

## Alignment with Illinois' 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

## ILLINOIS STATE STANDARDS GOALS 11, 12, AND 13

**STATE GOAL 11: Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.**

**Why This Goal Is Important:** The inquiry process prepares learners to engage in science and apply methods of technological design. This understanding will enable students to pose questions, use models to enhance understanding, make predictions, gather and work with data, use appropriate measurement methods, analyze results, draw conclusions based on evidence, communicate their methods and results, and think about the implications of scientific research and technological problem solving.

### A. Know and apply the concepts, principles and processes of scientific inquiry.

LATE ELEMENTARY	MIDDLE/JUNIOR HIGH SCHOOL
11.A.2a Formulate questions on a specific science topic and choose the steps needed to answer the questions.	11.A.3a Formulate hypotheses that can be tested by collecting data.
	11.A.3f Interpret and represent results of analysis to produce findings.

**STATE GOAL 12: Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.**

**Why This Goal Is Important:** This goal is comprised of key concepts and principles in the life, physical and earth/space sciences that have considerable explanatory and predictive power for scientists and non-scientists alike. These ideas have been thoroughly studied and have stood the test of time. Knowing and being able to apply these concepts, principles and processes help students understand what they observe in nature and through scientific experimentation. A working knowledge of these concepts and principles allows students to relate new subject matter to material previously learned and to create deeper and more meaningful levels of understanding.

### A. Know and apply concepts that explain how living things function, adapt and change.

LATE ELEMENTARY	MIDDLE/JUNIOR HIGH SCHOOL
12.A.2a Describe simple life cycles of plants and animals and the similarities and differences in their offspring.	12.A.3c Compare and contrast how different forms and structures reflect different functions (e.g., similarities and differences among animals that fly, walk or swim; structures of plant cells and animal cells).

**B. Know and apply concepts that describe how living things interact with each other and with their environment.**

LATE ELEMENTARY	MIDDLE/JUNIOR HIGH SCHOOL
<b>12.B.2b</b> Identify physical features of plants and animals that help them live in different environments (e.g., specialized teeth for eating certain foods, thorns for protection, insulation for cold temperature).	<b>12.B.3b</b> Compare and assess features of organisms for their adaptive, competitive and survival potential (e.g., appendages, reproductive rates, camouflage, defensive structures).

**C. Know and apply concepts that describe properties of matter and energy and the interactions between them.**

LATE ELEMENTARY	MIDDLE/JUNIOR HIGH SCHOOL
<b>12.C.2a</b> Describe and compare types of energy including light, heat, sound, electrical and mechanical.	<b>12.C.3a</b> Explain interactions of energy with matter including changes of state and conservation of mass and energy.
<b>12.C.2b</b> Describe and explain the properties of solids, liquids and gases.	

**D. Know and apply concepts that describe force and motion and the principles that explain them.**

LATE ELEMENTARY	MIDDLE/JUNIOR HIGH SCHOOL
<b>12.D.2b</b> Demonstrate and explain ways that forces cause actions and reactions (e.g., magnets attracting and repelling; objects falling, rolling and bouncing).	<b>12.D.3a</b> Explain and demonstrate how forces affect motion (e.g., action/reaction, equilibrium conditions, free-falling objects).
	<b>12.D.3b</b> Explain the factors that affect the gravitational forces on objects (e.g., changes in mass, distance).

**E. Know and apply concepts that describe the features and processes of the Earth and its resources.**

LATE ELEMENTARY	MIDDLE/JUNIOR HIGH SCHOOL
<b>12.E.2a</b> Identify and explain natural cycles of the Earth's land, water and atmospheric systems (e.g., rock cycle, water cycle, weather patterns).	<b>12.E.3a</b> Analyze and explain large-scale dynamic forces, events and processes that affect the Earth's land, water and atmospheric systems (e.g., jetstream, hurricanes, plate tectonics).

**F. Know and apply concepts that explain the composition and structure of the universe and Earth's place in it.**

EARLY ELEMENTARY	LATE ELEMENTARY	MIDDLE/JUNIOR HIGH SCHOOL	EARLY HIGH SCHOOL	LATE HIGH SCHOOL

<b>12.F.1a</b> Identify and describe characteristics of the sun, Earth and moon as familiar objects in the solar system.	<b>12.F.2a</b> Identify and explain natural cycles and patterns in the solar system (e.g., order of the planets; moon phases; seasons as related to Earth's tilt, one's latitude, and where Earth is in its yearly orbit around the sun).	<b>12.F.3a</b> Simulate, analyze and explain the effects of gravitational force in the solar system (e.g., orbital shape and speed, tides, spherical shape of the planets and moons).	<b>12.F.4a</b> Explain theories, past and present, for changes observed in the universe.	<b>12.F.5a</b> Compare the processes involved in the life cycle of stars (e.g., gravitational collapse, thermonuclear fusion, nova) and evaluate the supporting evidence.
<b>12.F.1b</b> Identify daily, seasonal and annual patterns related to the Earth's rotation and revolution.	<b>12.F.2b</b> Explain the apparent motion of the sun and stars.	<b>12.F.3b</b> Describe the organization and physical characteristics of the solar system (e.g., sun, planets, satellites, asteroids, comets).	<b>12.F.4b</b> Describe and compare the chemical and physical characteristics of galaxies and objects within galaxies (e.g., pulsars, nebulae, black holes, dark matter, stars).	<b>12.F.5b</b> Describe the size and age of the universe and evaluate the supporting evidence (e.g., red-shift, Hubble's constant).
		<b>12.F.3c</b> Compare and contrast the sun as a star with other objects in the Milky Way Galaxy (e.g., nebulae, dust clouds, stars, black holes).		

**STATE GOAL 13: Understand the relationships among science, technology and society in historical and contemporary contexts.**

**Why This Goal Is Important:** Understanding the nature and practices of science such as ensuring the validity and replicability of results, building upon the work of others and recognizing risks involved in experimentation gives learners a useful sense of the scientific enterprise. In addition, the relationships among science, technology and society give humans the ability to change and improve their surroundings. Learners who understand this relationship will be able to appreciate the efforts and effects of scientific discovery and applications of technology on their own lives and on the society in which we live.

**A. Know and apply the accepted practices of science.**

<b>LATE ELEMENTARY</b>	<b>MIDDLE/JUNIOR HIGH SCHOOL</b>
<b>13.A.2c</b> Explain why keeping accurate and detailed records is important.	

**B. Know and apply concepts that describe the interaction between science, technology and society.**

<b>LATE ELEMENTARY</b>	<b>MIDDLE/JUNIOR HIGH SCHOOL</b>
<b>13.B.2b</b> Describe the effects on society of scientific and technological innovations (e.g., antibiotics, steam engine, digital computer).	<b>13.B.3b</b> Identify important contributions to science and technology that have been made by individuals and groups from various cultures.
<b>13.B.2c</b> Identify and explain ways that science and technology influence the lives and careers of people.	<b>13.B.3c</b> Describe how occupations use scientific and technological knowledge and skills.

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