Alignment with Oklahoma's 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

SCIENCE PROCESSES AND INQUIRY

Grade 3

Process Standard 1: Observe and Measure - Observing is the first action taken by the learner to acquire new information about an object, organism, or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified.
1. Observe and measure objects, organisms, and/or events using developmentally appropriate Systems International (SI) units (i.e., meters, centimeters, grams, and degrees Celsius).
2. Compare and contrast similar and/or different characteristics in a given set of simple objects, familiar organisms, and/or observable events.

Process Standard 3: Experiment and Inquiry - Experimenting is a method of discovering information. It requires making observations and measurements to test ideas. Inquiry can be defined as the skills necessary to carry out the process of scientific or systemic thinking. In order for inquiry to occur, students must have the opportunity to ask a question, formulate a procedure, and observe phenomena.
*1. Ask a question about objects, organisms, or events in the environment.
*2. Plan and conduct a simple investigation.

Process Standard 4: Interpret and Communicate - Interpreting is the process of recognizing patterns in collected data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations.
2. Recognize and describe patterns, then make predictions based on patterns.
*3. Communicate the results of a simple investigation using drawings, tables, graphs, and/or written and oral language.

PHYSICAL SCIENCE

Grade 3

Standard 1: Properties of Objects and Materials - Describe characteristics of objects based on physical properties such as size, shape, color, or texture. Vibration of materials causes sound.
2. Sound is produced by vibrations (i.e., pitch and loudness).
*3. Compare how sound travels through air, water, and/or solids.

LIFE SCIENCE

Grade 3

Standard 2: Characteristics and Basic Needs of Organisms and Environments - All living things have structures that enable them to function in unique and specific ways to obtain food, reproduce, and survive.
1. Plants and animals have features (i.e., breathing structures, limbs, skin covering, seed dispersal, roots, stems, and leaves) that help them live in environments such as air, water, or land.
2. Each plant or animal has different structures that serve different functions in growth and survival (i.e., the way it moves, type of food it needs, and where it lives).

SCIENCE PROCESSES AND INQUIRY

Grade 4

Process Standard 1: Observe and Measure - Observing is the first action taken by the learner to acquire new information about an object, organism, or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified.
1. Observe and measure objects, organisms, and/or events (e.g., mass, length, time, volume, temperature) using Systems International (SI) units (i.e., grams, milligrams, meters, millimeters, centimeters, kilometers, liters, milliliters, and degrees Celsius).
2. Compare and/or contrast similar and/or different characteristics (e.g., color, shape, size, texture, sound, position, change) in a given set of objects organisms or events.

Process Standard 3: Experiment - Experimenting is a method of discovering information. It requires making observations and measurements to test ideas.
*1. Ask questions about the world and formulate an orderly plan to investigate a question.
2. Evaluate the design of a scientific investigation.
*3. Design and conduct a scientific investigation.

Process Standard 4: Interpret and Communicate - Interpreting is the process of recognizing patterns in collected data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations.
*1. Report data using tables, line, bar, trend, and/or simple circle graphs.
3. Make predictions based on patterns in experimental data.
4. Communicate the results of investigations and/or give explanations based on data.

Process Standard 5: Inquiry - Inquiry can be defined as the skills necessary to carry out the process of scientific or systemic thinking. In order for inquiry to occur, students must have the opportunity to ask a question, formulate a procedure, and observe phenomena.
*1. Use different ways to investigate questions and evaluate the fairness of the test.
*2. Use a variety of measurement tools and technology.

*3. Formulate a general statement to represent the data.
*4. Share results of an investigation in sufficient detail so that data may be combined with data from other students and analyzed further.

PHYSICAL SCIENCE

Grade 4

Standard 1: Position and Motion of Objects - The position of a moving object can be described relative to a stationary object or the background.
1. The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.
2. The motion of an object can be described by tracing and measuring its position over time.

LIFE SCIENCE

Grade 4

Standard 3: Characteristics of Organisms - Each type of organism has structures that enable it to function in unique and specific ways to obtain food, reproduce and survive.
1. Organisms can survive only in environments in which their needs can be met.
2. Living organisms can be classified using various characteristics (e.g., habitats, anatomy, behaviors).

SCIENCE PROCESSES AND INQUIRY

Grade 5

Process Standard 1: Observe and Measure - Observing is the first action taken by the learner to acquire new information about an object, organism, or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified.
1. Observe and measure objects, organisms, and/or events (e.g., mass, length, time, volume, temperature) using Systems International (SI) units (i.e., grams, milligrams, meters, millimeters, centimeters, kilometers, liters, milliliters, and degrees Celsius).

Process Standard 3: Experiment - Experimenting is a method of discovering information. It requires making observations and measurements to test ideas.
*1. Ask questions about the world and formulate an orderly plan to investigate a question.
2. Evaluate the design of a scientific investigation.
*3. Design and conduct a scientific investigation.

Process Standard 4: Interpret and Communicate - Interpreting is the process of recognizing patterns in collected data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations.
3. Make predictions based on patterns in experimental data.
4. Communicate the results of investigations and/or give explanations based on data.

Process Standard 5: Inquiry - Inquiry can be defined as the skills necessary to carry out the process of scientific or systemic thinking. In order for inquiry to occur, students must have the opportunity to ask a question, formulate a procedure, and observe phenomena.
*3. Formulate a general statement to represent the data.
*4. Share results of an investigation in sufficient detail so that data may be combined with data from other students and analyzed further.

LIFE SCIENCE

Grade 5

Standard 2: Organisms and Environments - Organisms within a community are dependent on one another and the environment.
1. Organisms in a community, interacting populations in a common location, depend on each other for food, shelter, and reproduction.
2. Changes in environmental conditions due to human interactions or natural phenomena can affect the survival of individual organisms and/or entire species.

EARTH/SPACE SCIENCE

Grade 5

Standard 3: Structure of Earth and the Solar System - Interaction between air, water, rocks/soil, and all living things.
2. Weather exhibits daily and seasonal patterns (i.e., air temperature, cloud type, wind direction, wind speed, and precipitation).
3. Earth is the third planet from the Sun in a system that includes the moon, the Sun, and eight other planets.

SCIENCE PROCESSES AND INQUIRY

Grade 6

Process Standard 1: Observe and Measure - Observing is the first action taken by the learner to acquire new information about an object, organism, or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified.
3. Use appropriate System International (SI) units (i.e., grams, meters, liters, degrees Celsius, and seconds); and SI prefixes (i.e. micro-, milli-, centi-, and kilo-) when measuring objects, organisms and/or events.

Process Standard 3: Experiment - Experimenting is a method of discovering information. It requires making observations and measurements to test ideas.
*1. Ask questions about the world and design investigations that lead to scientific inquiry.
2. Evaluate the design of a scientific investigation.
*4. Identify a testable hypothesis for an experiment.

Process Standard 4: Interpret and Communicate - Interpreting is the process of recognizing patterns in collected data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication

may be oral, written, or mathematical and includes organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations.
3. Evaluate data to develop reasonable explanation, and/or predictions.
*4. Accept or reject hypotheses when given results of an investigation.
*5. Communicate scientific procedures and explanations.

Process Standard 5: Inquiry - Inquiry can be defined as the skills necessary to carry out the process of scientific or systemic thinking. In order for inquiry to occur, students must have the opportunity to ask a question, formulate a procedure, and observe phenomena.
*3. Review data, summarize data, and form logical conclusions.
*4. Formulate and evaluate explanations proposed by examining and comparing evidence, pointing out statements that go beyond evidence, and suggesting alternative explanations.
PHYSICAL SCIENCE

Grade 6

Standard 1: Physical Properties in Matter - Physical characteristics of objects can be described using shape, size, and mass whereas the materials from which objects are made can be described using color and texture.
2. The mass of an object is not altered due to changes in shape.

EARTH/SPACE SCIENCE

Grade 6

Standard 5: Structures of the Earth and the Solar System - The earth is mostly rock, three-fourths of its surface is covered by a relatively thin layer of water, and the entire planet is surrounded by a relatively thin blanket of air, and is able to support life.
3. The sun provides the light and heat necessary to maintain life on Earth and is the ultimate source of energy (i.e., producers receive their energy from the sun).

SCIENCE PROCESSES AND INQUIRY

Grade 7

Process Standard 1: Observe and Measure - Observing is the first action taken by the learner to acquire new information about an object, organism, or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified.
3. Use appropriate System International (SI) units (i.e., grams, meters, liters, degrees Celsius, and seconds); and SI prefixes (i.e., micro-, milli-, centi-, and kilo-) when measuring objects, organisms, and/or events.
Process Standard 3: Experiment - Experimenting is a method of discovering information. It requires making observations and measurements to test ideas.
*1. Ask questions about the world and design investigations that lead to scientific inquiry.
2. Evaluate the design of a scientific investigation.
*4. Identify a testable hypothesis for an experiment.

Process Standard 4: Interpret and Communicate - Interpreting is the process of recognizing patterns in collected data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication

may be oral, written, or mathematical and includes organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations.
3. Evaluate data to develop reasonable explanations, and/or predictions.
*4. Accept or reject hypotheses when given results of an investigation.
*5. Communicate scientific procedures and explanations.

Process Standard 5: Inquiry - Inquiry can be defined as the skills necessary to carry out the process of scientific or systemic thinking. In order for inquiry to occur, students must have the opportunity to ask a question, formulate a procedure, and observe phenomena.
*3. Review data, summarize data, and form logical conclusions.
*4. Formulate and evaluate explanations proposed by examining and comparing evidence, pointing out statements that go beyond evidence, and suggesting alternative explanations.

EARTH/SPACE SCIENCE

Grade 7

Standard 5: Structures of the Earth System - The earth is mostly rock, three-fourths of its surface is covered by a relatively thin layer of water, and the entire planet is surrounded by a relatively thin blanket of air, and is able to support life.
1. Global patterns of atmospheric movement influence local weather such as oceans' effect on climate.
2. Clouds, formed by the condensation of water vapor, affect local weather and climate.

SCIENCE PROCESSES AND INQUIRY

Grade 8

Process Standard 1: Observe and Measure - Observing is the first action taken by the learner to acquire new information about an object, organism, or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified.
3. Use appropriate System International (SI) units (i.e., grams, meters, liters, degrees Celsius, and seconds); and SI prefixes (i.e., micro-, milli-, centi-, and kilo-) when measuring objects, organisms and/or events.

Process Standard 3: Experiment - Experimenting is a method of discovering information. It requires making observations and measurements to test ideas.
*1. Ask questions about the world and design investigations that lead to scientific inquiry.
2. Evaluate the design of a scientific investigation.
*4. Identify a testable hypothesis for an experiment.
*5. Design and conduct experiments.

Process Standard 4: Interpret and Communicate - Interpreting is the process of recognizing patterns in collected data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations.
3. Evaluate data to develop reasonable explanations, and/or predictions.
*4. Accept or reject hypotheses when given results of an investigation.
*5. Communicate scientific procedures and explanations.

Process Standard 5: Inquiry - Inquiry can be defined as the skills necessary to carry out the process of scientific or systemic thinking. In order for inquiry to occur, students must have the opportunity to ask a question, formulate a procedure, and observe phenomena.
*3. Review data, summarize data, and form logical conclusions.
*4. Formulate and evaluate explanations proposed by examining and comparing evidence, pointing out statements that go beyond evidence, and suggesting alternative explanations.

PHYSICAL SCIENCE

Grade 8

Standard 2: Motions and Forces - The motion of an object can be described by its position, direction of motion, and speed.
1. The motion of an object can be measured. The position of an object, its speed and direction can be represented on a graph.
2. An object that is not being subjected to a net force will continue to move at a constant velocity (in a straight line and a constant speed).

EARTH/SPACE SCIENCE

Grade 8

Standard 4: Structures and Forces of the Earth and Solar System - The earth is mostly rock, three-fourths of its surface is covered by a relatively thin layer of water, and the entire planet is surrounded by a relatively thin blanket of air, and is able to support life.
*3. Gravity is the force that governs the motion of the solar system and holds us to the earth's surface.

Standard 5: Earth's History - The Earth's history involves periodic changes in the structures of the earth over time.
1. Earth's history has been punctuated by occasional catastrophic events, such as the impact of asteroids or comets, enormous volcanic eruptions, periods of continental glaciation, and the rise and fall of sea level.

PHYSICAL SCIENCE

High School

Standard 2: Motion and Forces - The motion of an object can be described by its position, direction of motion, and speed. A change in motion occurs when a net force is applied.
1. Objects change their motion only when a net force is applied. Laws of motion are used to determine the effects of forces on the motion of objects.
2. Gravitation is a universal force that each mass exerts on any other mass.

Standard 3: Interactions of Energy and Matter - Energy, such as potential, kinetic, and field, interacts with matter and is transferred during these interactions.
1. All energy can be considered to be either kinetic energy, which is the energy of motion; potential energy, which depends on relative position; or energy contained by a field, such as electromagnetic waves.
2. Waves, including sounds and seismic waves, waves on water, and light waves, have energy and can transfer energy when they interact with matter (such as used in telescopes, solar power, and telecommunication technology).

Standard 5: The Universe - The universe is an ever-changing system of matter and energy that exists now, in the past, and in the future.
1. The stars differ from each other in size, temperature, and age, but they appear to be made up of the same elements that are found on the earth.
2. All stars have a life cycle including birth, development, and death. Fusion reactions in stars release great amounts of energy and matter over millions of years.

PHYSICS

High School

Standard 1: Motions and Forces - The motion of an object can be described by its position, direction of motion, and speed. A change in motion occurs when a net force is applied.
1. Objects change their motion only when a net force is applied. Newton's laws of motion are used to calculate precisely the effects of forces on the motion of objects.
2. Gravitation is a universal force that each mass exerts on any other mass. The strength of the gravitational attractive force between two masses is proportional to the masses and inversely proportional to the square of the distance between them.

Standard 2: Conservation of Energy - The total energy of the universe is constant.
1. Energy can be transferred but never destroyed. As these transfers occur, the matter involved becomes steadily less ordered.
2. All energy can be considered to be kinetic energy, potential energy, or energy contained by a field.

Standard 3: Interactions of Energy and Matter - Energy (potential, kinetic and field) interacts with matter and is transferred during these interactions.
1. Waves have energy and can transfer energy when they interact with matter. Sound waves and electromagnetic waves are fundamentally different.