

Alignment with Kansas' Science Standards

This document evaluates the state's Education Standards for Science to determine alignment with content found in Cogno board games. Grades 3-8 were analyzed.



Highlighting Key

Indicates a significant amount of material addresses the standard

Indicates a moderate amount of material is present to develop student understanding of the standard

▲ = Assessed Indicator

STANDARD 1: SCIENCE AS INQUIRY Grades 3-4

SCIENCE AS INQUIRY – The student will experience science as *full inquiry*. In the elementary grades, students begin to develop the physical and intellectual abilities of scientific inquiry.

Benchmark 1: The student will develop the skills necessary to do full inquiry. *Full inquiry* involves asking a simple question, completing an *investigation*, answering the question, and sharing the results with others.

1. ▲ asks questions that he/she can answer by investigating.

4. ▲ begins developing the abilities to communicate, critique, analyze his/her own *investigations*, and interprets the work of other students.

STANDARD 2: PHYSICAL SCIENCE Grades 3-4

PHYSICAL SCIENCE - The student will increase their understanding of the *properties* of objects and materials that they encounter on a daily basis. The student will compare, describe, and sort and *classify* these materials by observable properties.

Benchmark 1: The student will develop skills to describe objects.

3. ▲ observes and records how one object *interacts* with another object.

4. ▲ recognizes and describes the differences between solids, liquids, and gases.

Benchmark 2: The student will describe the motion of objects.

1. ▲ moves objects by pushing, pulling, throwing, spinning, dropping, and rolling; and describes the motion.

2. describes the change in position of objects when moved.

Benchmark 3: The student will recognize and demonstrate what makes sounds.

1. ▲ identifies that the source of sound is vibrations.
2. discriminates between sounds made by different objects.

STANDARD 3: LIFE SCIENCE **Grades 3-4**

LIFE SCIENCE – The student will develop an understanding of biological concepts through direct experience with living things, their life cycles, and their habitats.

Benchmark 1: The student will develop knowledge of organisms in their environment.

1. ▲ observes different organisms and compares and contrasts how similar functions are served by different structural characteristics.
2. ▲ compares basic needs of different organisms in their environment.
3. discusses ways organisms use their senses to survive in their environments.

STANDARD 4: EARTH AND SPACE SCIENCE **Grades 3-4**

EARTH AND SPACE SCIENCE – The student will observe objects, materials, and changes in their environment, note their properties, distinguish one from another, and develop their own explanations making sense of their observations.

Benchmark 2: The student will observe and describe objects in the sky.

1. observes the moon and stars.
3. ▲ discusses that the sun provides light and heat (electromagnetic radiation) to maintain the temperature of the earth.

Benchmark 3: The student will develop skills necessary to describe changes in the earth and weather.

1. ▲ describes changes in the surface of the earth.

STANDARD 5: SCIENCE AND TECHNOLOGY **Grades 3-4**

SCIENCE AND TECHNOLOGY – The student will have a variety of educational experiences which involve science and technology. They will begin to understand the design process.

Benchmark 2: The student will apply their understanding about science and technology.

1. will understand that the design process produces knowledge that can be used to solve a problem and improve our world.
2. invents a product to solve problems.
3. works with others to solve problems.
4. develops an awareness that women and men of all ages, backgrounds, and ethnic groups engage in a variety of scientific and technological work.
5. investigates how scientists use *tools* to observe.

STANDARD 7: HISTORY AND NATURE OF SCIENCE **Grades 3-4**

HISTORY AND NATURE OF SCIENCE – The student will experience some things about scientific inquiry and learn about people from history.

Benchmark 1: The student will develop awareness that people practice science.

1. recognizes that students participate in science inquiry by asking questions.
2. studies the lives of people who made scientific contributions.

STANDARD 1: SCIENCE AS INQUIRY Grades 5-7

SCIENCE AS INQUIRY – The student will develop the abilities to do *scientific inquiry*, be able to demonstrate how *scientific inquiry* is applied, and develop understandings about *scientific inquiry*.

Benchmark 1: The student will demonstrate abilities necessary to do the processes of scientific inquiry.

1. ▲ identifies questions that can be answered through scientific investigations.

Benchmark 3: The student will analyze how science advances through the interaction of new ideas, scientific investigations, skepticism, and examinations of evidence of varied explanations

2. ▲ evaluates the work of others to determine evidence which scientifically supports or contradicts the results, identifying faulty reasoning or conclusions that go beyond evidence and/or are not supported by data.

STANDARD 2: PHYSICAL SCIENCE Grades 5-7

PHYSICAL SCIENCE – The student will apply process skills to develop an understanding of physical science including: properties, changes of properties of matter, motion and forces, and transfer of energy.

Benchmark 1: The student will observe, compare, and classify properties of matter.

1. ▲ compares and classifies the states of matter; solids, liquids, gases, and plasma

Benchmark 3: The student will investigate motion and forces.

1. identifies the forces that act on an object (e.g., gravity and friction)

3. ▲ recognizes and describes examples of Newton's Laws of Motion.

Benchmark 4: The student will understand and demonstrate the transfer of energy.

1. understands the difference between potential and kinetic energy.

2. ▲ understands that when work is done energy transforms from one form to another, including mechanical, heat, light, sound, electrical, chemical, and nuclear energy, yet is conserved.

3. ▲ observes and communicates how light (electromagnetic) energy interacts with matter: transmitted, reflected, refracted, and absorbed.

STANDARD 3: LIFE SCIENCE Grades 5-7

LIFE SCIENCE – The student will apply process skills to explore and understand structure and function in living systems, reproduction and heredity, regulation and behavior, populations and ecosystems, and diversity and adaptations of organisms.

Benchmark 2: The student will understand the role of reproduction and heredity for all living things.

2. understands how hereditary information of each cell is passed from one generation to the next

3. infers that the characteristics of an organism result from heredity and interactions with the environment

Benchmark 3: The student will describe homeostasis, the regulation and balance of internal conditions in response to a changing external environment.

1. ▲ understands that internal and/or environmental conditions affect an organism's behavior and/or response in order to maintain and regulate stable internal conditions to survive in a continually changing environment.

2. recognizes that the survival of all organisms requires the ingestion of materials, the intake and

release of energy, growth, release of wastes and responses to environmental change.

Benchmark 5: The student will observe the diversity of living things and relate their adaptations to their survival or extinction.

2. ▲ understands that adaptations of organisms (changes in structure, function, or behavior that accumulate over successive generations) contribute to biological diversity.

3. ▲ associates extinction of a species with environmental changes and insufficient adaptive characteristics.

STANDARD 4: EARTH and SPACE SCIENCE Grades 5-7

EARTH and SPACE SCIENCE – The student will apply process skills to explore and develop an understanding of the structure of the earth system, earth’s history, and earth in the solar system.

Benchmark 1: The student will understand that the structure of the earth system is continuously changing due to earth’s physical and chemical processes.

1. ▲ identifies properties of the solid earth, the oceans and fresh water, and the atmosphere.

2. ▲ models earth’s cycles, constructive and destructive processes, and weather systems.

Benchmark 2: The student will understand past and present earth processes and their similarity.

1. ▲ understands that earth processes observed today (including movement of lithospheric plates and changes in atmospheric conditions) are similar to those that occurred in the past; earth history is also influenced by occasional catastrophes, such as the impact of a comet or asteroid.

Benchmark 3: The student will identify and classify stars, planets, and other solar system components.

1. ▲ compares and contrasts the characteristics of stars, planets, moons, comets, and asteroids.

2. models spatial relationships of the earth/moon/planets/sun system to scale.

3. identifies past and present methods used to explore space..

Benchmark 4: The student will model motions and identify forces that explain earth phenomena.

1. ▲ demonstrates and models object/space/time relationships that explain phenomena such as the day, the month, the year, seasons, phases of the moon, eclipses and tides.

2. describes how the angle of incidence of solar energy striking earth’s surface affects the amount of heat energy absorbed at earth’s surface.

STANDARD 5: SCIENCE AND TECHNOLOGY Grades 5-7

SCIENCE AND TECHNOLOGY – The student will demonstrate abilities of technological design and understandings about science and technology.

Benchmark 2: The student will develop understandings of the similarities, differences, and relationships in science and technology.

1. compares the work of various types of scientists and engineers.

2. evaluates benefits, risks, limitations and trade-offs of technological solutions.

3. identifies contributions to science and technology by many people and many cultures.

STANDARD 7: HISTORY AND NATURE OF SCIENCE Grades 5-7

HISTORY AND NATURE OF SCIENCE – The student will examine and develop an

understanding of science as a historical human endeavor.

Benchmark 1: The student will develop scientific habits of mind.

The student...

1. practices intellectual honesty, demonstrates skepticism appropriately, displays open-mindedness to new ideas, and bases decisions on evidence.

Benchmark 2: The student will research contributions to science throughout history.

The student...

1. ▲ recognizes that new knowledge leads to new questions and new discoveries, replicates historic experiments to understand principles of science, and relates contributions of men and women to the fields of science.

Please note that use of these standards does not imply this state's endorsement of Cogno.