

## Alignment with New York'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

Learning Standards for Mathematics, Science, and Technology at Three Levels

**Standard 1: Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.**

Elementary

1. The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.

Students:

- ask "why" questions in attempts to seek greater understanding concerning objects and events they have observed and heard about.
- question the explanations they hear from others and read about, seeking clarification and comparing them with their own observations and understandings.
- develop relationships among observations to construct descriptions of objects and events and to form their own tentative explanations of what they have observed.

3. The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.

Students:

- interpret organized observations and measurements, recognizing simple patterns, sequences, and relationships.
- share their findings with others and actively seek their interpretations and ideas.
- adjust their explanations and understandings of objects and events based on their findings and new ideas.

Intermediate

1. The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.

Students:

- formulate questions independently with the aid of references appropriate for guiding the search for explanations of everyday observations.
- construct explanations independently for natural phenomena, especially by proposing preliminary visual models of phenomena.

- represent, present, and defend their proposed explanations of everyday observations so that they can be understood and assessed by others.
- seek to clarify, to assess critically, and to reconcile with their own thinking the ideas presented by others, including peers, teachers, authors, and scientists.

3. The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.

Students:

- interpret the organized data to answer the research question or hypothesis and to gain insight into the problem.
- modify their personal understanding of phenomena based on evaluation of their hypothesis.

**Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.**

**Standard 4: Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.**

## THE PHYSICAL SETTING

1. The Earth and celestial phenomena can be described by principles of relative motion and perspective.

Elementary

- describe patterns of daily, monthly, and seasonal changes in their environment

Intermediate

- explain daily, monthly, and seasonal changes on earth

2. Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.

Elementary

- describe the relationships among air, water, and land on Earth

Intermediate

- explain how the atmosphere (air), hydrosphere (water), and lithosphere (land) interact, evolve, and change

4. Energy exists in many forms, and when these forms change energy is conserved.

Elementary

- describe a variety of forms of energy (e.g., heat, chemical, light) and the changes that occur in objects when they interact with those forms of energy
- observe the way one form of energy can be transformed into another form of energy present in common situations (e.g., mechanical to heat energy, mechanical to electrical energy, chemical to heat energy)

Intermediate

- describe situations that support the principle of conservation of energy

5. Energy and matter interact through forces that result in changes in motion.

Elementary

- describe the effects of common forces (pushes and pulls) on objects, such as those caused by gravity, magnetism, and mechanical forces
- describe how forces can operate across distances

Intermediate

- describe different patterns of motion of objects
- observe, describe, and compare effects of forces (gravity, electric current, and magnetism) on the motion of objects

## THE LIVING ENVIRONMENT

1. Living things are both similar to and different from each other and nonliving things.

Elementary

- describe the characteristics of and variations between living and nonliving things
- describe the life processes common to all living things

2. Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.

Elementary

- recognize that traits of living things are both inherited and acquired or learned

3. Individual organisms and species change over time.

Elementary

- describe how the structures of plants and animals complement the environment of the plant or animal
- observe that differences within a species may give individuals an advantage in surviving and reproducing

5. Organisms maintain a dynamic equilibrium that sustains life.

Elementary

- describe basic life functions of common living specimens (guppy, mealworm, gerbil)
- describe some survival behaviors of common living specimens

6. Plants and animals depend on each other and their physical environment.

Elementary

- describe the relationship of the sun as an energy source for living and nonliving cycles

7. Human decisions and activities have had a profound impact on the physical and living environment.

Elementary

- identify ways in which humans have changed their environment and the effects of those changes

Intermediate

- describe how living things, including humans, depend upon the living and nonliving environment for their survival
- describe the effects of environmental changes on humans and other populations

**Standard 5: Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.**

**Standard 6: Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.**

**Standard 7: Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.**

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