Florida Science

Grade 7

Adopted 2008

The Practice of Science

1. **Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.** SC.7.N.1.1
2. **Differentiate replication (by others) from repetition (multiple trials).** SC.7.N.1.2
3. **Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.** SC.7.N.1.3
4. **Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.** SC.7.N.1.4
5. **Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.** SC.7.N.1.5
6. **Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.** SC.7.N.1.6
7. **Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.** SC.7.N.1.7

Access Point for Students with Significant Cognitive Disabilities

Independent

a. Identify a problem from the seventh grade curriculum, use reference materials to gather information, carry out an experiment, collect and record data, and report results. SC.7.N.1.IN.A

b. Recognize the relationship between the end product (dependent variable) and in the input (independent variable) in an experiment. SC.7.N.1.IN.B

c. Identify questions that can be answered by scientific investigation, such as can a plant grow without sunlight? SC.7.N.1.IN.C

d. Identify ways that science can be used to study different areas, such as life science, earth and space science, and physical science. SC.7.N.1.IN.D

e. Identify that scientific knowledge is based on a large body of evidence and observations. SC.7.N.1.IN.E

Supported

a. Recognize a problem from the seventh grade curriculum, use materials to gather information, conduct a simple experiment, and record and share results. SC.7.N.1.SU.A

b. Recognize what is tested in a simple experiment (dependent variable). SC.7.N.1.SU.B

c. Recognize a question that can be answered by scientific investigation, such as can a plant grow without sunlight? SC.7.N.1.SU.C

d. Recognize that science includes different areas, such as life science, earth and space science, and physical science. SC.7.N.1.SU.D

e. Recognize that scientific knowledge is based on evidence and observations. SC.7.N.1.SU.E

Participatory

a. Recognize a problem related to the seventh grade curriculum, observe and explore objects and activities, and recognize a solution. SC.7.N.1.PA.A

b. Recognize observable changes in a simple experiment, such as plant growth. SC.7.N.1.PA.B

c. Associate objects and activities with science. SC.7.N.1.PA.C

The Characteristics of Scientific Knowledge

1. **Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.** SC.7.N.2.1

Access Point for Students with Significant Cognitive Disabilities

Independent

a. Identify an example of a change in scientific knowledge based on new evidence or new interpretations. SC.7.N.2.IN.A

Supported

a. Recognize an example of a change in scientific knowledge based on new evidence. SC.7.N.2.SU.A

Participatory

a. Recognize information related to science. SC.7.N.2.PA.A

The Role of Theories, Laws, Hypotheses, and Models

1. **Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.** SC.7.N.3.1
2. **Identify the benefits and limitations of the use of scientific models.** SC.7.N.3.2

Access Point for Students with Significant Cognitive Disabilities

Independent

a. Identify that scientific theories are explanations and laws describe relationships, and both are supported by evidence. SC.7.N.3.IN.A

b. Identify a benefit of using a model to explain how things work. SC.7.N.3.IN.B

Supported

a. Recognize that scientific theories and laws are supported by evidence. SC.7.N.3.SU.A

b. Recognize a benefit of using a model to explain how things work. SC.7.N.3.SU.B

b. Recognize that scientific theories can change. SC.8.N.3.SU.B

Participatory

a. Recognize that people use science to solve problems. SC.7.N.3.PA.A

b. Recognize a model of a common activity. SC.7.N.3.PA.B

Earth Structures

1. **Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.** SC.7.E.6.1
2. **Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).** SC.7.E.6.2
3. **Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating.** SC.7.E.6.3
4. **Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.** SC.7.E.6.4

5. **Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building.** SC.7.E.6.5

6. **Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.** SC.7.E.6.6

7. **Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.** SC.7.E.6.7

Access Point for Students with Significant Cognitive Disabilities

Independent

a. Identify that Earth has three layers (crust, mantle, and core) and describe the inside (core) as the hottest layer. SC.7.E.6.IN.A

b. Recognize that slow changes, such as mountain-building, and fast changes, such as volcanic eruptions, are caused by shifts below Earth's surface. SC.7.E.6.IN.B

c. Demonstrate how older rock layers are deposited at the bottom before younger layers (Law of Superposition). SC.7.E.6.IN.C

d. Identify physical evidence, such as fossils and sedimentary rock, which show how Earth has changed over a very long period of time. SC.7.E.6.IN.D

e. Recognize that humans have had an impact on Earth, such as polluting the air and water and expanding urban areas and road systems. SC.7.E.6.IN.E

Supported

a. Recognize that the surface of Earth is called the crust. SC.7.E.6.SU.A

b. Recognize that mountains change size and shape over a long period of time. SC.7.E.6.SU.B

c. Recognize that fossils are remains or imprints of living things from long ago. SC.7.E.6.SU.C

d. Recognize the effects of earthquakes and volcanoes. SC.7.E.6.SU.D

e. Recognize that polluting the air and water can harm Earth. SC.7.E.6.SU.E

Participatory

a. Recognize the ground as the outer surface (crust) of Earth. SC.7.E.6.PA.A

b. Discriminate between surface features of ground on Earth, such as rocky/sandy, flat/hilly, rough/smooth, or solid/liquid. SC.7.E.6.PA.B

c. Recognize that ground on the Earth's surface changes over time. SC.7.E.6.PA.C

d. Distinguish between clean and dirty water. SC.7.E.6.PA.D

Forms of Energy

1. **Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.** SC.7.P.10.1
2. **Observe and explain that light can be reflected, refracted, and/or absorbed.** SC.7.P.10.2
3. **Recognize that light waves, sound waves, and other waves move at different speeds in different materials.** SC.7.P.10.3

Access Point for Students with Significant Cognitive Disabilities

Independent

a. Identify that white (visible) light has many colors, such as when viewed with a prism. SC.7.P.10.IN.A
b. Recognize that light can be reflected or absorbed. SC.7.P.10.IN.B
c. Identify that light and sound travel in wave patterns. SC.7.P.10.IN.C

Supported

a. Recognize that white (visible) light contains many colors, such as viewed with a prism or rainbow. SC.7.P.10.SU.A
b. Recognize that light can be reflected. SC.7.P.10.SU.B
c. Recognize that sound and light travel. SC.7.P.10.SU.C

Participatory

a. Recognize primary colors of a rainbow. SC.7.P.10.PA.A
b. Recognize reflections of objects. SC.7.P.10.PA.B
c. Match light and sound to their sources. SC.7.P.10.PA.C

Energy Transfer and Transformations

1. **Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.** SC.7.P.11.1
2. **Investigate and describe the transformation of energy from one form to another.** SC.7.P.11.2
3. **Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.** SC.7.P.11.3
4. **Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.** SC.7.P.11.4

Access Point for Students with Significant Cognitive Disabilities

Independent

a. Identify that when heat is added or taken away, a temperature change occurs. SC.7.P.11.IN.A

b. Recognize that one form of energy can change to other forms of energy, such as solar panels change light into electricity. SC.7.P.11.IN.B

c. Identify examples of the predictable movement of heat, such as hot air rises and heat transfers from hot to cold objects. SC.7.P.11.IN.C

Supported

a. Recognize what happens to the temperature when heat is added. SC.7.P.11.SU.A

b. Recognize that energy can change forms, such as electricity produces light and heat in a lamp. SC.7.P.11.SU.B

c. Identify that heat rises. SC.7.P.11.SU.C

Participatory

a. Recognize that a hot object can make a cold object warm when they touch. SC.7.P.11.PA.A

b. Recognize that electrical devices need energy to work. SC.7.P.11.PA.B

Diversity and Evolution of Living Organisms

1. **Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.** SC.7.L.15.1

2. **Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.** SC.7.L.15.2

3. **Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.** SC.7.L.15.3

Access Point for Students with Significant Cognitive Disabilities

Independent

a. Recognize that fossils help people learn about living things that lived a very long time ago. SC.7.L.15.IN.A

b. Recognize that physical characteristics of living things are adapted to deal with the conditions of the environment, such as skin color or gills on a fish. SC.7.L.15.IN.B

c. Explain extinction and give examples. SC.7.L.15.IN.C

Supported

a. Identify fossils as parts of animals and plants that are no longer alive. SC.7.L.15.SU.A

b. Recognize that common plants or animals have special features that enable them to live in their environment, such as a as a fish has gills so it can live underwater. SC.7.L.15.SU.B

c. Recognize that some plants and animals no longer exist (are extinct). SC.7.L.15.SU.C

Participatory

a. Recognize that living things can die. SC.7.L.15.PA.A

b. Recognize a personal characteristic, such as hair color, that is different from the parents. SC.7.L.15.PA.B

Heredity and Reproduction

1. **Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.** SC.7.L.16.1

2. **Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.** SC.7.L.16.2

3. **Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.** SC.7.L.16.3

4. **Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.** SC.7.L.16.4

Access Point for Students with Significant Cognitive Disabilities

Independent

a. Explain that some characteristics are passed from parent to child (inherited). SC.7.L.16.IN.A

b. Recognize that it is possible to predict whether a person is likely to inherit a particular trait from parents. SC.7.L.16.IN.B

c. Explain that offspring receive half their genes from each parent in sexual reproduction. SC.7.L.16.IN.C

d. Recognize that science processes (biotechnology) have been used to develop new foods and medicines. SC.7.L.16.IN.D

Supported

a. Recognize that offspring have similar characteristics to parents. SC.7.L.16.SU.A

b. Recognize that animals, including humans, inherit some characteristics from one parent and some from the other. SC.7.L.16.SU.B

c. Recognize that science (biotechnology) has been used to develop new products for use in daily life. SC.7.L.16.SU.C

Participatory

a. Recognize a characteristic passed from parents to self, such as eye color. SC.7.L.16.PA.A

b. Recognize that children are born from two parents. SC.7.L.16.PA.B

c. Recognize common products, such as medicine, developed through science. SC.7.L.16.PA.C

Interdependence

1. **Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.** SC.7.L.17.1

2. **Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.** SC.7.L.17.2

3. **Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.** SC.7.L.17.3

Access Point for Students with Significant Cognitive Disabilities

Independent

a. Identify that in a simple food chain, energy transfers from the Sun to plants (producers), to animals (consumers), and to organisms that cause decay (decomposers). SC.7.L.17.IN.A

b. Describe how organisms interact with other organisms in an ecosystem to help each other (mutualism), to obtain food (predation), and to benefit at the expense of the other (parasitism). SC.7.L.17.IN.B

c. Recognize that living things compete with each other to get the things they need to live in their local environment. SC.7.L.17.IN.C

Supported

a. Identify different types of consumers in a food chain, including animals that eat plants, animals that eat other animals, and animals that eat plants and animals. SC.7.L.17.SU.A

b. Recognize how living things affect each other in their habitat (ecosystem). SC.7.L.17.SU.B

c. Identify how a lack of food, water, or shelter affects plants and animals in their habitats. SC.7.L.17.SU.C

Participatory

a. Recognize that humans eat vegetables and fruits (plants) and meat (animals). SC.7.L.17.PA.A

b. Recognize a mutual relationship between people and other living things. SC.7.L.17.PA.B

c. Recognize what happens when animals don't get food and water. SC.7.L.17.PA.C