

2.A.1 Terrarium Lesson

Living and Non-Living things in the classroom

Grade Level	2
Sessions	1 – 45 minutes 2 – 60 minutes 3 – 30 minutes
Seasonality	Beginning of the year (year long project)
Instructional Mode(s)	Whole class, Individual
Team Size	None
WPS Benchmarks	02.SC.IS.01; 02.SC.IS.02; 02.SC.IS.05; 02.SC.IS.06; 02.SC.ES.02; 02.SC.LS.02; 02.SC.LS.03; 02.SC.LS.08; 02.SC.TE.01; 02.SC.TE.02
MA Frameworks	K-2.ES.1; K-2.ES.3; K-2.ES.4; K-2.LS.1; K-2.LS.2; K-2.LS.3; K-2.LS.4; K- 2.LS.7; K-2.LS.8; K-2.TE.1.1; K-2.TE.1.2; K-2.TE.1.3
Key Words	Science, Living, Nonliving, Habitat, Terrarium, Engineering

Summary

During this unit, the students will experience living, nonliving, and once living things through the design, building, and observing of a terrarium. They will decide what kind of things are needed in a terrarium and as a class will build an actual terrarium. They will then discuss which things are living, nonliving and once living inside as well as observe different patterns and happenings in the terrarium.

Session 1: Terrarium Design

Summary of Session

The students will design a terrarium of a given type and will draw a picture to show what sort of things they are including in their design. They will also write the things they are including and why. This will give the teacher an idea of what the students are thinking involving terrariums and what they might have in them.

Learning Objectives

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2002 Worcester Public Schools (WPS) Benchmarks for Grade 2

1. **02.SC.LS.03** Students will be able to identify the ways in which an organism's habitat provides for its basic needs.
2. **02.SC.IS.05** Students will record observations and data with pictures, numbers, or written statements.

Additional Learning Objectives

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1. At the conclusion of this lesson, the students will be able to identify various types of habitats.

Required Background Knowledge

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Prior to this lesson the teacher should have introduced what makes something living and something nonliving and the students should probably have talked about different types of terrariums by discussing different habitats (i.e. the desert, the woods, the ocean, a lake, a swamp, etc.) and how they are different.

Essential Questions

-
1. What kinds of things do you think are found in a given habitat and why?

Introduction / Motivation

–
The students' motivation for this exercise is that they get to decide for themselves what their terrarium needs in it. They also can use crayons or markers to draw a picture of what they think they should include.

Procedure

The instructor will...

1. Introduce what makes something living and nonliving.
2. Provide the students with the attached worksheet.

The students will...

1. Discuss types of terrariums and habitats (i.e. the desert, the woods, the ocean, a lake, a swamp, etc.), and how they are different.
2. Complete the worksheet by drawing and listing the things they would include in the terrarium.

Materials

Materials per class	Amount	Location
Worksheet	One per student	PIEE/WPI Graduate Fellows

Materials per student	Amount	Location
Worksheet	One	PIEE/WPI Graduate Fellows

Vocabulary with Definitions

-
1. *Desert* – A dry barren region that is usually sandy and without trees
 2. *Habitat* – Place where a plant or animal grows or lives in nature
 3. *Living* – Things that undergo life processes such as growing, reproducing, eating, and drinking
 4. *Non-living* – Things that were never living
 5. *Once-living* – Things that were alive at one time or were once part of a living thing
 6. *Swamp* – Land covered by water that has shrubs and trees

7. *Terrarium* – A small container in which you sometimes keep living plants and small animals
8. *Woodland* – Forested land covered with trees and shrubs

Assessment / Evaluation of Students

–

The worksheet can be used to assess the students' learning.

1. Did they list things that would make sense to include?
2. Did they tell why?
3. Did they include the objects they listed in their drawing?

Lesson Extensions

–

None

Attachments

–

1. Terrarium worksheet

Troubleshooting Tips

–

There should not really be too much trouble with this lesson. If students do not know what to include you can prompt them to think about what they might see if they went to the desert (as an example).

Safety Issues

–

None

Additional Resources

–

None

Name: _____

Date:

Terrarium

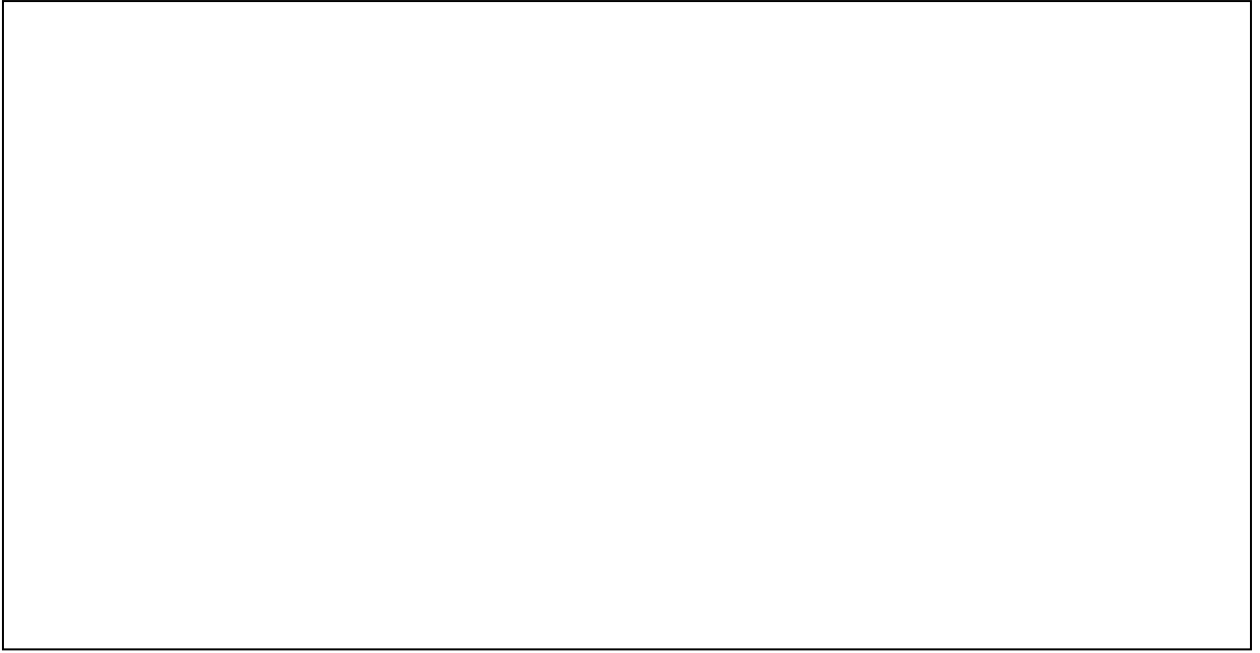
Definition: A small closed container where you keep and observe some living plants and small land animals, such as turtles and lizards.

List three things living or nonliving, you would put in your terrarium. Tell why.

1. _____

2. _____

3. _____



Draw your terrarium.

Session 2: Terrarium Building

Summary of Session

The students will build classroom terrariums given a set of materials.

Learning Objectives

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2002 Worcester Public Schools (WPS) Benchmarks for Grade 2

1. **02.SC.LS.03** Students will be able to identify the ways in which an organism's habitat provides for its basic needs.
2. **02.SC.IS.05** Students will record observations and data with pictures, numbers, or written statements.
3. **02.SC.IS.01** Students will ask questions about objects, organisms, and events in the environment.
4. **02.SC.TE.03** Identify and describe the safe and proper use of tools and materials (e.g., glue, scissors, tape, ruler, paper, toothpicks, straws, spools) to construct a simple structure.

Additional Learning Objectives

—
Students will learn that “building” something is not necessarily just limited to a bridge or a house.

Required Background Knowledge

—
Previous lesson

Essential Questions

1. What kinds of things do you find in a given habitat?
2. How can you assemble different materials to build a habitat for living things?

Introduction / Motivation

—
Tell the students that they are going to build a small habitat to keep in their classroom. A small animal will probably get the kids excited to be building its home, if available. The teacher can also show the students the materials and ask why that material is important to have in the terrarium.

Procedure

During this lesson, the class will build a terrarium of a given type. If more than one class is simultaneously completing this project, each class may build a different kind of terrarium. The teacher should procure the necessary materials for the desired habitat (a list of specific materials is attached) and then the students can be given different jobs in assembling the habitat, making sure everyone gets a turn to help. The attachment also provides information on including an animal in the habitat. Once the habitat is complete, the students can observe what happens in the habitat over time and keep notes. They can also help with the upkeep (i.e. adding water, feeding the animal(s) if there is one, etc.).

Materials (Terrarium Specific)

Woodland

Materials	Quantity	Shops
A large container w/lid	1	Pet Center (Petco)
Plants	As necessary	Home Improv. Store, Nursery
Gravel	½ Gallon	Pet Center
Sand	½ Gallon	Home Improv. Store
Soil	½ Gallon	Home Improv. Store, Nursery
Bark	¼ Bag	Home Improv. Store, Nursery
Charcoal	¼ Bag	Home Improv. Store, Nursery
Jar lid or ½ pint dish	1	
Trowel	1	Home Improv. Store, Nursery
Plant mister	1	Home Improv. Store, Nursery
Small animals	toad & salamander	Pet Center (Petco)
Food for animals	crickets & salamander food	Pet Center (Petco)

Desert Oasis

A large container w/lid	1	Pet Center (Petco)
Heat Lamp	1	Pet Center (Petco)
Water dish(plastic tub)	1	
Plants	As necessary	Home Improv. Store, Nursery
Gravel	½ Gallon	Pet Center
Sand	1 Gallon	Home Improv. Store
Soil	none	Home Improv. Store, Nursery
Bark	¼ Bag	Home Improv. Store, Nursery
Charcoal	¼ Bag	Home Improv. Store, Nursery
Jar lid or ½ pint dish	1	
Trowel	1	Home Improv. Store, Nursery
Plant mister	1	Home Improv. Store, Nursery
Small animals	chameleons	Pet Center (Petco)
Food for small animals	crickets	Pet Center (Petco)

Aquatic

A large container	1	Pet Center (Petco)
Plants	Water plants	Home Improv. Store, Nursery
Gravel	1 Bag	Pet Center
Aquarium Salt	1/2 tsp per gallon	Pet Center
Water filter	1 w/ replacement filters	Pet Center
Small animals	4-6 Swordtails/Mollies (Male and Female) and Snails	Pet Center
Food for small animals	Tropical Fish Food	Pet Center

Shoreline

A large container w/lid	1 (Lid is a necessity)	Pet Center
Glass Meat Loaf Pan	1	Home & Kitchen Center
Plants	As necessary	Home Improv. Store, Nursery
Sand	2 Gallon	Home Improv. Store, Nursery
Gravel	½ Gallon	Pet Center
Rocks, wood	As necessary (shade/climbing)	Home Improv. Store, Nursery
Jar lid or ½ pint dish	1	
Trowel	1	Home Improv. Store, Nursery
Small animals	Fiddler & Hermit Crabs	*****
Food for small animals	Crab food and occasional feeder fish	Pet Center

Vocabulary with Definitions

1. *Desert* – A dry barren region that is usually sandy and without trees
2. *Habitat* – Place where a plant or animal grows or lives in nature

3. *Living* – Things that undergo life processes such as growing, reproducing, eating, and drinking
4. *Non-living* – Things that were never living
5. *Once-living* – Things that were alive at one time or were once part of a living thing
6. *Shoreline* – Area including the beach and just beyond
7. *Swamp* – Land covered by water that has shrubs and trees
8. *Terrarium* – A small container in which you sometimes keep living plants and small animals
9. *Woodland* – Forested land covered with trees and shrubs

Assessment / Evaluation of Students

-
1. Do the students actively participate?
 2. Are they able to take part in discussion about why you need certain things in the terrarium?

Lesson Extensions

–
None

Attachments

-
1. Notes for teacher preparation

Troubleshooting Tips

–
Make sure everyone gets a turn to help build the terrarium and everyone has a job to do. In addition, if the terrarium includes some type of animal it will need to be fed and may need to be cleaned depending on the choice of animal.

Safety Issues

–
There may be safety issues relating to the type of animal used in the terrarium. Certain animals may bite or could carry diseases. All the above-mentioned

animals should pose a minimal bite risk, but children should wash their hands after handling the animals.

Additional Resources

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McCormick, Jann (2005). *Set up a Terrarium*. Retrieved November 18, 2005, from Spike's Science Projects Web site: <http://spikesworld.spike-jamie.com/science/ecology/c241-02-terrarium.html>

Bartlett, R.D. and Patti (2005). *The Ultimate Terraria*. Retrieved November 18, 2005, from PetPlace.com Web site: <http://petplace.netscape.com/articles/artShow.asp?artID=1721>

Notes for Teacher Preparation

Aquatic Terrarium

Materials (for inside terrarium)

- Gravel
- Aquatic plants
- A couple larger rocks (cleaned)
- Water

Suggested animals – Live Breeders including Mollies and Swordtails

Assemble gravel, larger rocks, and fill with water. Add the filter and suggested salt. After the terrarium has been running for 1 hour or more, add the fish by first floating them in their bags in the tank. After 15 minutes, gently pour the fish into the aquarium. This terrarium is simple to assemble. Be sure to buy only one species, but the male and female of that species (females are the plump ones). Use both natural and plastic plants, so that the babies can hide from their hungry parents. Within about 1 month, the students should notice small semi-transparent fish, which are fish babies. Feed them once or twice daily, and make sure not to overfeed.

Woodland Terrarium

Materials (for inside terrarium)

- Gravel
- Sand
- Soil
- Charcoal
- Small trees or plants
- Tiny ferns
- Moss
- A couple larger rocks/pieces of bark
- Small lid or ½ pint dish

Suggested animals – Sow or pill bug, salamander, newt, toads, snails

Layer approximately 1" gravel, ½" sand, ½" charcoal and 2-3" soil in the container. If you are making more than one habitat, you can use the sand and gravel for the other habitats. Plant tiny plants and ferns and place moss. Place larger rocks and bark where desired. Once again, if a small animal is to live in the habitat you will need to make sure it has some source of food. You can use the pond as a water source. The pond water needs to be changed daily, from a jar of day old water.

Desert Terrarium

Materials (for inside terrarium)

- Sand

- Small cacti
- A couple larger rocks and/or dried wood
- Small lid (for making a water “pond”)

Suggested animals – Desert lizard, geckos, small snakes

Cover the bottom of the container with sand. Plant the small cacti. These will need a couple of drops of water every so often to be able to survive. Place larger rocks and/or dried wood where desired. Once again, if a small animal is to live in the habitat you will need to make sure it has some source of food. You can use the pond (like a desert oasis) as a water source. If lizards are used, then a heat source such as a heat lamp or heat rock should be used to prevent the lizards from dying. You can substitute a portable shop light for a heat lamp, purchased cheaply at a home improvement store.

Swampland Terrarium (non-animal alternative to aquatic terrarium)

Materials (for inside terrarium)

- Gravel
- Sand
- Peat moss
- Tiny ferns
- Small vines
- Other plants that enjoy wet climates
- Wood and bark pieces
- A large contained area (like the jar lids above but larger) to create the water part of the swamp

Mix together sand, peat moss, gravel, and place in the bottom of the container 2” deep. Also, make sure, when you fill the terrarium that you add in the contained area that will hold water. Plant tiny ferns, plants, and vines. Place wood and bark pieces.

Shoreline Terrarium

Materials (for inside terrarium)

- Sand/Gravel
- Grasses
- A couple larger rocks and/or dried wood
- Large Tub or Glass Meat Loaf Pot
- Shells
- 1 tsp of Aquarium Salt

Suggested animals – Fiddler Crabs or Hermit Crabs

For Fiddler Crabs: Place the meatloaf pan in then bottom of the tank. Fill in Gravel and Sand as desired. The crabs should be able to walk into the dish,

though; sand does not need to cover the bottom of the dish. Add 1 tsp of salt per gallon to the water.

For Hermit Crabs: Use less sand and more gravel, but make a sloped terrarium with small jar lid/tub at the bottom.

All: Add plants and fill tub or pan with water. Add shells and rocks as desired. Both of these animals are “climbers” and the students should always remember to keep the lid on the terrarium.

Session 3: Terrarium Observation

Summary of Session

The students will now write their observations about the terrarium in their classroom. They will investigate which types of living, nonliving, and once living things are inside the terrarium. There will also be a class discussion of their findings.

Learning Objectives

—
2002 Worcester Public Schools (WPS) Benchmarks for Grade 2

1. **02.SC.IS.01** Students will ask questions about objects, organisms, and events in the environment.
2. **02.SC.IS.05** Students will record observations and data with pictures, numbers, or written statements.
3. **02.SC.IS.06** Students will discuss observations with others.
4. **02.SC.LS.03** Students will be able to differentiate between living and nonliving things based on their characteristics.
5. **02.SC.LS.08** Students will observe small animals in the classroom while they find food, water, shelter, etc.

Additional Learning Objectives

—
None

Required Background Knowledge

—
Previous lessons

Essential Questions

-
1. What things in our terrarium are living, nonliving, and once-living?
 2. What things do you see happening inside the terrarium?

Introduction / Motivation

–

The students' motivation for this lesson is that they now get to see what is happening inside the terrarium that they helped build. If an animal has been included, what is that animal eating and drinking? What does it do within the habitat?

Procedure

–

The teacher should first provide the students with the worksheet about what is living, nonliving, and once living and let students fill it in. A class discussion of what they found can follow. The other worksheet is an extension activity when the kids have finished work early. They answer the given questions and draw a picture (the picture could be on a larger sheet of paper if the teacher wanted to use it as more of an art project).

Materials

Materials per class	Amount	Location
Worksheets	One of each type per student	PIEE/WPI Graduate Fellows

Materials per student	Amount	Location
Worksheets	One of each type per student	PIEE/WPI Graduate Fellows

Vocabulary with Definitions

–

1. *Observation* – To watch something. Sometimes when we are observing something, we might write what we see.

Assessment / Evaluation of Students

–

The worksheets can be used to assess the students' learning.

1. Did they list correct living, nonliving, and once living things?
2. Did they make good observations about the habitat?

3. Was their writing understandable with good grammar, spelling, and printing?

Lesson Extensions

–
If several classrooms are participating in the terrarium lesson at the same time, the students in each classroom should talk to the other students about their terrariums. This will encourage the students to discuss their observations, and will create a sense of ownership of the terrarium.

Attachments

-
1. Terrarium worksheet

Troubleshooting Tips

–
It will be a good idea to have students observing the terrarium a few at a time.

Safety Issues

–
Make sure if there are animals in the terrarium, the students do not handle the animals without a teacher or other adult's supervision.

Additional Resources

–
None