

## Alignment with Wyoming'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

## Grade Three

### Life Sciences

#### *Diversity and Interdependence of Life*

2. Relate animal structures to their specific survival functions (e.g., obtaining food, escaping or hiding from enemies).
6. Describe how changes in an organism's habitat are sometimes beneficial and sometimes harmful.

### Physical Sciences

#### *Forces and Motion*

1. Describe an objects position by locating it relative to another object or the background.
2. Describe an objects motion by tracing and measuring its position over time.
3. Identify contact/noncontact forces that affect motion of an object (e.g., gravity, magnetism and collision).
4. Predict the changes when an object experiences a force (e.g., a push or pull, weight and friction).

### Science and Technology

#### *Understanding Technology*

1. Describe how technology can extend human abilities (e.g., to move things and to extend senses).
2. Describe ways that using technology can have helpful and/or harmful results.

### Scientific Inquiry

#### *Doing Scientific Inquiry*

2. Discuss observations and measurements made by other people.
6. Communicate scientific findings to others through a variety of methods (e.g., pictures, written, oral and recorded observations).

### Scientific Ways of Knowing

#### *Nature of Science*

1. Describe different kinds of investigations that scientists use depending on the questions they are trying to answer.

#### *Science and Society*

3. Explore through stories how men and women have contributed to the development of science.

4. Identify various careers in science.
5. Discuss how both men and women find science rewarding as a career and in their everyday lives.

## Grade Four

### Earth and Space Sciences

#### *Earth Systems*

1. Explain that air surrounds us, takes up space, moves around us as wind, and may be measured using barometric pressure.
2. Identify how water exists in the air in different forms (e.g., in clouds, fog, rain, snow and hail).

### Physical Sciences

#### *Nature of Matter*

4. Explain that matter has different states (e.g., solid, liquid and gas) and that each state has distinct physical properties.

### Science and Technology

#### *Understanding Technology*

1. Explain how technology from different areas (e.g., transportation, communication, nutrition, healthcare, agriculture, entertainment and manufacturing) has improved human lives.
2. Investigate how technology and inventions change to meet peoples' needs and wants.

### Scientific Inquiry

#### *Doing Scientific Inquiry*

1. Select the appropriate tools and use relevant safety procedures to measure and record length, weight, volume, temperature and area in metric and English units.
2. Analyze a series of events and/or simple daily or seasonal cycles, describe the patterns and infer the next likely occurrence.
3. Develop, design and conduct safe, simple investigations or experiments to answer questions.
6. Formulate instructions and communicate data in a manner that allows others to understand and repeat an investigation or experiment.

### Scientific Ways of Knowing

#### *Nature of Science*

1. Differentiate fact from opinion and explain that scientists do not rely on claims or conclusions unless they are backed by observations that can be confirmed.
2. Record the results and data from an investigation and make a reasonable explanation.

## Grade Five

### Earth and Space Sciences

#### *The Universe*

2. Explain that Earth is one of several planets to orbit the sun, and that the moon orbits Earth.
3. Describe the characteristics of Earth and its orbit about the sun (e.g., three-fourths of Earth's surface is covered by a layer of water [some of it frozen], the entire planet surrounded by a thin blanket of air, elliptical orbit, tilted axis and spherical planet).
4. Explain that stars are like the sun, some being smaller and some larger, but so far away that they look like points of light.

### Physical Sciences

### *Nature of Energy*

5. Explore and summarize observations of the transmission, bending (refraction) and reflection of light.
6. Describe and summarize observations of the transmission, reflection, and absorption of sound.
7. Describe that changing the rate of vibration can vary the pitch of a sound.

### **Science and Technology**

#### *Understanding Technology*

1. Investigate positive and negative impacts of human activity and technology on the environment.

#### *Abilities To Do Technological Design*

3. Explain how the solution to one problem may create other problems.

### **Scientific Inquiry**

3. Use evidence and observations to explain and communicate the results of investigations.

### **Scientific Ways of Knowing**

#### *Nature of Science*

1. Summarize how conclusions and ideas change as new knowledge is gained.
2. Develop descriptions, explanations and models using evidence to defend/support findings.
3. Explain why an experiment must be repeated by different people or at different times or places and yield consistent results before the results are accepted.
4. Identify how scientists use different kinds of ongoing investigations depending on the questions they are trying to answer (e.g., observations of things or events in nature, data collection and controlled experiments).

#### *Science and Society*

6. Identify a variety of scientific and technological work that people of all ages, backgrounds and groups perform.

## **Grade Six**

### **Life Sciences**

#### *Diversity and Interdependence of Life*

8. Describe how organisms may interact with one another.

### **Physical Sciences**

#### *Nature of Matter*

1. Explain that equal volumes of different substances usually have different masses.

### **Science and Technology**

#### *Understanding Technology*

1. Explain how technology influences the quality of life.

### **Scientific Inquiry**

#### *Doing Scientific Inquiry*

1. Explain that there are not fixed procedures for guiding scientific investigations; however, the nature of an investigation determines the procedures needed.
4. Explain that a single example can never prove that something is always correct, but sometimes a single example can disprove something.

### **Scientific Ways of Knowing**

#### *Nature of Science*

1. Identify that hypotheses are valuable even when they are not supported.

*Science and Society*

3. Identify ways scientific thinking is helpful in a variety of everyday settings.
4. Describe how the pursuit of scientific knowledge is beneficial for any career and for daily life.

## Grade Seven

### Life Sciences

*Evolutionary Theory*

8. Investigate the great diversity among organisms.

### Physical Sciences

*Nature of Matter*

1. Investigate how matter can change forms but the total amount of matter remains constant.

*Nature of Energy*

2. Describe how an object can have potential energy due to its position or chemical composition and can have kinetic energy due to its motion.
4. Explain how energy can change forms but the total amount of energy remains constant.

### Science and Technology

*Understanding Technology*

1. Explain how needs, attitudes and values influence the direction of technological development in various cultures.
2. Describe how decisions to develop and use technologies often put environmental and economic concerns in direct competition with each other.
3. Recognize that science can only answer some questions and technology can only solve some human problems.

### Scientific Inquiry

*Doing Scientific Inquiry*

3. Formulate and identify questions to guide scientific investigations that connect to science concepts and can be answered through scientific investigations.
5. Analyze alternative scientific explanations and predictions and recognize that there may be more than one good way to interpret a given set of data.
6. Identify faulty reasoning and statements that go beyond the evidence or misinterpret the evidence.

### Scientific Ways of Knowing

*Science and Society*

3. Describe how the work of science requires a variety of human abilities and qualities that are helpful in daily life (e.g., reasoning, creativity, skepticism and openness).

## Grade Eight

### Earth and Space Sciences

*The Universe*

1. Describe how objects in the solar system are in regular and predictable motions that explain such phenomena as days, years, seasons, eclipses, tides and moon cycles.
2. Explain that gravitational force is the dominant force determining motions in the solar system and in particular keeps the planets in orbit around the sun.
5. Explain that the universe consists of billions of galaxies that are classified by shape.

6. Explain interstellar distances are measured in light years (e.g., the nearest star beyond the sun is 4.3 light years away).
7. Examine the life cycle of a star and predict the next likely stage of a star.
8. Name and describe tools used to study the universe (e.g., telescopes, probes, satellites and spacecraft).

## **Life Sciences**

### *Evolutionary Theory*

3. Explain how variations in structure, behavior or physiology allow some organisms to enhance their reproductive success and survival in a particular environment.

## **Physical Sciences**

### *Forces and Motion*

1. Describe how the change in the position (motion) of an object is always judged and described in comparison to a reference point.
2. Explain that motion describes the change in the position of an object (characterized by a speed and direction) as time changes.
3. Explain that an unbalanced force acting on an object changes that object's speed and/or direction.

### *Nature of Energy*

4. Demonstrate that waves transfer energy.
5. Demonstrate that vibrations in materials may produce waves that spread away from the source in all directions (e.g., earthquake waves and sound waves).

## **Science and Technology**

### *Understanding Technology*

1. Examine how science and technology have advanced through the contributions of many different people, cultures and times in history.
2. Examine how choices regarding the use of technology are influenced by constraints caused by various unavoidable factors (e.g., geographic location, limited resources, social, political and economic considerations).

### *Abilities To Do Technological Design*

4. Evaluate the overall effectiveness of a product design or solution.

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