

Scope and Sequence for *Science in the Beginning*

This hands-on science course introduces a wide variety of scientific topics to elementary students of all ages. Because each lesson is built around an activity or experiment, it is engaging for all K-6 students. In addition, there are three levels of review for each lesson, so that the parent/teacher can choose the depth at which each student is expected to grasp the material. The course contains roughly 90 hours of instruction, 35 of which are composed of hands-on activities.

The course begins with 15 lessons on the properties of light. Students learn the three things that can happen when light strikes an object (reflection, absorption, and transmission), how reflected light allows us to see things, that white light is made of all colors of light, how we can guide light, how light is refracted as it passes into a new medium, and how refraction leads to magnification. In addition, students learn about several forms of energy in creation (radiant, mechanical, chemical, and thermal) and the law of conservation of energy, which governs how energy can be converted from one form to another.

The next 15 lessons cover the properties of air and water. Students learn the phases of matter, why things float, the difference between cohesion and adhesion, the chemical makeup of water, and the definitions of solution, solvent, and solute. Students then learn that air has weight, why some gases (like hot air and helium) rise in the air, what air pressure is, what causes wind, and how we measure temperature.

The next 15 lessons deal with land, the seas, and plants. The students learn about what soil is, the rock cycle, the differences between freshwater and saltwater, why salt “melts” ice, what a hypothesis is, and how hypotheses are tested. After that, the students move on to plants, learning the entire germination process, photosynthesis, the functions of roots, stems, and leaves, and how plants store their food. They also learn the detailed, macroscopic structure of a leaf and the ways in which plants can move.

The next 15 lessons cover the sun, moon, planets, and stars. Students learn how sundials tell time, what makes the sky blue, why there are bright colors at sunrise and sunset, what causes the sun’s apparent motion in the sky, and how the earth orbits the sun. In addition, they learn the basic structure of the solar system, the phases of the moon, what solar and lunar eclipses are, and why the moon seems to change size in the sky. Students then get introduced to the brightness of stars, ultraviolet light that comes from the sun, sunspots, and how we can determine the composition of the sun.

The next 15 lessons deal with water-dwelling creatures and birds. Students are taught the basics of animal classification, the differences between marine environments and freshwater environments, the difference between vertebrates and invertebrates, and how different water-dwelling animals move. Students then move on to birds, where they learn the basic structure of feathers, the basics of how birds fly, the specific designs that birds have to aid them in flight, the basic structure of an egg, and some details regarding how bird eggs are hatched.

The last 15 lessons deal with land animals and people. They are taught how to distinguish between different types of land vertebrates and invertebrates as well as how animals deal with changing temperatures. The students finish the course by learning about the five special senses each person has (sight, smell, hearing, balance, and taste) as well as the one general sense that each person has (touch).