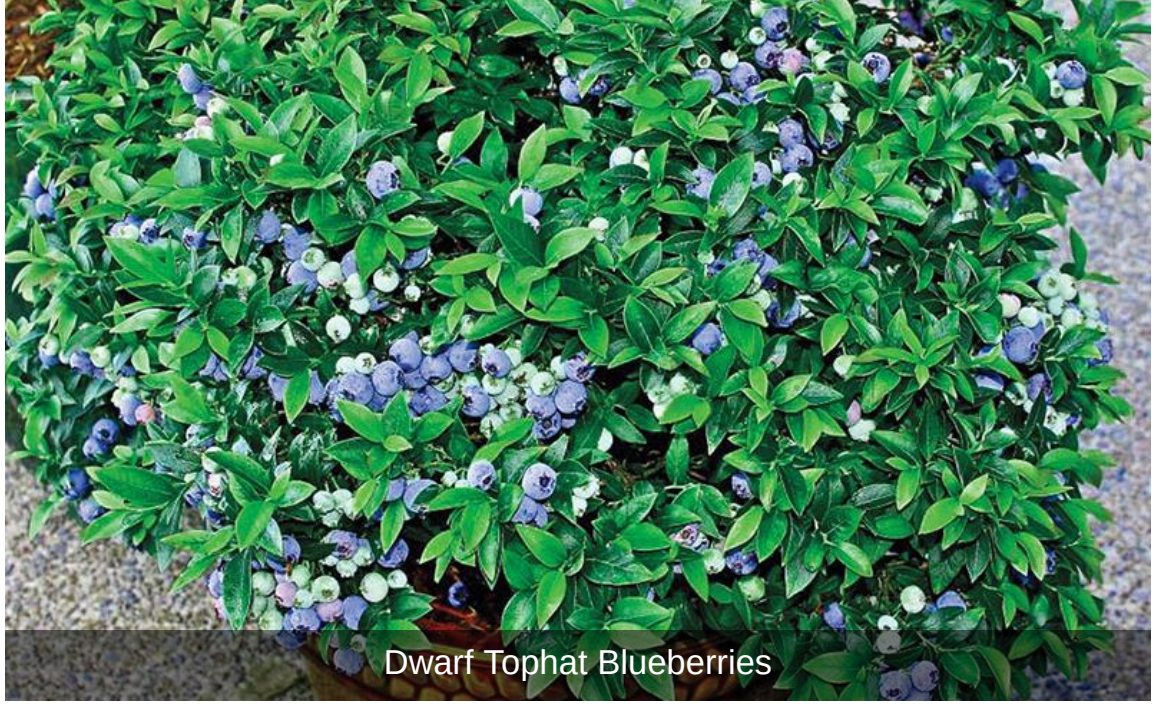
The first thing you need to do is to choose what kind of terrarium you are going to grow. Once you have done that, you can choose materials that you may have at your home or purchase needed items. You need to decide if you will use plants that are already growing or plant seeds that will grow in the habitat that you have chosen. There are many websites that you can visit to obtain ideas.

- Start with a layer of rocks about one inch or so on the bottom of your container. The rocks will help with keeping the water from rotting the roots of your plant.
- Add a 1/2-inch-thick layer of charcoal above your rocks. It will help prevent fungi and other bacteria from growing.
- Fill the potting soil to the middle of the container.
- Plant your seeds or plants. Arrange the plants so that they have room to grow.
- Add decorations such as decorative pebbles and rocks to add color and creativity to your container. You can even add figurines.
- Water the plants, but not too much. You don't want to over water your plants.
- Place in indirect light so that the sun can help with plant growth.
- Take photographs of the supplies you used to create your terrarium, your newly-created terrarium, and when plants begin growing. Compare the progress you are making throughout the whole project. https://contest.sciartexchange.org/XpandYourHorizon 2020 001 design your habitat/entryform/form/ .





You can recycle or purchase any shape or size container to create your own terrarium. It can be open or closed.



Dwarf Tophat Blueberries

Dwarf Plums

Edible Terrarium

For any terrarium, you need:

- Clear glass container- it can be any clear glass container you want to recycle such as a pickle jar or an old aquarium or purchase one that will fit your needs. It's best to find a container with an opening wide enough to accommodate the width your hand so that you can easily place and move materials as needed.
- Rocks (polished pebbles, sea glass, marbles, etc.)
- Sphagnum or sheet moss
- Soil
- Plants or seeds of plants that won't overgrow. There are several varieties of plants that don't take much space to grow. Complete the "Things to Know Before You Grow" form to determine if the plants you chose are for the environment you are creating.
- Some examples of edible plants are: Creeping Figs, Thyme, varieties of tomatoes, Dwarf Pineapple, Mint, Dwarf Tophat Blueberries, Dwarf Plums, Oregano, and Sage to name a few fruits and vegetables that you can grow.

Click on the picture to watch how I created my living garden.

Now it’s your turn……
Create your own video creating your own terrarium and post it to the SciArt Exchange submission system

https://contest.sciartexchange.org/XpandYourHorizon-2020-001-design-your-habitat/entry_form/

How to Create a Soda Bottle Terrarium

Materials:

small pebbles,

charcoal,

potting soil,

a few terrarium happy plants, like small succulents

a coke bottle

an exacto knife

scissors

To make this project, you must use a Coke (or Diet Coke) bottle because it has just the right shape. It comes inward near the bottom, which allows the top to sit over it securely. Cut out the middle part so that the bottom measures 3.5” and the top measures 5”. Use an exacto knife to make the first cut, then small, sharp scissors to finish cutting. You will need small pebbles, charcoal, and potting soil and either seeds or a plant to create your soda bottle terrarium. Start with the pebbles, followed by the charcoal, and then the potting soil. Then add your plants or seeds to the soil and cover it with the lid.

Fantasy Garden

Create a fantasy garden of your dreams . The best part is that you can design it any way that you would like. You can collect items that you have at home, a craft store or a dollar store.

Items needed to create your garden:

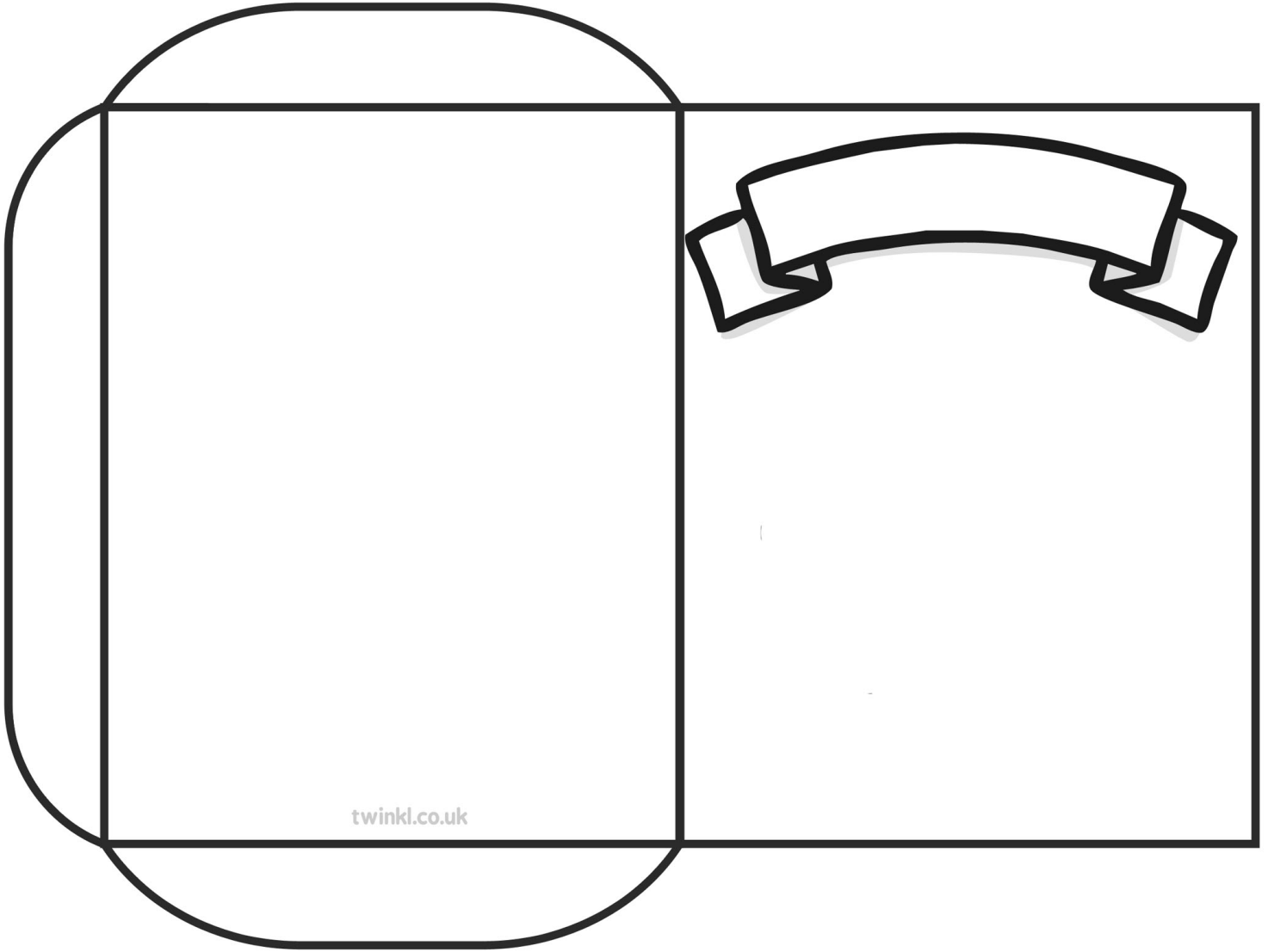
- Glue Gun, Pea Gravel (small rocks), Mixed plant soil, Paint, Flowerpot – Big enough for all the little pieces, Soil, dry Moss, Rocks, Figures, House or Water pond – Made out of small rocks and blue pebbles. Mini accessories – mushrooms, ladybugs, bluebirds, animals etc.
- Plant Ideas – Pansies, Wispy Ferns, Baby Angels Tears
- Paint a design on the flowerpot. Choose to paint little flowers, fairies, clouds, etc.
- Place a layer of pea gravel (small rocks) on the bottom of the flowerpot.
- Overtop of the pea gravel, lay down a small screen for plant roots to latch onto. If you are not planting real plants, then you can skip this step.
- Pour on a layer of mixed planting soil.
- Start adding the plants (real or fake) to the pot. Add more soil if needed to stabilize the plants.
- After adding more soil to stabilize the plants, add the little garden items: Fairies, mushrooms, fairy houses, birds, butterflies, etc.
- Create a fairy path with rocks to the house and anywhere else you desire.
- Water the fantasy garden and enjoy your magical creation!
- Watch https://www.youtube.com/watch?v=78z9KMxwoeo to get some creative ideas.

Key Words

- Sustainability
- Recycle
- Humidity
- Soil
- Charcoal
- Nutrition
- Plant cycle

Create Your Own Seed Packet

Show your creative side and create your own seed packet. Upload your seed packet to the SciArt Exchange submission system to share what you have created: https://contest.sciartexchange.org/XpandYourHorizon-2020-001-design-your-habitat/entry_form/.



Introductory Videos to a Variety of Terrariums

- What Is Terrarium? https://www.youtube.com/watch?v=_rOz-2bNKC0
- How to Make a Terrarium: https://www.youtube.com/watch?v=oCmcoG5sFII
- How to Make A Terrarium: https://www.youtube.com/watch?v=3y_e1dzL61Y
- Build a Tiny World - discusses how to create your own tiny world in a bottle: https://www.youtube.com/watch?v=0vu4wdHNo4Q
- NASA Climate Kids discusses how a terrarium holds in the warmth, just like Earth's atmosphere. The website introduces the different climates and weather. https://climatekids.nasa.gov/mini-garden/
- How to Grow a Pop Bottle Terrarium: https://www.youtube.com/watch?v=69hYV9ti_R8
- https://adirondackgirlatheart.com/coke-bottle-terrariu/
- DIY Terrarium for Kids! https://www.youtube.com/watch?v=PB93Mj7lhdE
- Creativity for Kids Grow 'n Glow Terrarium (You can purchase this kit if you would like to have all the supplies needed to grow your own terrarium): https://www.youtube.com/watch?v=uhrrZWAU_x8
- Aquarium Terrarium by Creativity for Kids: https://www.youtube.com/watch?v=n2ck814lQKE
- The Venus Fly Trap Terrarium: https://www.youtube.com/watch?v=mC4earMBHIo

Standards

- 112.14(b)(2)Scientific investigation and reasoning.
- 112.14(b)(10)Organisms and environments. The student knows that organisms undergo similar life processes and have structures that help them survive within their environments.