Wisconsin Science

Grades K, 1, 2

Adopted 2017

Life Science

LS1. Students use science and engineering practices, crosscutting concepts, and an understanding of structures and processes (on a scale from molecules to organisms) to make sense of phenomena and solve problems. SCI.LS1

- A. Structure and Function SCI.LS1.A
  - 1. All organisms have external parts that they use to perform daily functions. SCI.LS1.A.1
- B. Growth and Development of Organisms SCI.LS1.B
  - 1. Parents and offspring often engage in behaviors that help the offspring survive. SCI.LS1.B.1
- C. Organization for Matter and Energy Flow in Organisms SCI.LS1.C
  - K. Animals obtain food they need from plants or other animals. Plants need water and light. SCI.LS1.C.K
- D. Information Processing SCI.LS1.D
  - 1. Animals sense and communicate information and respond to inputs with behaviors that help them grow and survive. SCI.LS1.D.1

LS2. Students use science and engineering practices, crosscutting concepts, and an understanding of the interactions, energy, and dynamics within ecosystems to make sense of phenomena and solve problems. SCI.LS2

- A. Interdependent Relationships in Ecosystems SCI.LS2.A
  - 2. Plants depend on water and light to grow. Plants depend on animals for pollination or to move their seeds around. SCI.LS2.A.2

LS3. Students use science and engineering practices, crosscutting concepts, and an understanding of heredity to make sense of phenomena and solve problems. SCI.LS3

- A. Inheritance of Traits SCI.LS3.A
  - 1. Young organisms are very much, but not exactly, like their parents, and also resemble other organisms of the same kind. SCI.LS3.A.1
- B. Variation of Traits SCI.LS3.B
  - 1. Individuals of the same kind of plant or animal are recognizable as similar, but can also vary in many ways. SCI.LS3.B.1

LS4. **Students use science and engineering practices, cross-cutting concepts, and an understanding of biological evolution to make sense of phenomena and solve problems.** SCI.LS4

D. Biodiversity and Humans SCI.LS4.D

2. There are many different kinds of living things in any area, and they exist in different places on land and in water. SCI.LS4.D.2

Physical Science

PS1. **Students use science and engineering practices, crosscutting concepts, and an understanding of matter and its interactions to make sense of phenomena and solve problems.** SCI.PS1

A. Structures and Properties of Matter SCI.PS1.A

2. Matter exists as different substances that have different observable properties. Different properties are suited to different purposes. Objects can be built up from smaller parts. SCI.PS1.A.2

B. Chemical Reactions SCI.PS1.B

2. Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. SCI.PS1.B.2

PS2. **Students use science and engineering practices, crosscutting concepts, and an understanding of forces, interactions, motion and stability to make sense of phenomena and solve problems.** SCI.PS2

A. Forces and Motion SCI.PS2.A

K. Pushes and pulls can have different strengths and directions, and can change the speed or direction of an object's motion, or start or stop it. SCI.PS2.A.K

a. A bigger push or pull makes things speed up or slow down more quickly. SCI.PS2.A.K.A

B. Types of Interactions SCI.PS2.B

K. When objects touch or collide, they push on one another and can result in a change of motion. SCI.PS2.B.K

PS3. **Students use science and engineering practices, cross-cutting concepts, and an understanding of energy to make sense of phenomena and solve problems.** SCI.PS3

C. Relationships Between Energy and Forces SCI.PS3.C

K. Bigger pushes and pulls cause bigger changes in an object's motion or shape. SCI.PS3.C.K

D. Energy in Chemical Processes and Everyday Life SCI.PS3.D

K. Sunlight warms Earth's surface. SCI.PS3.D.K

PS4. **Students use science and engineering practices, cross-cutting concepts, and an understanding of waves and their applications in technologies for information transfer to make sense of phenomena and solve problems.** SCI.PS4

A. Wave Properties SCI.PS4.A

1. Sound can make matter vibrate, and vibrating matter can make sound. SCI.PS4.A.1

B. Electromagnetic Radiation SCI.PS4.B

1. Objects can be seen only when light is available to illuminate them. SCI.PS4.B.1

C. Information Technologies and Instrumentation SCI.PS4.C

1. People use devices to send and receive information. SCI.PS4.C.1

Earth and Space Science

ESS1. **Students use science and engineering practices, cross-cutting concepts, and an understanding of Earth's place in the universe to make sense of phenomena and solve problems.** SCI.ESS1

A. The Universe and Its Stars SCI.ESS1.A

1. Patterns of movement of the sun, moon, and stars, as seen from Earth, can be observed, described, and predicted. SCI.ESS1.A.1

B. Earth and the Solar System SCI.ESS1.B

1. Seasonal patterns of sunrise and sunset can be observed, described, and predicted. SCI.ESS1.B.1

C. The History of Planet Earth SCI.ESS1.C

2. Some events on Earth occur very quickly; others can occur very slowly. SCI.ESS1.C.2

ESS2. Students use science and engineering practices, crosscutting concepts, and an understanding of Earth's systems to make sense of phenomena and solve problems. SCI.ESS2

A. Earth Materials and Systems SCI.ESS2.A

2. Wind and water change the shape of the land. SCI.ESS2.A.2

B. Plate Tectonics and Large-Scale System Interactions SCI.ESS2.B

2. Maps show where things are located. One can map the shapes and kinds of land and water in any area. SCI.ESS2.B.2

C. The Roles of Water in Earth's Surface Processes SCI.ESS2.C

2. Water is found in many types of places and in different forms on Earth. SCI.ESS2.C.2

D. Weather and Climate SCI.ESS2.D

K. Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region and time. People record weather patterns over time. SCI.ESS2.D.K

E. Biogeology SCI.ESS2.E

K. Plants and animals can change their local environment. SCI.ESS2.E.K

ESS3. Students use science and engineering practices, crosscutting concepts, and an understanding of the Earth and human activity to make sense of phenomena and solve problems. SCI.ESS3

A. Natural Resources SCI.ESS3.A

K. Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. SCI.ESS3.A.K

B. Natural Hazards SCI.ESS3.B

K. In a region, some kinds of severe weather are more likely than others. Forecasts allow communities to prepare for severe weather. SCI.ESS3.B.K

C. Human Impacts on Earth Systems SCI.ESS3.C

K. Things people do can affect the environment but they can make choices to reduce their impacts. SCI.ESS3.C.K

Engineering, Technology, and the Application of Science (ETS)

ETS1. Students use science and engineering practices, cross-cutting concepts, and an understanding of engineering design to make sense of phenomena and solve problems. SCI.ETS1

A. Defining and Delimiting Engineering Problems SCI.ETS1.A

K-2. A situation that people want to change or create can be approached as a problem to be solved through engineering. SCI.ETS1.A.K-2

a. Asking questions, making observations, and gathering information are helpful in thinking about problems. SCI.ETS1.A.K-2.A

b. Before beginning to design a solution, it is important to clearly understand the problem. SCI.ETS1.A.K-2.B

B. Developing Possible Solutions SCI.ETS1.B

K-2. Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. SCI.ETS1.B.K-2

C. Optimizing the Design Solution SCI.ETS1.C

2. Because there is more than one possible solution to a problem, it is useful to compare and test designs. SCI.ESS1.C.2

ETS2. Students use science and engineering practices, crosscutting concepts, and an understanding of the links among Engineering, Technology, Science, and Society to make sense of phenomena and solve problems. SCI.ETS2

A. Interdependence of Science, Engineering, and Technology SCI.ETS2.A

K-2. Science and engineering involve the use of tools to observe and measure things. SCI.ETS2.A.K-2

B. Influence of Engineering, Technology, and Science on Society and the Natural World SCI.ETS2.B

K-2. Every human-made product is designed by applying some knowledge of the natural world and is built by using natural materials. SCI.ETS2.B.K-2

a. Taking natural materials to make things impacts the environment. SCI.ETS2.B.K-2.A

ETS3. **Students use science and engineering practices, cross-cutting concepts, and an understanding of the nature of science and engineering to make sense of phenomena and solve problems.** SCI.ETS3

A. Science and Engineering Are Human Endeavors SCI.ETS3.A

K-2. People of diverse backgrounds can become scientists and engineers. SCI.ETS3.A.K-2

a. People have practiced science and engineering for a long time. SCI.ETS3.A.K-2.A

b. Creativity and imagination are important to science and engineering. SCI.ETS3.A.K-2.B

B. Science and Engineering Are Unique Ways of Thinking with Different Purposes SCI.ETS3.B

K-2. Scientists use evidence to explain the natural world. SCI.ETS3.B.K-2

a. Science assumes natural events happen today as they happened in the past. SCI.ETS3.B.K-2.A

b. Engineers solve problems to meet the needs of people and communities. SCI.ETS3.B.K-2.B

C. Science and Engineering Use Multiple Approaches to Create New Knowledge and Solve Problems SCI.ETS3.C

K-2. Science and engineers use many approaches to answer questions about the natural world and solve problems. SCI.ETS3.C.K-2

a. Scientific explanations are strengthened by being supported with evidence. SCI.ETS3.C.K-2.A

b. An engineering problem can have many solutions. The strength of a solution depends on how well it solves the problem. SCI.ETS3.C.K-2.B

Science and Engineering Practices

SEP1. **Students ask questions and define problems, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.** SCI.SEP1

A. Asking Questions SCI.SEP1.A

K-2. Students ask simple descriptive questions that can be tested. This includes the following: SCI.SEP1.A.K-2

a. Ask questions based on observations to find more information about the natural world. SCI.SEP1.A.K-2.A

b. Ask or identify questions that can be answered by an investigation. SCI.SEP1.A.K-2.B

B. Defining Problems SCI.SEP1.B

K-2. Students define simple problems that can be solved through the development of a new or improved object or tool. SCI.SEP1.B.K-2

SEP2. Students develop and use models, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems. SCI.SEP2

A. Developing Models SCI.SEP2.A

K-2. Students use and develop models (i.e., diagrams, drawings, physical replicas, dioramas, dramatizations, or storyboards) that represent concrete events or design solutions. This includes the following: SCI.SEP2.A.K-2

a. Distinguish between a model and the actual object, process, or events the model represents. SCI.SEP2.A.K-2.A

b. Compare models to identify common features and differences. SCI.SEP2.A.K-2.B

c. Develop or use models to represent amounts, relationships, relative scales (bigger, smaller), and patterns in the natural and designed world(s). SCI.SEP2.A.K-2.C

d. Develop a simple model based on evidence to represent a proposed object or tool. SCI.SEP2.A.K-2.D

SEP3. Students plan and carry out investigations, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems. SCI.SEP3

A. Planning and Conducting Investigations SCI.SEP3.A

K-2. Students plan and carry out simple investigations, based on fair tests, which provide data to support explanations or design solutions. This includes the following: SCI.SEP3.A.K-2

a. With guidance, plan and conduct an investigation in collaboration with peers (for K). SCI.SEP3.A.K-2.A

b. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. SCI.SEP3.A.K-2.B

c. Evaluate different ways of observing and measuring a phenomenon to determine which way can answer the question being studied. SCI.SEP3.A.K-2.C

d. Make observations (firsthand or from media) and measurements to collect data that can be used to make comparisons. SCI.SEP3.A.K-2.D

e. Make observations (firsthand or from media) and measurements of a proposed object or tool or solution to determine if it solves a problem or meets a goal. SCI.SEP3.A.K-2.E

f. Make predictions based on prior experiences. SCI.SEP3.A.K-2.F

SEP4. Students analyze and interpret data, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems. SCI.SEP4

A. Analyze and Interpret Data SCI.SEP4.A

K-2. Students collect, record, and share observations. This includes the following: SCI.SEP4.A.K-2

a. Record information (observations, thoughts, and ideas). SCI.SEP4.A.K-2.A

b. Use and share pictures, drawings, or writings of observations. SCI.SEP4.A.K-2.B

c. Use observations (firsthand or from media) to describe patterns or relationships in the natural and designed worlds in order to answer scientific questions and solve problems. SCI.SEP4.A.K-2.C

d. Compare predictions (based on prior experiences) to what occurred (observable events). SCI.SEP4.A.K-2.D

e. Analyze data from tests of an object or tool to determine if the object or tool works as intended. SCI.SEP4.A.K-2.E

SEP5. Students use mathematics and computational thinking, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems. SCI.SEP5

A. Qualitative and Quantitative Data SCI.SEP5.A

K-2. Students recognize that mathematics can be used to describe the natural and designed world. This includes the following: SCI.SEP5.A.K-2

a. Use counting and numbers to identify and describe patterns in the natural and designed worlds. SCI.SEP5.A.K-2.A

b. Describe, measure, or compare quantitative attributes of different objects and display the data using simple graphs. SCI.SEP5.A.K-2.B

c. Use qualitative and/or quantitative data to compare two alternative solutions to a problem. SCI.SEP5.A.K-2.C

SEP6. Students construct explanations and design solutions, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems. SCI.SEP6

A. Construct an Explanation SCI.SEP6.A

K-2. Students use evidence and ideas in constructing evidence-based accounts of natural phenomena. This includes the following: SCI.SEP6.A.K-2

a. Use information from observations (firsthand and from media) to construct an evidence-based account for natural phenomena. SCI.SEP6.A.K-2.A

B. Design Solutions SCI.SEP6.B

K-2. Students use evidence and ideas in designing solutions. This includes the following: SCI.SEP6.B.K-2

a. Use tools and materials to design and/or build a device that solves a specific problem or a solution to a specific problem. SCI.SEP6.B.K-2.A

b. Generate and compare multiple solutions to a problem. SCI.SEP6.B.K-2.B

SEP7. Students engage in argument from evidence, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems. SCI.SEP7

A. Argue from Evidence SCI.SEP7.A

K-2. Students compare ideas and representations about the natural and designed world. This includes the following: SCI.SEP7.A.K-2

a. Identify arguments that are supported by evidence. SCI.SEP7.A.K-2.A

b. Distinguish between explanations that account for all gathered evidence and those that do not. SCI.SEP7.A.K-2.B

c. Analyze why some evidence is relevant to a scientific question and some is not. SCI.SEP7.A.K-2.C

d. Distinguish between opinions and evidence in one's own explanations. SCI.SEP7.A.K-2.D

e. Listen actively to arguments to indicate agreement or disagreement based on evidence, or to retell the main points of the argument. SCI.SEP7.A.K-2.E

f. Construct an argument with evidence to support a claim. SCI.SEP7.A.K-2.F

g. Make a claim about the effectiveness of an object, tool, or solution that is supported by relevant evidence. SCI.SEP7.A.K-2.G

SEP8. **Students will obtain, evaluate and communicate information, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.** SCI.SEP8

A. Obtain, Evaluate, and Communicate Information SCI.SEP8.A

K-2. Students use observations and texts to communicate new information. This includes the following: SCI.SEP8.A.K-2

a. Read developmentally-appropriate texts or use media to obtain scientific and technical information. Use the information to determine patterns in or evidence about the natural and designed worlds. SCI.SEP8.A.K-2.A

b. Describe how specific images (e.g., a diagram showing how a machine works) support a scientific or engineering idea. SCI.SEP8.A.K-2.B

c. Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering scientific questions or supporting scientific claims. SCI.SEP8.A.K-2.C

d. Communicate information or design ideas and solutions with others in oral or written forms. Use models, drawings, writing, or numbers that provide detail about scientific ideas, practices, or design ideas. SCI.SEP8.A.K-2.D

Cross Cutting Concepts

CC1. **Students use science and engineering practices, disciplinary core ideas, and patterns to make sense of phenomena and solve problem** SCI.CC1

K-2. Students recognize that patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. SCI.CC1.K-2

CC2. **Students use science and engineering practices, disciplinary core ideas, and cause and effect relationships to make sense of phenomena and solve problems.** SCI.CC2

K-2. Students learn that events have causes that generate observable patterns. They design simple tests to gather evidence to support or refute their own ideas about causes. SCI.CC2.K-2

CC3. **Students use science and engineering practices, disciplinary core ideas, and an understanding of scale, proportion and quantity to make sense of phenomena and solve problems.** SCI.CC3

K-2. Students use relative scales (e.g., bigger and smaller; hotter and colder; faster and slower) to describe objects. They use standard units to measure length. SCI.CC3.K-2

CC4. **Students use science and engineering practices, disciplinary core ideas, and an understanding of systems and models to make sense of phenomena and solve problems.** SCI.CC4

K-2. Students understand objects and organisms can be described in terms of their parts and that systems in the natural and designed world have parts that work together. SCI.CC4.K-2

CC5. **Students use science and engineering practices, disciplinary core ideas, and an understanding of energy and matter to make sense of phenomena and solve problems.** SCI.CC5

K-2. Students observe objects may break into smaller pieces, be put together into larger pieces, or change shapes. SCI.CC5.K-2

CC6. **Students use science and engineering practices, disciplinary core ideas, and an understanding of structure and function to make sense of phenomena and solve problems.** SCI.CC6

K-2. Students observe the shape and stability of structures of natural and designed objects are related to their function(s). SCI.CC6.K-2

CC7. **Students use science and engineering practices, disciplinary core ideas, and an understanding of stability and change to make sense of phenomena and solve problems.** SCI.CC7

K-2. Students observe some things stay the same while other things change, and things may change slowly or rapidly. SCI.CC7.K-2