

## Alignment with North Carolina'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 K-5 Standard Course of Study and Extended Content Standards with Demonstrators

**Subject:** Life Science

**Grade Level:** 3

**Competency Goal 1:** Will conduct investigations and build an understanding of plant growth and adaptations

**Objectives:**

1.02 Observe and describe how environmental conditions determine how well plants survive and grow in a particular environment.

**Subject:** Earth/Environmental Science

**Grade Level:** 3

**Competency Goal 3:** Will make observations and use appropriate technology to build an understanding of the earth/moon/sun system

**Objectives:**

3.01 Observe that light travels in a straight line until it strikes an object and is reflected and/or absorbed.

3.02 Observe that objects in the sky have patterns of movement including: Sun, Moon, Stars

3.06 Observe that patterns of stars in the sky stay the same, although they appear to move across the sky nightly.

**Subject:** Life Science

**Grade Level:** 4

**Competency Goal 1:** Will make observations and conduct investigations to build an understanding of animal behavior and adaptation

**Objectives:**

1.02 Observe and record how animals of the same kind differ in some of their characteristics and discuss possible advantages and disadvantages of this variation.

1.03 Observe and discuss how behaviors and body structures help animals survive in a particular habitat.

1.04 Explain and discuss how humans and other animals can adapt their behavior to live in changing habitats.

1.05 Recognize that humans can understand themselves better by learning about other animals.

**Subject:** Physical Science

**Grade Level:** 4

**Competency Goal 3:** The learner will make observations and conduct investigations to build an understanding of magnetism and electricity

**Objectives:**

3.01 Observe and investigate the pull of magnets on all materials made of iron and the pushes or pulls on other magnets.

3.09 Recognize lightning as an electrical discharge and show proper safety behavior when lightning occurs.

**Subject:** Physical Science

**Grade Level:** 5

**Competency Goal 4:** Will conduct investigations and use appropriate technology to build an understanding of forces and motion in technological designs

**Objectives:**

4.01 Determine the motion of an object by following and measuring its position over time.

4.02 Evaluate how pushing or pulling forces can change the position and motion of an object.

4.03 Explain how energy is needed to make machines move, Moving air, Gravity.

4.04 Determine that an unbalanced force is needed to move an object or change its direction.

4.05 Determine factors that affect motion including: Force, Friction, Inertia, Momentum

Science – Grade 6

**COMPETENCY GOAL 1:** The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

**Objectives:**

1.01 Identify and create questions and hypotheses that can be answered through scientific investigations.

1.05 Analyze evidence to:

- Explain observations.
- Make inferences and predictions.
- Develop the relationship between evidence and explanation.

1.06 Use mathematics to gather, organize, and present quantitative data resulting from scientific investigations:

- Measurement.
- Analysis of data.
- Graphing.
- Prediction models.

1.08 Use oral and written language to:

- Communicate findings.
- Defend conclusions of scientific investigations.

1.10 Analyze and evaluate information from a scientifically literate viewpoint by reading, hearing, and/or viewing:

- Scientific text.
- Articles.
- Events in the popular press.

COMPETENCY GOAL 2: The learner will demonstrate an understanding of technological design.

Objectives

2.03 Evaluate technological designs for:

- Application of scientific principles.
- Risks and benefits.
- Constraints of design.

COMPETENCY GOAL 3: The learner will build an understanding of the geological cycles, forces, processes, and agents which shape the lithosphere.

Objectives

3.01 Evaluate the forces that shape the lithosphere including:

- Crustal plate movement.
- Volcanic Activity.

3.03 Explain the model for the interior of the earth.

COMPETENCY GOAL 4: The learner will investigate the cycling of matter.

Objectives

4.03 Examine evidence that green plants make food.

- Photosynthesis is a process carried on by green plants and other organisms containing chlorophyll.
- During photosynthesis, light energy is converted into stored energy which the plant, in turn, uses to carry out its life processes.

COMPETENCY GOAL 5: The learner will build understanding of the Solar System.

Objectives

5.01 Analyze the components and cycles of the solar system including:

- Sun.
- Planets and moons.
- Asteroids and meteors.
- Comets.

5.02 Compare and contrast the Earth to other planets in terms of:

- Size.
- Composition.
- Relative distance from the sun.
- Ability to support life.

5.04 Describe space explorations and the understandings gained from them including:

- N.A.S.A.
- Technologies used to explore space.
- Historic timeline.
- Apollo mission to the moon.
- Space Shuttle.
- International Space Station.
- Future goals.

5.05 Describe the setting of the solar system in the universe including:

- Galaxy.
- Size.
- The uniqueness of Earth.

5.06 Analyze the spin-off benefits generated by space exploration technology including:

- Medical.
- Materials.

- Transportation.
- Processes.
- Future research.

COMPETENCY GOAL 6: The learner will conduct investigations and examine models and devices to build an understanding of the characteristics of energy transfer and/or transformation.

Objectives

6.03 Analyze sound as an example that vibrating materials generate waves that transfer energy.

- Frequency.
- Amplitude.
- Loudness.
- How sound travels through different material.
- Form and function of the human ear.

6.05 Analyze the physical interactions of light and matter:

- Absorption.
- Scattering.
- Color perception.
- Form and function of the human eye.

6.07 Analyze the Law of Conservation of Energy:

- Conclude that energy cannot be created or destroyed, but only changed from one form into another.
- Conclude that the amount of energy stays the same, although within the process some energy is always converted to heat.
- Some systems transform energy with less loss of heat than others.

COMPETENCY GOAL 7: The learner will conduct investigations and use technologies and information systems to build an understanding of population dynamics.

Objectives

7.02 Investigate factors that determine the growth and survival of organisms including:

- Light.
- Temperature range.
- Water.
- Energy.

7.03 Explain how changes in habitat may affect organisms.

7.06 Investigate processes which, operating over long periods of time, have resulted in the diversity of plant and animal life present today:

- Natural selection.
- Adaptation.

Science – Grade 7

COMPETENCY GOAL 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

Objectives

1.01 Identify and create questions and hypotheses that can be answered through scientific investigations.

1.05 Analyze evidence to:

- Explain observations.
- Make inferences and predictions.

1.06 Use mathematics to gather, organize, and present quantitative data resulting from scientific investigations:

- Measurement.
- Analysis of data.
- Prediction models.

1.08 Use oral and written language to:

- Communicate findings.
- Defend conclusions of scientific investigations

1.10 Analyze and evaluate information from a scientifically literate viewpoint by reading, hearing, and/or viewing:

- Scientific text.
- Articles.
- Events in the popular press.

COMPETENCY GOAL 2: The learner will demonstrate an understanding of technological design.  
Objectives

2.03 Evaluate technological designs for:

- Application of scientific principles.
- Risks and benefits.
- Constraints of design.

COMPETENCY GOAL 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.

Objectives

3.01 Explain the composition, properties and structure of the atmosphere:

- Mixture of gases.
- Stratified layers.

3.06 Assess the use of technology in studying atmospheric phenomena and weather hazards:

- Satellites.
- Weather maps.
- Predicting.
- Recording.
- Communicating information about conditions.

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Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of heredity and genetics.

Objectives

5.01 Explain the significance of genes to inherited characteristics:

- Genes are the units of information.
- Parents transmit genes to their offspring.

Competency Goal 6: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of motion and forces.

Objectives

6.03 Evaluate motion in terms of Newton's Laws:

- The force of friction retards motion.
- For every action there is an equal and opposite reaction.
- The greater the force, the greater the change in motion.
- An object's motion is the result of the combined effect of all forces acting on the object:
- A moving object that is not subjected to a force will continue to move at a constant speed in a straight line
- An object at rest will remain at rest.

6.04 Analyze that an object's motion is always judged relative to some other object or point.

6.05 Describe and measure quantities that characterize moving objects and their interactions within a system:

- Time.
- Distance.
- Mass.
- Force.
- Velocity.
- Center of mass.
- Acceleration.

Science – Grade 8

COMPETENCY GOAL 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

Objectives

1.01 Identify and create questions and hypotheses that can be answered through scientific investigations.

1.05 Analyze evidence to:

- explain observations.
- make inferences and predictions.
- develop the relationship between evidence and explanation.

1.06 Use mathematics to gather, organize, and present quantitative data resulting from scientific investigations:

- Measurement.
- Analysis of data.
- Prediction models.

1.08 Use oral and written language to:

- Communicate findings.
- Defend conclusions of scientific investigations.
- Describe strengths and weaknesses of claims, arguments, and/or data

1.10 Analyze and evaluate information from a scientifically literate viewpoint by reading, hearing, and/or viewing:

- Scientific text.
- Articles.
- Events in the popular press.

COMPETENCY GOAL 2: The learner will demonstrate an understanding of technological design.

Objectives

2.03 Evaluate technological designs for:

- Application of scientific principles.
- Risks and benefits.
- Constraints of design.

COMPETENCY GOAL 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the hydrosphere.

Objectives

3.02 Explain the structure of the hydrosphere including:

- Water distribution on earth.

3.03 Evaluate evidence that Earth's oceans are a reservoir of nutrients, minerals, dissolved gases, and life forms:

- Estuaries.
- Marine ecosystems.
- Upwelling.

- Behavior of gases in the marine environment.
- Value and sustainability of marine resources.
- Deep ocean technology and understandings gained.

COMPETENCY GOAL 4: The learner will conduct investigations and utilize technology and information systems to build an understanding of chemistry.

Objectives

4.07 Identify evidence supporting the law of conservation of matter.

- During an ordinary chemical reaction matter cannot be created or destroyed.
- In a chemical reaction, the total mass of the reactants equals the total mass of the products.

COMPETENCY GOAL 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of evidence of evolution in organisms and landforms.

Objectives

5.01 Interpret ways in which rocks, fossils, and ice cores record Earth's geologic history and the evolution of life including:

- Geologic Time Scale.
- Catastrophic events.

5.02 Correlate evolutionary theories and processes:

- Biological.
- Geological.
- Technological.

5.03 Examine evidence that the geologic evolution has had significant global impact including:

- Distribution of living things.
- Major geological events.
- Mechanical and chemical weathering.

COMPETENCY GOAL 7: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of microbiology.

Objectives

7.01 Compare and contrast microbes:

- Size, shape, structure.
- Whether they are living cells.

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