



* Science

My Habitat, Your Habitat

Aladdin and Jasmine both lived with limited opportunity to explore beyond their own “neighborhood.” Had they done so, both would have discovered other environments beyond the desert with characteristics different from those most common to them. Both would have discovered multiple ecosystems--the combination of light, air, water, soil--varied climates, habitats and biomes, all called home by some living thing.

Kentucky Science Standards

Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.2-2.6) Grades 4-6

Academic Expectations:

- 2.3 Students identify and analyze systems and the ways their components work together or affect each other.
- 2.4 Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.
- 2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance.
- 2.6 Students understand how living and nonliving things change over time and the factors that influence the changes.

Ohio Science Standards: Life Sciences

Diversity and Interdependence of Life

Benchmarks Grades 4-5

C. Compare changes in an organism’s ecosystem/habitat that effect its survival.

Grade 6

C. Explain how energy entering the ecosystems as sunlight supports the life of organisms through photosynthesis and the transfer of energy through the interaction of organisms and the environment.

Objective:

Students will:

- Work cooperatively and follow inquiry guidelines to collect, evaluate data, and draw conclusions for varying environments, including that of desert with regards to their support of living things.

Assessment:

Students will be able to:

- Organize and collect data using scientific and mathematical tools.
- Share findings and conclusions from the data collected to answer an original inquiry question.
- Design and construct a simulated environment to determine how a change within the environment affects the survival of its living organisms.

Sample selected response items to gauge student understanding:

1. The following factors may affect the survival of organisms within an environment, habitat or ecosystem. Explain why.
 - a. changes in the climate/weather
 - b. species occupying their own ecological niche independently
 - c. a change in the availability of food, water, and/or resources
 - d. structural development by humans

Answer: Each bring about change that affects an organism's specific needs related to its growth--food, water, shelter and the ability to raise young.

2. Jasmine and Aladdin's "home" environments were similar because_____.

Answer: Both lived in desert biome/environment, and their basic needs were met from available resources.

3. A scientist decides that a new species should to be added to a desert environment. What are the considerations before making such a decision?

Answer: The scientist should check to be sure the basic needs of the species can be met within this habitat without altering to any great extent, the survival of others species that are already exist there. He/she should also be sure that the species fits into a common food chain/web, and that the species contributes to the ecosystem.

Vocabulary:

- Environment/Biome
- Habitat
- Ecosystem
- Characteristics
- Evidence
- Survival
- Observation
- Inference

Materials:

- Reference materials about desert environments
- For each team of students
 - Variety of soil materials
 - Plants and animals (replicas) identified for various environments/habitats
- Aquarium/water (optional)
- Scientific tools
 - Hand lens
 - measurement tools
 - Heating/lighting devices
- For each student
 - Journal for recording plans, observations, predictions inferences and data conclusions

Activity

Living Within These Walls

Teacher will:

1. Establish a question for inquiry to introduce and guide the activity. (e.g., How is it possible that diverse biomes, environments, ecosystems and habitats can surround or be adjacent to that of a desert in the support of other living organisms?)
2. Provide a variety of materials and resources for students' use to collect data about a chosen, environment or ecosystem, including that of desert, and then design a simulated model of their own. Students will work in teams of 3 or 4.
3. Establish guidelines for working within a cooperative group and the requirements of mastery for the group project based on agreed rubrics developed by teacher and students. Emphasize the requirements for any environment and habitat that supports life—the need for food, water, shelter and the ability to raise young.
4. Facilitate student brainstorming for the type of required data that needs to be obtained—information on climate, plants, animals, etc.
5. Facilitate discussions within large and small groups related to the exploration of the varying environments. (e.g., Does the collected information provide evidence of the four requirements necessary for any habitat?) Why or why not?
6. Assist students with evaluation of plans for their simulated environment models, and make changes if needed.
7. Have student create their simulations with the requirement to illustrate what happens when there is a change within the environment. (*Sixth grade students will also emphasize the role of photosynthesis in the environment and habitat.)
8. Have student teams present and share their models with classmates.
9. Instruct students to observe patterns of similarities to and differences from a desert environment, and the degree to which the environment offers food, water, shelter and the ability to raise young.
10. Extend the activity by having students research the current region of the Middle East, in which Aladdin would have lived, to judge its ability to support its living organisms, including people.