SCIENCE CONTENT STANDARDS
GRADE 2

Grade 2 students learn about forces (pushes and pulls) and some common phenomena such as gravity, magnetism, and sound. In the life sciences, students learn about life cycles of animals and the basics of inheritance. It may be no surprise that dogs always reproduce to give puppies, never kittens or hamsters, but on the other hand not all puppies look like each other. There is both similarity within a species and natural variation, some of which is caused by the environment. In the earth sciences, students learn that rocks are composed of different combinations of minerals, that smaller rocks and soil are made from breakage and weathering of larger rocks, and that soils also contain organic materials. Students are introduced to fossils, and the evidence they provide about the past history of Earth.

Students should practice measuring length, weight, temperature, and liquid volume with appropriate tools, expressing those measurements in standard metric units. In grade 2, students learn to be systematic in their use of measures and in their recording of data. This is particularly important in the physical sciences, where students learn to measure the position and motion of objects using metric system units. The metric system is a language that is understood internationally, and it is the language of science.

Physical Sciences

- **The motion of objects can be observed and measured.** As a basis for understanding this concept, students know:
  - the position of an object can be described by locating it relative to another object or the background.
  - an object's motion can be described by recording the change in its position over time.
  - **the way to change how something is moving is to give it a push or a pull.** The size of the change is related to the strength, or the amount of "force," of the push or pull.
  - tools and machines are used to apply pushes and pulls (forces) to make things move.
  - objects near the Earth fall to the ground unless something holds them up.
  - magnets can be used to make some objects move without being touched.

Life Sciences

- **Animals meet their needs in different ways, and have predictable life cycles.** As a basis for understanding this concept, students know:
  - organisms reproduce offspring of their own kind. The offspring resemble their parents and each other.
  - **the sequential stages of life cycles are different for different animals, for example butterflies, frogs, and mice.**
  - **many characteristics of an organism are inherited from the parents. Some characteristics are caused by, or influenced by, the environment.**
  - there is variation among individuals of one kind within a population.

- animals need air, food, and water.
- animals eat plants or other animals for food and may also use plants or even other animals for shelter and nesting.
- how to infer what animals eat from the shapes of their teeth.

Earth Sciences

- Earth is made of materials that have distinct properties and provide resources for human activities. As the basis for understanding this concept, students know:
  - **how to compare the physical properties of different kinds of rocks and that rock is composed of different combinations of minerals.**
  - smaller rocks come from the breakage and weathering of larger rocks.
  - **soil is made partly from weathered rock and partly from organic materials, and that soils differ in their color, texture, capacity to retain water, and ability to support the growth of many kinds of plants.**
  - fossils provide evidence about the plants and animals that lived long ago, and scientists learn about the past history of Earth by studying fossils.
  - rock, water, plants and soil provide many resources including food, fuel, and building materials that humans use.

Science Process Skills (Investigation and Experimentation)

- Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content of the other three strands, students should develop their own questions and perform investigations. Students will:
  - **make predictions based on patterns of observation rather than random guessing.**
  - measure length, weight, temperature, and liquid volume with appropriate tools and express measurements in standard and non-standard units.
  - compare and sort common objects based on two or more physical attributes (including color, shape, texture, size, weight).
  - write or draw descriptions of a sequence of steps, events, and observations.
  - **construct bar graphs to record data using appropriately labeled axes.**
  - write or draw descriptions of a sequence of steps, events and observations, and include the use of magnifiers or microscopes to extend senses.
  - follow verbal instructions for a scientific investigation.