

Elementary Science: Earth Science

Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.

Key Idea 1:

The Earth and celestial phenomena can be described by principles of relative motion and perspective.

The universe is made up of many different objects. Students should observe and describe the motions of the Sun, Moon, and stars. The movement of these objects through space can be traced and measured over various time segments.

By keeping daily records, students will learn to identify sequences of changes and look for patterns; this skill will be useful throughout their study of the natural world. Younger students should draw what they see. Older students should be encouraged to keep journals and use instruments to measure and record their observations.

Note: Students at this age are concrete thinkers; therefore, only the effects of gravity they can directly observe should be discussed. Drawing models that show size and position and discussing phenomena based on gravity are too abstract and may lead to misconceptions.

Note: the use of e.g. denotes examples which may be used for in-depth study. The terms for example and such as denote material which is testable. Items in parenthesis denote further definition of the word(s) preceding the item and are testable.

Describe patterns of daily, monthly, and seasonal changes in their environment.

PERFORMANCE INDICATOR 1.1

Major Understandings:

1.1a 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), resulting in one Earth year
- the length of daylight and darkness varying with the seasons
- weather changing from day to day and through the seasons
- the appearance of the Moon changing as it moves in a path around Earth to complete a single cycle

1.1b Humans organize time into units based on natural motions of Earth:

- second, minute, hour
- week, month

1.1c The Sun and other stars appear to move in a recognizable pattern both daily and seasonally.

Key Idea 2:

Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.

The water cycle, weather, erosion, deposition, and extreme natural events involve interactions among air, water, and land. Students should observe and describe naturally occurring changes in their world involving these phenomena. They can also investigate these phenomena in classroom experiments.

Younger students should be engaged in observation of their immediate surroundings with emphasis on recognizing change around them. As students mature, they can begin to recognize cycles and identify the processes and natural events which are causing the changes they are observing.

PERFORMANCE INDICATOR 2.1

Describe the relationship among air, water, and land on Earth.

Major Understandings:

- 2.1a Weather is the condition of the outside air at a particular moment.
- 2.1b Weather can be described and measured by:
 - temperature
 - wind speed and direction
 - form and amount of precipitation
 - general sky conditions (cloudy, sunny, partly cloudy)
- 2.1c Water is recycled by natural processes 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
 - runoff: water flowing on Earth's surface
 - groundwater: water that moves downward into the ground
- 2.1d Erosion and deposition result from the interaction among air, water, and land.
 - interaction between air and water breaks down earth materials
 - pieces of earth material may be moved by air, water, wind, and gravity
 - pieces of earth material will settle or deposit on land or in the water in different places
 - soil is composed of broken-down pieces of living and nonliving earth material
- 2.1e Extreme natural events (floods, fires, earthquakes, volcanic eruptions, hurricanes, tornadoes, and other severe storms) may have positive or negative impacts on living things.