



Kentucky Academic Standards Addressed By Zoo Program

WINGED WONDERS: SEED DROP!

Program description:

Discover how whether all seeds fall at the same rate. Do small or big seeds fall more slowly? Students will use inquiry to discover answers to these and other questions.

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

EARLY PRIMARY – 6TH GRADE

Subdomain: Physical Science

Organizer: Structure and Transformation of Matter

Standards:

Early Primary

SC-EP-1.1.1

Students will classify material objects by their properties providing evidence to support their classifications.

Organizer: Motion and Forces

Standards;

4th Grade

SC-04-1.2.1

Students will interpret or represent data related to an object's straight-line motion in order to make inferences and predictions of changes in position and/or time.

An object's motion can be described by measuring its change in position over time such as rolling different objects (e.g., spheres, toy cars) down a ramp. Collecting and representing data related to an object's motion provides the opportunity to make comparisons and draw conclusions.

5th Grade

SC-05-1.2.1

Students will interpret data in order to make qualitative (e.g., fast, slow, forward, backward) and quantitative descriptions and predictions about the straight-line motion of an object.

The motion of an object can be described by its relative position, direction of motion and speed. That motion can be measured and represented on a graph.

SC-05-1.2.2

Students will understand that forces are pushes and pulls, and that these pushes and pulls may be invisible (e.g., gravity, magnetism) or visible (e.g., friction, collisions.)

6th Grade

SC-06-1.2.1

Students will describe friction and make inferences about its effects on the motion of an object.

When an unbalanced force (friction) acts on an object, the change in speed or direction depends on the size and direction of the force.

7th Grade

SC-07-1.2.1

Students will explain the cause and effect relationship between simple observable motion and unbalanced forces.

An object remain at rest or maintains a constant speed and direction of motion unless an unbalanced force acts on it (e.g., gravity). When an unbalanced force acts on an object, the change in speed or direction depends on the size and direction of the force.

8th Grade

SC-08-1.2.1

Students will describe and explain the effects of balanced and unbalanced forces on motion as found in real-life phenomena.

Objects change their motion only when a net force is applied. Newton's Laws of Motion are used to describe the effects of forces on the motion of objects.

Subdomain: Biological Science

Organizer: Unity and Diversity

Standards:

Early Primary

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-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 he relationship between structure and function should be used to make inferences and draw conclusions.

SC-0403.3.4

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

8th Grade

SC-08-3.4.4

Students will describe and explain patterns found within groups of organisms in order to make biological classifications of those organisms.

Observations and patterns found within groups of organisms allow for biological classifications based on how organisms are related.

5th 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, tissues, 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.

Organizer: Energy Transformations

Standards:

SC-EP-4.6.1

Students will describe 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 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.

8th Grade
SC-08-4.6.5

Students will:

- Describe the relationships between organisms and energy flow in ecosystems (food chains and energy pyramids);
- Explain the effects of change to any component of the ecosystem.

Energy flows through ecosystems in one direction from photosynthetic organisms to herbivores to carnivores and decomposers.

Organizer: Biological Change

Standards:

Fifth Grade
SC-05-3.5.1

Students will describe cause and effect relationships between enhanced survival/reproductive success and particular biological adaptations (e.g., changes in structures, behaviors, and/or physiology) to generalize about the diversity of populations of organisms.

Biological change over time accounts for the diversity of populations developed through gradual processes over many generations. Examining cause and effect relationships between enhanced survival/reproductive success and biological adaptations (e.g., changes in structures, behaviors, and/or physiology), based on evidence gathered, creates the basis for explaining diversity.

Subdomain: Unifying Concepts

Organizer: Interdependence

Standards:

Early 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 others 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.

SC-04-4.7.2

Students will:

- Describe human interactions in the environment where they live:

- Classify the interactions whether they are beneficial or harmful to the environment using data/evidence to support conclusions.

All organisms, including humans, cause changes in the environment where they live. Some of these changes are detrimental to the organism or to other organisms; other changes are beneficial (e.g., dams benefit some aquatic organisms but are detrimental to others). By evaluating the consequences of change using cause and effect relationships, solutions to real life situations/dilemmas can be proposed.

8th Grade

SC -08-4.7.1

Students will describe the interrelationships and interdependencies within an ecosystem and predict the effects of change on one or more components within an 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.