Science
Overview of Curriculum and Expectations

Kindergarten

Trees Through the Seasons

What are some changes we see in trees during the year?

- Students identify the basic needs of organisms to live and thrive:
  - Needs of plants to live and thrive (e.g., air, water, light)
  - Living things grow and change.

- Students observe and compare the different structures that enable each plant to live and thrive:
  - Roots, leaves, stems, flowers, seeds

- Students observe adaptations of plants:
  - Plants respond to changes in the environment including season changes such as:
    - Leaves falling in autumn and forming in springtime
    - Flowers blooming

Exploring Properties – Wood & Paper, Fabrics

How do we observe and describe objects?

Students observe and describe physical properties of objects using all of the appropriate senses:

-
- Size, shape, texture, weight, color, etc.
- Determine whether objects are alike or different

Students observe and describe physical properties of objects using appropriate tools:

- Hot/cold (thermometer)
- Weight (pan balance)
- Measurement (nonstandard units) including bigger/smaller, more/less, capacity of liquids
- Observations (hand lenses)

Students observe, describe, and identify the properties of materials, e.g.:

- Wood

- Plastic
- Metal

Students sort groups of objects according to their properties:

- Texture, color, shape, etc.
- Sink and float

Animals - What are animals?

Students identify the basic needs of organisms to live and thrive:

- Needs of animals to live and thrive
  (e.g., air, water, food, shelter)
- Living things grow and change.

Students observe and compare the different structures that enable each animal to live and thrive:

- Wings, legs, fins, eyes, nose, ears, tongue, skin, claws, etc.

Students make clear that nonliving thins do not live and thrive.

Students recognize that living things have offspring and that offspring closely resembles its parents:

- Dogs/puppies, cats/kittens, cows/calves, ducks/ducklings, frogs/tadpoles

Students observe physical animal characteristics that are influenced by changing environmental conditions such as:

- Coat thickness in winter, rabbits changing fur color, shedding of fur

Students observe that some animal behaviors are influenced by environmental conditions:

- Nest building, hibernation, migration

First/Second Grade

Plant Diversity - Becoming aware of the diversity of life in the plant kingdom

This Unit provides experiences that heighten young students' awareness of the diversity of life in the plant kingdom. Students care for plants to learn what they need to grow

and develop. They observe the structures of flowering plants and discover ways to propagate new plants from mature plants (from seeds, bulbs, roots, and stem cuttings). They observe and describe changes that occur as plants grow, and organize their observations on a calendar and in a journal.

The students will do cross-curricular work with their social studies units. They will study how the air and weather patterns affect what is available in the greenmarkets and the many processes involved in growing produce.

Weather and Seasons

The Weather and Seasons Unit consists of four sequential investigations, each designed to introduce concepts in earth science. The investigations provide opportunities for young students to explore the natural world by using simple tools to observe and monitor change.

Animal Diversity– How are animals alike and different?

This Unit provides experiences that heighten students' awareness of the diversity of animal forms. They come to know the life sequences of a number of insects. Students observe structures and behaviors, discuss their findings, and ask questions. Students observe life cycles of insects and compare the stages of metamorphosis exhibited by each species. They will study the animals that inhabit the local estuaries of the Hudson and East Rivers.

Third/Fourth Grade

Plant and Animal Adaptations

How are plants and animals well suited to live in their environments?

This Module consists of four sequential investigations dealing with observable characteristics of organisms. Students observe, compare, categorize, and in so doing they learn to identify properties of plants and animals and to sort and group organisms on the basis of observable properties. Students investigate structures of the organisms and learn how some of the structures function in growth and survival.

Interactions of Air, Water and Land

How do natural events affect our world?

Students will observe, investigate, and record examples of physical and chemical weathering. They will describe how erosional processes (e.g., action of gravity, wind, and water) cause surface changes to the land. Students will also investigate, measure, and observe the deposition of earth materials. They will investigate and illustrate the natural processes by which water is recycled on earth (e.g., ground water, runoff).

They will also explore the negative and positive impact of extreme natural events on living things. These events include earthquakes, volcanoes, hurricanes, tornadoes, floods, and fires.

Animals and Plants in their environments

What roles do plants and animals play in their environments?
Students will classify populations of organisms as producers, consumers, or decomposers by the role they serve in the ecosystem (food chains and food webs}. Students will explore how plants manufacture food by utilizing air, water, and energy from the sun. They will investigate how food supplies energy and materials necessary for growth and repair. Students will identify populations within a community that are in competition with one another for resources. Students will recognize that individual variations within a species may cause certain individuals to have an advantage in surviving and reproducing.

Students will describe how the health, growth, and development of organisms are affected by environmental conditions such as availability of food, water, air, space, shelter, heat, and sunlight. They will understand that animals' senses help them to survive. Students will observe that when the environment changes, some plants and animals survive and reproduce, while others die or move to new locations. They will also identify examples where human activity has had a beneficial or harmful effect on other organisms (e.g. deforestation)

Fifth Grade

Variables
The Nature of Science – How do scientists gather and share information? The students will be formulating questions of scientific inquiry with the aid of our FOSS kits for Variables. Students will identify questions, formulate hypotheses, and conduct scientific investigations to answer these questions. They will use tools to gather, analyze, and interpret data and identify dependent and independent variables. Cross-curricular work will be done when the students are studying Government in their Social Studies curriculum.

Food and Nutrition
While the students are studying Westward Expansion in their Social Studies; they will study Food and Nutrition in their science classes. Through a variety of experiments, readings, and explorations the students will learn how nutrition and exercise affect our health. This will be compared to the food and health conditions during the westward expansion.

Ecosystems

While the students study the Mayans in social studies, they will be Exploring Ecosystems in science. There will be a particular emphasis on the Amazon Rainforest and how the plants and animals in any ecosystem are interconnected.

Earth Science

Earth Science and the processes that help shape the land will also be explored in science. The students will classify sedimentary, igneous, or metamorphic rocks. They will investigate and explain how rocks and soil form. The students will observe, compare, and describe the topography of the earth's surface. These topics will be related to the students' geography study and topography of the westward expansion time period in social studies.