



Elementary Science

The ISK Science program is designed to engage students' natural curiosity. Teachers begin by laying a foundation of knowledge, and then students' own interests and curiosity help guide the learning. Many units integrate social studies and science concepts as well as library skills, art, music and technology.

Science units are designed to provide opportunities for students to learn through inquiry and hands-on activities. Units are centered around five general strands:

1. *Nature of Science and Scientific Inquiry (integrated into all units)*
2. *Life Sciences*
3. *Physical Sciences*
4. *Earth and Beyond*
5. *Environmental Sciences (integrated into all units)*



Grade 4

1. NATURE OF SCIENCE

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Standard 1.1: Understand the nature of scientific inquiry (*Understand and use the scientific method*)

- 1.1.1 Know that scientists use different kinds of investigations depending on the questions they are trying to answer
- 1.1.2 Conduct an experiment using a set of written instructions (including multiple trials)
- 1.1.3 Repeat observations to improve accuracy
- 1.1.4 Conduct multiple trials to test a prediction and draw conclusions
- 1.1.5 Understand that explanations and conclusions about what happens in the world come from observations and reflections

Standard 1.2: Communicate scientific ideas and activities clearly

- 1.2.1 Formulate and justify predictions
- 1.2.2 Use quantitative and qualitative data collection in describing and comparing objects, events and measurement
- 1.2.3 Offer reasons for findings and also consider reasons suggested by others
- 1.2.4 Write formal lab reports

Standard 1.3: Investigate using appropriate tools and instruments to conduct scientific activities

- 1.3.1 Use appropriate tools to conduct multiple trials to test a prediction and draw conclusions

Standard 1.4: Understand the nature of scientific knowledge and enterprise (*Understand why science is important*)

- 1.4.1 Understand that models can be used to represent and predict changes in objects, events, and processes
- 1.4.2 Know that although people using scientific inquiry have learned much about the objects, events and phenomena in nature, science is an ongoing process and will never be finished
- 1.4.3 Know that scientists review and ask questions about the results of other scientists' work

2. LIFE SCIENCES

Standard 2.1: Understand biological evolution and diversity (scientific comparisons)

- 2.1.1 Examine human body systems (skeletal, muscular, digestive, respiratory and circulatory)

Standard 2.3: Understand the relationships among organisms and their environment

- 2.3.1 Explain the interdependence of the human body systems
- 2.3.2 Describe the body's requirement of nutrients in food for energy and maintenance, growth and repair
- 2.3.3 Describe the process of breathing and its role in the exchange of the gases oxygen (taken in) and carbon dioxide (eliminated).
- 2.3.4 Describe the role and process of the circulatory system
- 2.3.5 Describe the function of skin in regulating body temperature
- 2.3.6 Describe the skin's role in protecting the body from harmful substances and organisms.
- 2.3.7 Understand that the skeleton is the framework of the body

Standard 2.4: Understand the cycling of matter and the flow of energy through ecosystem

- 2.4.1 Know that transfer of energy (through food consumption) is essential to all living organisms

Standard 2.5: Understand the principles of heredity and related concepts

- 2.5.1 Know that some characteristics result from an individual's interactions with the environment

3. PHYSICAL SCIENCES

Standard 3.2: Understand the sources and properties of energy

- 3.2.1 Identify the different forms of energy: kinetic and potential



Grade 4

- 3.2.2 Know that energy can be changed from one form to another
- 3.2.3 Know that the sun acts as a major source of energy
- 3.2.4 Understand how energy can be harnessed and changed

4. EARTH AND BEYOND

Standard 4.1: Understand the composition, structure and features of the geosphere, hydrosphere and atmosphere (Earth, Water and Air)

- 4.1.1 Know how the features on the Earth's surface are constantly changed by a combination of slow and rapid natural processes, (e.g., slow processes, such as weathering, erosion, transport, and deposition of sediment caused by waves, wind, water, and ice; rapid processes, such as landslides, volcanic eruptions, and earthquakes)
- 4.1.2 Explain the impact of humans on the changing surface of the Earth (Urbanization, dams, clear-cutting, agriculture, etc)
- 4.1.3 Identify and classify rocks
- 4.1.4 Explain the rock cycle (e.g. igneous, sedimentary, metamorphic)

5. ENVIRONMENTAL SCIENCES

Standard 5.2: Understand how society uses and conserves resources and energy

- 5.2.1 Explain how the human population uses and misuses energy (impact on the physical earth)

Standard 5.3: Identify, investigate and evaluate environmental problems and issues

- 5.3.1 Explain the impact of man-made erosion the earth (e.g. agriculture, dams...)

Standard 4: Develop an understanding and commitment to environmental responsibility