



Quarrybrook

EXPERIENTIAL EDUCATION CENTER

Program Title: **Organism Must-Haves**

Audience: 6th-8th grade students

Program Theme: To be classified as biotic, an organism must have all five characteristics used to define living things.

Program Goal: Students will be able to identify the five characteristics of living things in a variety of organisms from different kingdoms.

Next Generation/Common Core Connections:

Topic: MS-LS1 From Molecules to Organisms: Structures and Processes

Dimensions: Cause and Effect, Systems and System Models, Energy and Matter

Program Outline:

Activity 1: LIVING OR NON-LIVING (30 min.) – Students will sort elements of an ecosystem as biotic or abiotic, then discuss what five characteristics the living elements have in common. (Living things are made of cells, take in energy and get rid of waste, grow and develop, reproduce, and respond and adapt to their environment.)

Objectives: Students will understand what characteristics all living things share, and that both biotic and abiotic elements are necessary for an ecosystem to thrive.

Intended Outcomes: Students will be able to distinguish elements of an ecosystem as being biotic or abiotic. Students will be able to explain why they placed each element into its category.



Teachers are welcome to add further explanation of the five characteristics of living things, based on classroom learning.

Activity 2: KINGDOM SEARCH (75 min.) – Now that we have identified the biotic elements of an ecosystem, students will have the opportunity to closely examine specimens from three of the kingdoms. Students will present evidence that plants, animals, and fungi exhibit all of the characteristics of living things.

Objectives: Student sub-teams will have opportunities to identify plant, animal, and fungus specimens, and to find in each the five characteristics that all biotic organisms must have to be classified as living. Students will also identify where each organism finds its four essential needs (food, water, shelter, and air).

Intended Outcome: Each group will accurately record the evidence they observed that indicates their organism is living.



Teachers and chaperones will be useful in guiding students through their process of determining why the organism they are studying is biotic, and how it exhibits the five characteristics of living things.

Conclusion/Wrap-up: (15 min.) Students will be asked to provide an example of a characteristic of a living organism and to share the evidence they found that proves their specimen has that characteristic.

Successful completion of this program will help support your students' proficiency in NGSS

Performance Expectations:

MS-LS1-1 Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.