# Curriculum Guide for Parents

## Second Grade Science

## STANDARD 1: ANALYSIS, INQUIRY AND DESIGN

Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

Scientific Inquiry:

The Scientific Method is the process scientists use to go from asking a question to finding an answer. Students should:

- ask questions through observations
- make predictions
- follow procedures
- observe experiments
- draw conclusions using graphs, pictures, written and/or verbal responses

For a more detailed list of process skills refer to pages 10 and 15 of the New York State Elementary Science Core Curriculum at http://www.emsc.nysed.gov/ciai/mst/pub/elecoresci.pdf.

## STANDARD 4: LIVING ENVIRONMENT

### Life Sciences – Animals

- Knows that animals and plants sometimes cause changes in their surroundings
- Animals require air, water and food (essential nutrients)in order to live and thrive
- Some traits of living things have been inherited (i.e., number of limbs…)
- Some characteristics result from an individual's interactions with the environment and cannot be inherited by the next generation (i.e., having scars, riding a bicycle)
- Observe animals have different structures that serve different functions in growth, survival and reproduction
  - wings, legs or fins enable some animals to seek shelter and escape predators
  - the mouth, including teeth, jaws, and tongue, enables some animals to eat and drink
  - eyes, nose, ears, tongue and skin of some animals enable the animals to sense their surroundings
  - claws, shells, spines, feathers, fur, scales, and color of body covering enable some animals to protect themselves from predators and other environmental conditions, or enable them to obtain food
- Discover animals have life cycles. These may include beginning of a life, development into an adult, reproduction as an adult and eventually death
- Each generation of animals goes through changes in form from young to adult. This completed sequence of changes in form is called a life cycle. Some insects change from egg to larva to pupa to adult
- Each kind of animal goes through its own stages of growth and development during its life span
- The length of time from an animal's birth to its death is called its life span. Life spans of different animals vary

## STANDARD 4: LIVING ENVIRONMENT

Life Sciences – Animals continued

- Growth is the process by which animals increase in size
- All living things grow, take in nutrients, breathe, reproduce and eliminate waste
- Senses can provide essential information (regarding danger, food, mates…) to animals about their environment
- Some animals, including humans, move from place to place to meet their needs
- When the environment changes some animals survive and reproduce and others die or move to new locations

## STANDARD 4: LIVING ENVIRONMENT

Health and Nutrition

- Humans need a variety of healthy foods, exercise and rest in order to grow and maintain good health
- Good health habits include hand washing and personal cleanliness, avoiding harmful substances, eating a balanced diet, engaging in regular exercise

Human decisions and activities have had a profound impact on the physical and living environments.

- Humans depend on their natural and constructed environments
- Over time humans have changed their environment by cultivating crops and raising animals, creating shelter, using energy, manufacturing goods, developing means of transportation, changing populations, and carrying out other activities
- Humans, as individuals or communities, change environments in ways that can be either helpful or harmful for themselves and other organisms

## STANDARD 4: PHYSICAL SETTING

Earth Science – Weather

- Observe that weather can change from day to day and through the seasons
- Know that the sun's energy provides the light and heat necessary to maintain the temperature of the Earth
- Weather is the condition of the outside air at a particular moment
- Weather can be described and measured by temperature, form and amount of precipitation and general sky conditions (sunny, cloudy, partly cloudy, stormy, fair)

## STANDARD 4: PHYSICAL SETTING

### Physical Science – Astronomy

- Natural cycles and patterns include:
  - Earth spinning around once every 24 hours (rotation) resulting in day and night
  - Earth moving in a path around the sun (revolution), results in one Earth year
  - The length of daylight and darkness vary with the seasons
  - Weather changes from day to day and through the seasons
  - The appearance of the Moon changes as it moves in a path around Earth to complete a single cycle
- Humans organize time into units based on natural motions of Earth: second, minute, hour, week, month
- The Sun and other stars appear to move in a recognizable pattern both daily and seasonally
- Observe that the stars are innumerable, unevenly dispersed and of unequal brightness
- Observe that the sun can be seen only in daytime, whereas the moon is out sometimes at night and sometimes during the day
- Discover that light travels in a straight line unless it strikes an object
- Discover that things on Earth fall to the ground unless something holds them up
- Identify that the Earth's gravity pulls an object toward it without touching it

### Physical Science – Changes

- (Observe) water is recycled by natural process on Earth Evaporation: changing of water (liquid) into water vapor (gas); Condensation: changing of water vapor (gas) into water (liquid); Precipitation: rain, sleet, snow, hail
- The materials an object is made up of determine some specific properties of the object. Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, and balances
- Objects have properties that can be observed, described and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, and flexibility
- Describes and classifies matter (objects) by their composition (i.e., wood, metal, plastic, cloth…) and their physical properties (i.e., color, size, shape, texture, weight, magnetism, hardness, odor, sound, taste…) that can be observed through the senses
- Discover that Earth materials consist of rocks, soils, liquid water and the gases of the atmosphere – discuss that matter exists in three states: solid, liquid, gas
- Observe that temperature can affect the state of matter: water can be a liquid (rain or a solid (ice) and can be made to go back and forth from one form to the other (observation)
- Changes in the properties or materials of objects can be observed and described
- The position of an object can be described by locating it relative to another object or the background (i.e., on top of, next to, over, under…)
- Magnetism is a force that may attract or repel certain materials