



# Oregon Curriculum Crosswalk

## *Grades 6,7,8*

### *Physical Science, Life Science, Earth Science*

No matter where your district is on its inquiry journey, Propello helps students actively engage in the learning process with high-quality, phenomena-based, 5E instructional materials.

Together with Propello, the sky's the limit. ✈️

## 6th Grade

### Oregon Science Standard

### Corresponding Propello Content

#### Earth and Space Science

6.ESS2.4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

The Water Cycle

6.ESS2.5 Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.

Weather

6.ESS2.6 Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

Climate

6.ESS3.3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

Human Impact on Earth's Systems  
Solving Environmental Problems

6.ESS3.5 Ask clarifying questions based on evidence about the factors that have caused climate change over the past century

Humans in the Biosphere

#### Life Science

6.LS1.1 Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.

Cells

6.LS1.2 Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

Cells

6.LS1.3† Construct an explanation supported by evidence for how the body is composed of interacting systems consisting of cells, tissues, and organs working together to maintain homeostasis.

From Cells to Systems

6.LS1.4 Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

Reproduction  
Mechanisms of Evolution

6.LS1.5 Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

Growth and Development

6.LS1.8 Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

From Cells to Systems

6.LS3.2 Develop and use models to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

Inheritance and Variation  
Reproduction

#### Physical Science

6.PS3.3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

Energy Transfer

6.PS3.4 Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	Energy Transfer
6.PS3.5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	Energy Transfer

## 7th Grade

Oregon Science Standard	Corresponding Propello Content
<b>Earth and Space Science</b>	
7.ESS2.1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	Earth's Changes
7.ESS2.2 Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	Earth's Changes
7.ESS2.3 Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.	Earth's Resources
7.ESS3.1 Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.	Natural Hazards
7.ESS3.2 Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	Earth's Changes
<b>Life Science</b>	
7.LS1.6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	Matter and Energy in Organisms
7.LS1.7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	Matter and Energy in Organisms
7.LS2.1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem	Matter and Energy in Ecosystems Ecosystem Dynamics Biodiversity and Ecosystem Services
7.LS2.2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	Ecosystem Dynamics

7.LS2.3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	Matter and Energy in Ecosystems
7.LS2.4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	Ecosystem Dynamics Biodiversity and Ecosystem Services
7.LS2.5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	Ecosystem Dynamics Biodiversity and Ecosystem Services
7.LS1.6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	Matter and Energy in Organisms
7.LS1.7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	Matter and Energy in Organisms
<b>Physical Science</b>	
7.PS1.1 Develop models to describe the atomic composition of simple molecules and extended structures.	Matter
7.PS1.2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	Physical and Chemical Changes
7.PS1.3 Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	Chemical Reactions
7.PS1.4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	Physical and Chemical Changes
7.PS1.5 Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	Chemical Reactions
7.PS1.6 Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	Chemical Reactions

<b>8th Grade</b>	
<b>Oregon Science Standard</b>	<b>Corresponding Propello Content</b>
<b>Earth and Space Science</b>	
8.ESS1.1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.	The Earth-Sun-Moon System

8.ESS1.2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system	The Universe
8.ESS1.3 Analyze and interpret data to determine scale properties of objects in the solar system.	The Universe
8.ESS1.4 Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.	Earth's History
8.ESS3.4 Construct an argument supported by evidence for how increases in human population and percapita consumption of natural resources impact Earth's systems.	Humans in the Biosphere
8.ESS1.1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.	The Earth-Sun-Moon System
8.ESS1.2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system	The Universe
8.ESS1.3 Analyze and interpret data to determine scale properties of objects in the solar system.	The Universe
8.ESS1.4 Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.	Earth's History
8.ESS3.4 Construct an argument supported by evidence for how increases in human population and per capita consumption of natural resources impact Earth's systems.	Humans in the Biosphere
<b>Life Science</b>	
8.LS3.1 Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	Inheritance and Variation
8.LS4.1 Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past	Evidence of Evolution
8.LS4.2 Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.	Evidence of Evolution
8.LS4.3 Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.	Evidence of Evolution
8.LS4.4 Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.	Mechanisms of Evolution

8.LS4.5 Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.	Growth and Development Mechanisms of Evolution
8.LS4.6 Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	Growth and Development Mechanisms of Evolution
<b>Physical Science</b>	
8.PS2.1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	Forces and Motion
8.PS2.2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object	Forces and Motion
8.PS2.3 Ask questions about data to determine the factors that affect the strength of electric and magnetic forces	Forces at a Distance
8.PS2.4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	Forces at a Distance
8.PS2.5 Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	Forces at a Distance
8.PS3.1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	Energy
8.PS3.2 Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	Energy
8.PS4.1 Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.	Waves
8.PS4.2 Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	Waves
8.PS4.3 Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals	Using Waves

# Science and Engineering Practices + Crosscutting Concepts- All Grades

Oregon Science Standard	Corresponding Propello Content
<b>Science and Engineering Practices</b>	
<p><b>Asking Questions and Defining Problems</b> A practice of science is to ask and refine questions that lead to descriptions and explanations of how the natural and designed world(s) works and which can be empirically tested.</p>	Embedded throughout Propello Course topics and activities.
<p><b>Developing and Using Models</b> A practice of both science and engineering is to use and construct models as helpful tools for representing ideas and explanations. These tools include diagrams, drawings, physical replicas, mathematical representations, analogies, and computer simulations.</p>	Embedded throughout Propello Course topics and activities.
<p><b>Planning and Carrying Out Investigations</b> Scientists and engineers plan and carry out investigations in the field or laboratory, working collaboratively as well as individually. Their investigations are systematic and require clarifying what counts as data and identifying variables or parameters.</p>	Embedded throughout Propello Course topics and activities.
<p><b>Analyzing and Interpreting Data</b> Scientific investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists use a range of tools—including tabulation, graphical interpretation, visualization, and statistical analysis—to identify the significant features and patterns in the data. Scientists identify sources of error in the investigations and calculate the degree of certainty in the results.</p>	Embedded throughout Propello Course topics and activities.
<p><b>Using Mathematics and Computational Thinking</b> In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships.</p>	Embedded throughout Propello Course topics and activities.
<p><b>Constructing Explanations and Designing Solutions</b> The end-products of science are explanations and the end-products of engineering are solutions. The goal of science is the construction of theories that provide explanatory accounts of the world. A theory becomes accepted when it has multiple lines of empirical evidence and greater explanatory power of phenomena than previous theories.</p>	Embedded throughout Propello Course topics and activities.
<p><b>Engaging in Argument from Evidence</b> Argumentation is the process by which evidence-based conclusions and solutions are reached. In science and engineering, reasoning and argument based on evidence are essential to identifying the best explanation for a natural phenomenon or the best solution to a design problem.</p>	Embedded throughout Propello Course topics and activities.
<p><b>Obtaining, Evaluating, and Communicating Information</b> Scientists and engineers must be able to communicate clearly and persuasively the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity.</p>	Embedded throughout Propello Course topics and activities.

## Crosscutting Concepts

<p><b>Patterns</b> Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.</p>	<p>Embedded throughout Propello Course topics and activities.</p>
<p><b>Cause and Effect: Mechanism and Explanation</b> Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.</p>	<p>Embedded throughout Propello Course topics and activities.</p>
<p><b>Scale, Proportion, and Quantity</b> In considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system's structure or performance.</p>	<p>Embedded throughout Propello Course topics and activities.</p>
<p><b>Systems and System Models</b> Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for understanding and testing ideas that are applicable throughout science and engineering.</p>	<p>Embedded throughout Propello Course topics and activities.</p>
<p><b>Energy and Matter: Flows, Cycles, and Conservation</b> Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations.</p>	<p>Embedded throughout Propello Course topics and activities.</p>
<p><b>Structure and Function</b> The way in which an object or living thing is shaped and its substructure determine many of its properties and functions.</p>	<p>Embedded throughout Propello Course topics and activities.</p>
<p><b>Stability and Change</b> For natural and built systems alike, conditions of stability and factors that control rates of change are critical elements to consider and understand.</p>	<p>Embedded throughout Propello Course topics and activities.</p>

Questions? Looking for guidance with Propello? Our crew is here to help: [hello@propello.com](mailto:hello@propello.com)