



Kentucky Academic Standards Addressed By Zoo Program

Nocturnal Adventure – Animal Adaptations

Program description:

During the Animal Adaptations Overnight students will investigate the definition of adaptation. Have you ever wondered why a mouse scurries snugly against the wall as it runs or why a dog has a wet nose? Have you ever thought about how hard it would be to get dressed for school if you had no thumbs? Nocturnal Adventures' Animal Adaptations will answer all those questions and more!

Kentucky *Core Content for Science Assessment* standards addressed by this program:

END OF PRIMARY – HIGH SCHOOL

Subdomain: Biological Science

Organizer: Unity and Diversity

Standards:

End of Primary

SC-EP-3.4.1.

Students will explain the basic needs of organisms.

Organisms have basic needs. For example, animals need air, water and food; plants need air, water, nutrients and light. Organisms can survive only in environments in which their needs can be met.

SC-EP-3.4.3.

Students will describe the basic structures and related functions of plants and animals that contribute to growth, reproduction and survival.

Each plant or animal has observable structures that serve different functions in growth, survival and reproduction. For example, humans have distinct body structures for walking, holding, seeing and talking. These observable structures should be explored to sort, classify, compare and describe organisms.

SC-EP-3.4.4

Students will describe a variety of plant and animal life cycles to understand patterns of the growth, development, reproduction and death of an organism.

Plants and animals have life cycles that include the beginning of life, growth and development, reproduction and death. The details of a life cycle are different for different organisms. Observations of different life cycles should be made in order to identify patterns and recognized similarities and differences.

Fourth Grade

SC-04-3.4.1.

Students will:

- Compare the different structures and functions of plants and animals that contribute to the growth, survival and reproduction of the organisms;
- Make inferences about the relationship between structure and function in organisms.

Each plant or animal has structures that serve different functions in growth, survival and reproduction. For example, humans have distinct body structures for walking, holding, seeing and talking. Evidence about the relationship between structure and function should be used to make inferences and draw conclusions.

SC-04-3.4.4

Students will identify some characteristics of organisms that are inherited from the parents and others that are learned from interactions with the environment.

Observations of plants and animals yield the conclusions that organisms closely resemble their parents at some time in the life cycle. Some characteristics (e.g., the color of flowers, the number of appendages) are passed to offspring. Other characteristics are learned from interactions with the environment, such as the ability to ride a bicycle, and these cannot be passed on to the next generation. Explorations related to inherited versus learned characteristics should offer opportunities to collect data and draw conclusions about various groups of organisms.

Fifth Grade

SC-05-3.4.1

Students will describe and compare living systems to understand the complementary nature of structure and function.

Observations and comparisons of living systems at all levels of organization illustrate the complementary nature of structure and function. Important levels of organization for structure and function include cells, tissue, organs, organ systems, organisms (e.g., bacteria, protists, fungi, plants, animals), and ecosystems. Examining the relationship between structure and function provides a basis for comparisons and classification schemes.

Sixth Grade

SC-06-3.4.2

Students will make inferences about the factors influencing behavior based on data/evidence of various organism's behaviors.

Behavior is one kind of response an organism may make to an internal or environmental stimulus. Observations of organisms, data collection/analysis, support generalizations/conclusions that a behavioral response is a set of actions determined in part by heredity and in part from experience. A behavioral response requires coordination and communication at many levels including cells, organ systems and organisms.

Organizer: Biological Change

Standards:

Fifth Grade

SC-05-3.5.2.

Students will understand that all organisms must be able to obtain and use resources, grow, reproduce, and maintain stable internal conditions while living in a constantly changing external environment.

High School

SC-HS-3.5.2

Students will:

- Predict the success of patterns of adaptive behaviors based on evidence/data;
- Justify explanations of organism survival based on scientific understandings of behavior.

The broad patterns of behavior exhibited by organisms have changed over time through natural selection to ensure reproductive success. Organisms often live in unpredictable environments, so their behavioral responses must be flexible enough to deal with uncertainty and change. Behaviors often have an adaptive logic.

Subdomain: Unifying Concepts

Organizer: Energy Transformations

Standards:

End of Primary

SC-EP-4.6.1

Students will describe basic relationships of plants and animals in an ecosystem (food chains).

Plants make their own food. All animals depend on plants. Some animals eat plants for food. Other animals eat animals that eat the plants. Basic relationships and connections between organisms in food chains can be used to discover patterns within ecosystems.

Fourth Grade

SC-04-4.6.1

Students will analyze patterns and make generalizations about the basic relationships of plants and animals in an ecosystem (food chain).

Plants make their own food. All animals depend on plants. Some animals eat plants for food. Other animals eat animals that eat the plants. Basic relationships and connections between organisms in food chains, including the flow of energy, can be used to discover patterns within ecosystems.

Organizer: Interdependence

Standards:

End of Primary

SC-EP-4.7.1.

Students will describe the cause and effect relationships existing between organisms and their environments.

The world has many different environments. Organisms require an environment in which their needs can be met. When the environment changes some plants and animals survive and reproduce and others die or move to new locations.

Fourth Grade

SC-04-4.7.1

Students will make predictions and/or inferences based on patterns of evidence related to the survival and reproductive success of organisms in particular environments.

The world has many different environments. Distinct environments support the lives of different types of organisms. When the environment changes some plants and animals survive and reproduce and other die or move to new locations. Examples of environmental changes resulting in either increase or decrease in numbers of a particular organism should be explored in order to discover patterns and resulting cause and effect relationships between organisms and their environments(e.g., structures and behaviors that make an organism suited to a particular environment). Connections and conclusions should be made based on the data.

High School

SC-HS-4.7.1

Students will:

- Analyze relationships and interactions among organisms in ecosystems;
- Predict the effects on other organisms of changes to one or more components of the ecosystem.

Organisms both cooperate and compete in ecosystems. Often changes in one component of an ecosystem will have effects on the entire system that are difficult to predict. The interrelationships and interdependencies of these organisms may generate ecosystems that are stable for hundreds or thousands of years.