

IA_Core Curriculum - Science (2009)

Primary

Strand 1 Science as Inquiry

Concept 1.1 Ask questions about objects, organisms, and events in the environment.

Skill 1.1.1 Students should answer their questions by seeking information from their own observations, investigations and from reliable sources of scientific information.

Concept 1.2 Plan and conduct simple investigations.

Skill 1.2.1 In earliest years, investigations are largely based on direct observations. As students develop, they design and conduct simple investigations to answer questions.

Skill 1.2.2 It is important to follow appropriate safety procedures when conducting investigations.

Concept 1.3 Use tools to gather data and extend the senses.

Skill 1.3.1 Students use tools such as rulers, thermometers, watches, balances, spring scales, magnifiers and microscopes to extend their senses and their abilities to gather data.

Concept 1.4 Use mathematics in scientific inquiry.

Skill 1.4.1 Mathematics is used to gather, organize and present data and to construct convincing explanations.

Concept 1.5 Use data to construct reasonable explanations.

Skill 1.5.1 Students should learn what constitutes evidence.

Skill 1.5.2 Students' explanations should reflect the evidence they have obtained.

Concept 1.6 Communicate investigations and explanations.

Skill 1.6.1 Students should begin to develop the abilities to communicate, critique, and analyze their work and the work of other students.

Skill 1.6.2 Students should communicate orally, through writing or through drawings.

Concept 1.7 Follow appropriate safety procedures when conducting investigations.

Strand 2 Earth and Space

Concept 2.1 Understand and apply knowledge of properties of earth materials.

Skill 2.1.1 Earth materials are solid rocks and soils, water and the gases of the atmosphere. The varied materials have different physical and chemical properties.

Skill 2.1.2 Soils have properties of color and texture, capacity to retain water, and ability to support the growth of many kinds of plants, including those in our food supply.

Concept 2.2 Understand and apply knowledge of observable information about daily and seasonal weather conditions.

Skill 2.2.1 Weather changes from day to day and over the seasons.

Skill 2.2.2 The sun provides the light and heat necessary to maintain the temperature of the earth.

Concept 2.3 Understand and apply knowledge of events that have repeating patterns.

Skill 2.3.1 Seasons of the year, day and night are events that are repeated in regular patterns.

Skill 2.3.2 The sun's position in the sky can be observed and described.

Skill 2.3.3 The sun can only be seen during our daylight hours. We are unable to see the sun at night because of the rotation of the earth.

Strand 3 Physical Science

Concept 3.1 Understand and apply knowledge of observable and measurable properties of objects.

Skill 3.1.1 Objects have many observable properties including size, weight, shape, color, temperature and the ability to react with other substances. Those properties can be measured using tools such as rulers, balances and thermometers.

Skill 3.1.2 Objects are made of one or more materials.

Skill 3.1.3 Objects can be described by the properties of the materials from which they are made. Properties can be used to separate or sort a group of objects or materials.

Concept 3.2 Understand and apply knowledge of characteristics of liquids and solids.

Skill 3.2.1 Materials can exist in different states – solid, liquid, and gas.

Skill 3.2.2 Some common materials, such as water, can be changed from one state to another by heating or cooling.

Concept 3.3 Understand and apply knowledge of the positions and motions of objects.

Skill 3.3.1 The position of an object can be described by locating it relative to its background.

Skill 3.3.2 An object's motion can be described by observing and measuring its position over time.

Skill 3.3.3 An object's position or movement can be changed by pushing or pulling.

Strand 4 Life Science

Concept 4.1 Understand and apply knowledge of the characteristics of living things and how living things are both similar to and different from each other and from non-living things.

Skill 4.1.1 Living things share some common characteristics that are both similar to and different from non-living things.

Skill 4.1.2 Different species of plants and animals have different observable characteristics by which they can be classified.

Concept 4.2 Understand and apply knowledge of life cycles of plants and animals.

Skill 4.2.1 Plants and animals have life cycles that include being born, developing into adults, reproducing, and eventually dying.

Skill 4.2.2 Plants and animals closely resemble their parents.

Concept 4.3 Understand and apply knowledge of the basic needs of plants and animals and how they interact with each other and their physical environment.

Skill 4.3.1 Organisms have basic needs. For example, animals need air, water, and food; plants require air, water, nutrients, and light.

Skill 4.3.2 Organisms interact with each other and their physical environment.

Skill 4.3.3 Organisms can survive only in environments in which their needs can be met.

Skill 4.3.4 The world has many different environments, and distinct environments support the life of different types of organisms.

Concept 4.4 Understand and apply knowledge of ways to help take care of the environment.

Skill 4.4.1 Chapter 12 of the Iowa Administrative Code states that science instruction shall include conservation of natural resources; and environmental awareness.

Skill 4.4.2 Humans depend on their natural and constructed environments.

Skill 4.4.3 Humans change environments in ways that can be either beneficial or detrimental to themselves or other organisms.

Concept 4.5 Understand and apply knowledge of basic human body structures (human body parts and their functions).

Skill 4.5.1 Humans have distinct body structures for functions including but not limited to thinking, walking, holding, seeing and talking.

Concept 4.6 Understand and apply knowledge of good health habits.

Skill 4.6.1 See 21st Century Skills of the Iowa Core Curriculum.