

Bay Area Scientists in Schools Presentation Plan

Lesson Name: Survival on the playground

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Grade Level: 4th Grade

Standards Connection(s): Ecosystems, some thrive some die

Teaser: Are your students itching to go outside? In this lesson, your students will learn about a variety of ecosystems and recreate an ecosystem in their own classroom. We supply all of the plants, dirt, and the container, as well as an informative lesson about the importance of ecosystems and why different living organisms are only found in particular regions. We will leave your class with a special present so that they can begin to populate their new environment with living creatures.



Vocabulary/Definitions:

terrarium- a miniature version of a habitat with plants, animals, and non-living physical elements

habitat- place where specific plants and animals live

ecosystem- a set of relationships between organisms living in the same physical space

organism- a living thing

biome- a specific region where several habitats intersect

Materials:

- fish tank for terrarium
- gravel
- dirt, scoop for the dirt
- plants from a representative environment
- bug trap
- students should have paper, pencil
- overhead projector transparencies and markers

Classroom Set-up:

- Student grouping of 4-6
- Power/Water
- chalk board/whiteboard
- overhead projector
- 5 minutes before and after the class for set up and clean up



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Classroom Visit

1. Personal Introduction: 1 Minutes

Hi everyone. We are graduate student scientists at UC Berkeley. We study the way cells handle DNA and the way different organisms interact with one another. Today we are going to discuss ecology, one of the many fields in biology.

Topic Introduction: 10 Minutes

What questions will you ask to learn from students? Big Idea(s), vocabulary, assessing prior knowledge...

Why do different organisms live in different places? Different organisms live in different places because they have specific requirements for survival. Some organisms require lots of sunlight, while others like to live cold, dark places.

What kinds of animals live on you school playground? Different organisms or living creatures live in different environments, or ecosystems. The organisms living in these environments are dependent on each other for survival. Today we are going to make a miniature ecosystem in your classroom. A miniature ecosystem is called a terrarium. It has plants, animals, water, and resembles a larger ecosystem. What things are necessary for an ecosystem to be successful? Can anyone think of different ecosystems or biomes?

2. Learning Experience(s): 45-50 Minutes

Part 1: This portion of the lesson should last about 10 minutes. An important part of an ecosystem is understanding what kinds of animals and plants will interact or not interact. To begin each group will be given a card with an ecosystem and some random cards with different animals, plants, landforms etc. The ecosystems will include forest, chaparral, desert, and tundra. Each group will try to match their organism/landform cards to their environment. The groups will trade cards with other groups to create the correct environment for their given ecosystems. Some organisms will be found in more than one environment while others will be limited to living in one place. The different organisms in these environments will be dependent on specific features in their environment for survival.

Part 2: (this should take 15 minutes) Now that we have explored a variety of different environments, we will look at the specific environment around the school playground. given the environment around the school, what kinds of organisms do you think will be best suited to live in our terrarium? What organisms may have a hard time living in the terrarium? What things should we consider when building our terrarium? We are going to make a picture of what we want our terrarium to include. I will get things started and then one member from each group will add another thing that we should include. We need gravel at the bottom of our terrarium so that the soil can drain. (draw gravel in the bottom of the container). Then we need soil. Why do we need soil? What organisms live in the soil?

Can someone draw an example of what might be living in the soil? (ie earthworms, plants, crickets). What else will live in our terrarium if it is representative of your playground? What natural resources do you think we should have available? (ie water, sunlight). Let's design our terrarium. I have brought a few plants, some dirt, and some other things that we can include in our terrarium. These plants are plants that are found around your school. Each group will have 5 minutes to make a picture of what they would like the terrarium to look like on these overhead transparencies. We will vote on all of the drawings for the best design and make our terrarium according to this plan.

Part 3: Now we are ready to build our terrarium (10-15 minutes). Each group will add a specific part to the terrarium. Remember we will be adding living organisms and each living organism requires different conditions for survival. (groups will add gravel, dirt, plants, water dish, rocks)

3. Wrap-up: Sharing Experiences

10 Minutes

Now that we have made an environment that is representative of your school yard, our terrarium is ready for the addition of animals. I am leaving you a bug trap for your class. Your teacher has instructions on how to set it up. You will be able to add the insects you collect to the terrarium we have created. Also, you will want to occasionally mist the terrarium with water, specifically mineral water, or rain water. This water has more nutrients for your terrarium. What did you learn today? Why do certain organisms only live in certain places? What kinds of organisms would you expect to live near your school? Why do different organisms live in different places?

4. Connections & Close:

2 Minutes

You live in a specific environment. If you have pets, plants, etc. they will require different conditions for optimal survival. Everything requires water in some form. Some animals get water from seeds while others drink water directly. When we destroy the environment, we may be negatively impacting organisms that require a specific habitat for survival. Certain organisms cannot live in certain environments. For example, fish cannot live on land, and polar bears wouldn't do very well in the rain forest.

TOTAL 75 Minutes

Follow-up – After Presentation

Suggest students write a letter explaining "How we learned about biomes...."

Students will continue to observe their terrarium and make guesses as to what will grow well. As they add new insects they will see that some will perform better in the new environment than others. What changes have you observed in your terrarium? Which plants are best suited for this environment? Which insects are most successful?