

Heredity



Lesson Summary

- © Identify how various organisms adapt in different environments.
- © Explore traits and characteristics of different organisms through dance.

Lesson Plan and Procedure

Experience/Identify

Define *organism* as any living thing that carries out life activities on its own.

Define *traits* as characteristics that determine how an organism looks, acts, or functions.

The following activities give students a chance to move like different organisms based on their traits.

Lesson Key Facts

- © **Grade(s):** 1, 3
- © **Subject(s):** Dance, Science, Social Studies
- © **Duration of lesson:** 40 minutes
- © **Author(s):** Jana Shumway

Organism	Trait	Dance/Movement
Human	Walks on two legs	Walk around the room to the beat of the music
Animal	Walks on four legs	Walk on hands and feet
Bird	Flies in the air	Fly around the room with arms outstretched
Insect	Has six legs	With a partner, create a shape with six legs and walk around the room
Plant	Grows from the ground	Start low and grow high
Bacterium	Is incredibly small	Get really small and move in really minute way

Explore/Investigate

Divide the class into two groups: parents and offspring. Have each parent pick one offspring to be his or her partner. Discuss heredity, inherited traits, and learned traits. Place a card with the definition of each on the board.

- ⊙ Heredity: The passing of traits from parents to their offspring
- ⊙ Inherited traits: Characteristics passed from parents to their offspring
- ⊙ Learned traits: Characteristics or behaviors that are learned by following the examples of the parents

In pairs, have the offspring copy the movement of their parent. Model with a student how this could look.

Teacher: *If I were doing human movements on two legs, I would show my offspring how to _____ (tiptoe, walk backward, skip, jump in circles, and so on), and he or she will have to copy as close as he or she can everything I am doing and thus inherit my traits.*

After modeling an example, allow the students to dance their assigned part, either as leader (parent) or follower (offspring).

Use the drum for accompaniment. With each activity, switch roles and have the offspring copy the varied movement of the parent.

Organism	Trait	Dance/Movement
Human	Stands on two legs	Tiptoe, walk backward, skip, jump, run, leap, and spin
Animal	Stands on four legs	Move high, low, and sideways with small and large steps
Bird	Flies through the air	Flap around the classroom by diving and swooping low and high
Insect	Moves on six legs	Crawl on hands and feet slowly
Plant	Grows from the ground	Twist straight, wide, symmetrical, low to high, and side to side
Bacterium	Is incredibly small	Bend down in a small shape and move around with arms twisted, heads tucked, and legs squared



Create/Perform

Discuss the concept of species and specialized structures. Put a card on the board with the definitions on it.

- ⊙ Species: Groups of plants or animals that can only reproduce among themselves
- ⊙ Specialized structures: Body parts unique to a certain organism (examples listed below)
 - Snowshoe rabbit: Lives in a cold environment, has small ears to keep in the heat, and has broad feet to travel on the snow
 - Jackrabbit: Lives in hot, dry areas; has long ears to release heat; and has powerful hind legs to outrun predators
 - Woodpecker: Has a climbing foot
 - Duck: Has a swimming foot
 - Emu: Has a running foot
 - Hawk: Has a grasping foot

Discuss *environment* as the surrounding in which an organism lives.

Play "Sun of Jamaica" by Cusco.

Have the students get into groups of four or five. Assign each group an environment (swamp, forest, ocean, arctic, desert, savanna, and so on). Have the students create with their bodies an imaginary animal and give it traits that it would need in order to survive in its environment.

Create the shape of the animal as a group. Each child will represent one trait. Name the animals. Have the children show their animals to the class.

When they show the animal, state the environment it lives in. Have all the students who are observing make shapes like that environment. (For example, they might make cacti and sand for desert.) The group performing will state the animal's name, and then move like their imaginary animal would move through the student-created environment.



Connect/Analyze

Discuss the special structures that each group chose for their animal to adapt to fit into their environment. Discuss the effectiveness of having these traits as opposed to others.

Learning Objectives

- ◎ Understand that traits are passed from parents to offspring.
- ◎ Identify variations between parents and offspring.
- ◎ Identify traits that are helpful or unhelpful, depending on the environment.
- ◎ Compare the dances of others and the aspects that made them unique.
- ◎ Collaborate with peers to create a unified dance.
- ◎ Refine spatial relationships between members of a dance.

Utah State Board of Education Standards

This lesson can be used to meet [standards](#) in many grades and subject areas. We will highlight one grade's standards to give an example of application.

Grade 3 Science with Engineering Education (SEEd)

- ◎ **Standard 3.2.3: Construct an explanation** that the environment can affect the traits of an organism. Examples could include that the growth of normally tall plants is stunted with insufficient water or that pets given too much food and little exercise may become overweight. (LS3.B)
- ◎ **Standard 3.2.4: Construct an explanation** showing how variations in traits and behaviors can affect the ability of an individual to survive and reproduce. Examples of traits could include large thorns protecting a plant from being eaten or strong smelling flowers to attracting certain pollinators. Examples of behaviors could include animals living in groups for protection or migrating to find more food. (LS2.D, LS4.B)
- ◎ **Standard 3.2.5: Engage in argument from evidence** that in a particular habitat (system) some organisms can survive well, some survive less well, and some cannot survive at all. Emphasize that organisms and habitats form systems in which the parts depend upon each other. Examples of evidence could include needs and characteristics of the organisms and habitats involved such as cacti growing in dry, sandy soil but not surviving in wet, saturated soil. (LS4.C)

Grade 3 Dance

- ◎ **Standard 3.D.CR.1:** Demonstrate willingness to take turns leading and following when creating dance with others.
- ◎ **Standard 3.D.P.7:** Recall movement sequences with a partner or in group dance activities.
- ◎ **Standard 3.D.CO.1:** Respond to a dance work using a set of questions, create movement using ideas from responses, and explain how certain movements express a specific idea.

Grade 3 Social Studies

- ◎ **Standard 1:** Students will understand how geography influences community location and development.

- **Objective 2:** Describe how various communities have adapted to existing environments and how other communities have modified the environment.
 - Describe the major world ecosystems (i.e. desert, plain, tropic, tundra, grassland, mountain, forest, wetland).

Equipment and Materials Needed

- ◎ Visuals of the different environments
- ◎ Drum
- ◎ Music track: “Sun of Jamaica” by Cusco
- ◎ Definition cards for the following:
 - Organism
 - Traits
 - Heredity
 - Inherited traits
 - Learned traits
 - Species
 - Specialized structures
 - Environment

Additional Resources

- ◎ 3rd Grade SEEd Open Educational Resource Textbook: <https://emedia.uen.org/courses/utah-oer-textbooks-3rd-grade-seed/view>
- ◎ Explanation of different biomes: <https://ucmp.berkeley.edu/exhibits/biomes/index.php>

Image References

Image 1: BYU Arts Bridge Student Blogs (<http://education.byu.edu/arts/bridge/2016>).

Images 2–3: Bradley Slade.