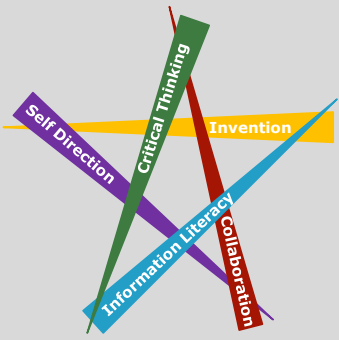


**Curriculum Development Course at a Glance  
Planning for 7<sup>th</sup> Grade Science**

<b>Content Area</b>	Science	<b>Grade Level</b>	7 <sup>th</sup> Grade
<b>Course Name/Course Code</b>			
<b>Standard</b>	<b>Grade Level Expectations (GLE)</b>	<b>GLE Code</b>	
1. Physical Science	1. Mixtures of substances can be separated based on their properties such as solubility, boiling points, magnetic properties, and densities	SC09-GR.7-S.1-GLE.1	
2. Life Science	1. Individual organisms with certain traits are more likely than others to survive and have offspring in a specific environment	SC09-GR.7-S.2-GLE.1	
	2. The human body is composed of atoms, molecules, cells, tissues, organs, and organ systems that have specific functions and interactions	SC09-GR.7-S.2-GLE.2	
	3. Cells are the smallest unit of life that can function independently and perform all the necessary functions of life	SC09-GR.7-S.2-GLE.3	
	4. Photosynthesis and cellular respiration are important processes by which energy is acquired and utilized by organisms	SC09-GR.7-S.2-GLE.4	
	5. Multiple lines of evidence show the evolution of organisms over geologic time	SC09-GR.7-S.2-GLE.5	
3. Earth Systems Science	1. Major geologic events such as earthquakes, volcanic eruptions, mid-ocean ridges, and mountain formation are associated with plate boundaries and attributed to plate motions	SC09-GR.7-S.3-GLE.1	
	2. Geologic time, history, and changing life forms are indicated by fossils and successive sedimentation, folding, faulting, and uplifting of layers of sedimentary rock	SC09-GR.7-S.3-GLE.2	

**Colorado 21<sup>st</sup> Century Skills**



**Critical Thinking and Reasoning:** *Thinking Deeply, Thinking Differently*

**Information Literacy:** *Untangling the Web*

**Collaboration:** *Working Together, Learning Together*

**Self-Direction:** *Own Your Learning*

**Invention:** *Creating Solutions*

**Reading & Writing Standards for Literacy  
in Science and Technical Subjects 6 - 12**

**Reading Standards**

- Key Ideas & Details
- Craft And Structure
- Integration of Knowledge and Ideas
- Range of Reading and Levels of Text Complexity

**Writing Standards**

- Text Types & Purposes
- Production and Distribution of Writing
- Research to Construct and Present Knowledge
- Range of Writing

<b>Unit Titles</b>	<b>Length of Unit/Contact Hours</b>	<b>Unit Number/Sequence</b>
It's All About You: From Cells to Organisms	7-9 weeks	1
Energy Transformations in Living Things	2-3 weeks	2
Mixtures & Substances	2-3 weeks	3
Adaptations of Life Over Time	5-6 weeks	4
Geologic Events Through Time	7-9 weeks	5
Shake Rattle and Roll	3-5 weeks	6

**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Unit Title</b>	It's All About You: From Cells to Organisms		<b>Length of Unit</b>	7-9 weeks
<b>Focusing Lens(es)</b>	Systems Structure and Function	<b>Standards and Grade Level Expectations Addressed in this Unit</b>	SC.09-GR.7-S.2-GLE.2 SC.09-GR.7-S.2-GLE.3	
<b>Inquiry Questions (Engaging-Debatable):</b>	<ul style="list-style-type: none"> <li>Does structure follow function or does function follow structure in living organisms?</li> <li>How can the human body be explained as systems within systems?</li> </ul>			
<b>Unit Strands</b>	Life Science			
<b>Concepts</b>	Systems, Structure, Function, Interactions, Models, Scale, Cells, Human Body, Organism, Relationship			

<b>Generalizations</b> My students will <b>Understand</b> that...	<b>Guiding Questions</b>	
	<b>Factual</b>	<b>Conceptual</b>
The structures within the human body (cells, tissues, organs, organ systems) interact with one another to perform a wide variety of functions that support the whole organism (SC.09-GR.7-S.2-GLE.2-EO.b;IQ.2)	What are the major body systems within the human body and the organs that make up each body system? (SC.09-GR.7-S.2-GLE.2-EO.a)	How do multiple different systems within the human body interact to perform an important function (for example: providing glucose to a neuron in the brain)? What is the most important component of a cell for it to still perform its functions as a cell? (SC.09-GR.7-S.2-GLE.3-EO.a)
Models allow scientists to investigate and explain the various structures within an organism across a range of scales and organizational levels from the atomic to the whole-organism level (SC.09-GR.7-S.2-GLE.2-EO.c;N.1)	What are the major components of a plant cell, animal cell, and a single-celled organism? (SC.09-GR.7-S.2-GLE.3-EO.b,c) What are the different organizational levels within an organism and examples of each? (SC.09-GR.7-S.2-GLE.3-EO.a)	What makes one model of an organ system or a cellular organelle better than another model? (SC.09-GR.7-S.2-GLE.3-EO.a,b) How are all living things both similar and different in terms of structure and function? (SC.09-GR.7-S.2-GLE.2-EO.b)
The pattern of similarities and differences among structures in living things reflects the strong relationship between structure and their function (SC.09-GR.7-S.2-GLE.3-EO.a; IQ.1) and (SC.09-GR.7-S.2-GLE.2-EO.b)	What is the difference between plant cells, animal cells, and single-celled organisms? (SC.09-GR.7-S.2-GLE.3-EO.b,c)	How are structure and function related in a given organ or cellular organelle (for example: heart, cell membrane)?
Cells operate independently and interdependently to perform the necessary functions of life (SC.09-GR.7-S.2-GLE.3-EO.a, b)	What are the necessary functions for life? (SC.09-GR.7-S.2-GLE.3-EO.a; IQ.1)	How do cells extract energy from food and eliminate waste similar to the human body? (SC.09-GR.7-S.2-GLE.3-EO.c; IQ.3)

**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Critical Content:</b> <b>My students will Know...</b>	<b>Key Skills:</b> <b>My students will be able to (Do)...</b>
<ul style="list-style-type: none"> <li>• The composition of the human body (atoms, molecules, cells, tissues, organs, and organ systems and their specific functions and interactions)(SC.09-GR.7-S.2-GLE.2)</li> <li>• The inter-related nature of structure and function in living things (SC.09-GR.7-S.2-GLE.2, 3)</li> <li>• The functions of cells as a the smallest unit of life that can function independently and perform all the necessary functions of life (SC.09-GR.7-S.2-GLE.3)</li> <li>• The similarities and differences between plant cells, animal cells, and single-celled organisms (SC.09-GR.7-S.2-GLE.3-EO.3)</li> <li>• The development and refinement of our t understanding of cells over centuries of studies by many scientists (SC.09-GR.7-S.2-GLE.3; N.1)</li> <li>• How each body system contributes to supporting the life of the organism (SC.09-GR.7-S.2-GLE.2;IQ.1)</li> <li>• The different body systems (SC.09-GR.7-S.2-GLE.2-EO.a)</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and design a scientific investigation about human body systems (SC.09-GR.7-S.2-GLE.2-EO.a)</li> <li>• Develop, communicate, and justify an evidence-based scientific explanation regarding the functions and interaction of the human body (SC.09-GR.7-S.2-GLE.2-EO.b)</li> <li>• Gather, analyze, and interpret data and models on the functions and interactions of the human body (SC.09-GR.7-S.2-GLE.2-EO.c)</li> <li>• Draw, label, describe, and explain the cell, its organelles, and their functions, in plant cells, animal cells, and single-celled organisms (SC.09-GR.7-S.2-GLE.3)</li> <li>• Gather, analyze, and interpret data and models on the different types of cells, their structures, components and functions (SC.09-GR.7-S.2-GLE.3-EO.a)</li> <li>• Develop, communicate, and justify an evidence-based scientific explanation regarding cell structures, components, and their specific functions (SC.09-GR.7-S.2-GLE.3-EO.b)</li> <li>• Compare and contrast the basic structures and functions of plant cells, animal cells, and single-celled organisms (SC.09-GR.7-S.2-GLE.3-EO.c)</li> <li>• Employ tools to gather, view, analyze, and report results for the scientific investigations of cells (SC.09-GR.7-S.2-GLE.3-EO.d)</li> </ul>

**Critical Language:** includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline.  
 EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: *“Mark Twain exposes the hypocrisy of slavery through the use of satire.”*

<b>A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):</b>	<i>The structure of an organ or an organelle helps it to perform its main function. For example, the heart is a muscular organ with multiple chambers that allow it to perform its function of pumping blood throughout the body.</i>
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<b>Academic Vocabulary:</b>	systems, structure, function, interactions, models, scale, compare, contrast
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<b>Technical Vocabulary:</b>	cells, human body, organism, organelle, organ system, organ, tissue, atom, molecule
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**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Unit Title</b>	Energy Transformations in Living Things		<b>Length of Unit</b>	2-3 Weeks
<b>Focusing Lens(es)</b>	Transformation	<b>Standards and Grade Level Expectations Addressed in this Unit</b>	SC.09-GR.7-S.2-GLE.4	
<b>Inquiry Questions (Engaging-Debatable):</b>	<ul style="list-style-type: none"> <li>• What might be the effect of increased carbon dioxide in the air on plant and animal life?</li> <li>• What would happen to life as we know it is there was no sunlight and energy transformation?</li> </ul>			
<b>Unit Strands</b>	Life Science			
<b>Concepts</b>	Energy, Transformation, Photosynthesis, Respiration, Process			

<b>Generalizations</b> My students will <b>Understand</b> that...	<b>Guiding Questions</b>	
	<b>Factual</b>	<b>Conceptual</b>
Photosynthesis and cellular respiration are both chemical processes that support life through the transformation of light energy into a form of energy that is usable by organisms (SC.09-GR.7-S.2-GLE.4-EO.a,b; IQ.2; RA.2)	What are the basic reactants and products of photosynthesis and cellular respiration? (SC.09-GR.7-S.2-GLE.4-EO.a) What is the relationship between photosynthesis and cellular respiration? (SC.09-GR.7-S.2-GLE.4-EO.b) What energy transformations occur in both the processes of photosynthesis and cellular respiration? (SC.09-GR.7-S.2-GLE.4-EO.b; IQ.2)	How does life depend upon photosynthesis? (SC.09-GR.7-S.2-GLE.4-EO.a) Why do humans need oxygen in order to live? (SC.09-GR.7-S.2-GLE.4-EO.a) From where does a plant get most of the matter that makes up its mass? (SC.09-GR.7-S.2-GLE.4-EO.a) Why do living organisms need energy? (SC.09-GR.7-S.2-GLE.4; RA.2)
The process of photosynthesis uses organelles specific to plants to transform and store energy (SC.09-GR.7-S.2-GLE.4-EO.b; IQ.2)	How do plants transform energy?	What might the consequences be for life on Earth, if the amount of radiation from the Sun reaching the Earth's surface was significantly less than it is now – for example, if ash from a massive volcanic eruption filled the upper layers of the atmosphere? (SC.09-GR.7-S.2-GLE.4-EO.b; RA.1, 3)
Cellular respiration transforms and uses energy differently from photosynthesis (SC.09-GR.7-S.2-GLE.4-EO.b; IQ.2)	How do animal cells transform energy?	How are photosynthesis and cellular respiration the same and different? (SC.09-GR.7-S.2-GLE.4-EO.a; IQ.2)

**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Critical Content:</b> <b>My students will Know...</b>	<b>Key Skills:</b> <b>My students will be able to (Do)...</b>
<ul style="list-style-type: none"> <li>• The common process of cellular respiration in both plants and animals, and the unique (plant) process of photosynthesis (SC.09-GR.7-S.2-GLE.4)</li> <li>• The inputs (reactants) of photosynthesis: light energy, carbon dioxide and water (SC.09-GR.7-S.2-GLE.4-EO.a)</li> <li>• The outputs (products) of photosynthesis: sugar (glucose) and oxygen (SC.09-GR.7-S.2-GLE.4-EO.a)</li> <li>• The inputs (reactants) of cellular respiration: sugar (glucose) and oxygen (SC.09-GR.7-S.2-GLE.4-EO.a)</li> <li>• The outputs (products) of cellular respiration: energy, carbon dioxide and water (SC.09-GR.7-S.2-GLE.4-EO.a)</li> <li>• The reasons why plants are essential for human health and the health and survival of Earth’s ecosystems (SC.09-GR.7-S.2-GLE.4;RA.1)</li> <li>• How energy in the form of food comes from Sunlight via photosynthesis (SC.09-GR.7-S.2-GLE.4; RA.2)</li> <li>• How fossil fuels result from the photosynthesis of organisms that lived millions of years ago (SC.09-GR.7-S.2-GLE.4; RA.3)</li> </ul>	<ul style="list-style-type: none"> <li>• Gather, analyze, and interpret data regarding the basic functions of photosynthesis and cellular respiration (SC.09-GR.7-S.2-GLE.4-EO.1)</li> <li>• Use direct and indirect evidence to describe the relationship between photosynthesis and cellular respiration within plants – and between plants and animals (SC.09-GR.7-S.2-GLE.4-EO.2)</li> <li>• Use computer simulations to model the relationship between photosynthesis and cellular respiration within plants – and between plants and animals (SC.09-GR.7-S.2-GLE.4-EO.3)</li> <li>• Ask a testable question and make a falsifiable hypothesis about photosynthesis or respiration and design an inquiry-based method to find an answer (SC.09-GR.7-S.2-GLE.4;N.1)</li> <li>• Design an experiment to observe photosynthesis or respiration, and clearly define controls and variables (SC.09-GR.7-S.2-GLE.4;N.2)</li> <li>• Share experimental data, and respectfully discuss conflicting results emulating the practice of scientists (SC.09-GR.7-S.2-GLE.4; N.3)</li> </ul>

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 EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: *“Mark Twain exposes the hypocrisy of slavery through the use of satire.”*

<b>A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):</b>	<i>The products of photosynthesis (sugar and oxygen) are also the reactants of cellular respiration.</i>
<b>Academic Vocabulary:</b>	inputs, outputs, process, energy, transformation, testable question, hypothesis, control, variable, food
<b>Technical Vocabulary:</b>	photosynthesis, cellular respiration, products, reactants, oxygen, carbon dioxide, sugar, glucose, light

**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Unit Title</b>	Mixtures and Substances	<b>Length of Unit</b>	2-3 weeks
<b>Focusing Lens(es)</b>	Properties Classification	<b>Standards and Grade Level Expectations Addressed in this Unit</b>	SC09-GR.7-S.1-GLE.1
<b>Inquiry Questions (Engaging-Debatable):</b>	<ul style="list-style-type: none"> <li>• What would earth be like if we were unable to separate or classify the matter that makes up a substance or mixture?</li> <li>• Does the environmental impact of mining outweigh the benefits gained through extracting and separating these resources?</li> </ul>		
<b>Unit Strands</b>	Physical Science		
<b>Concepts</b>	classification, properties, matter, mixture, substance, solution, density, physical size, boiling point, solubility, magnetic properties, materials, filtration, scientific investigations		

<b>Generalizations</b> My students will <b>Understand</b> that...	<b>Guiding Questions</b>	
	<b>Factual</b>	<b>Conceptual</b>
Mixtures separated by their properties (solubility, boiling point, physical size, and densities) assist in a variety of processes (i.e. water filtration, recycling center, kidneys, etc.), some which are vital to human existence (SC09-GR.7-S.1-GLE.1-EO.a;RA.1,2,3)	<p>How do you separate a mixture based on the physical properties of its matter? (SC.09-GR.7-S.1-GLE.1-EO.a;IQ.1)</p> <p>Which properties (i.e. boiling point, density, physical size, solubility, and magnetic properties) are most useful in classifying mixtures of substances? (SC.09-GR.7-S.1-GLE.1-EO.a;IQ.2)</p>	<p>Why is it important and necessary to be able to separate mixtures? (SC09-GR.7-S.1-GLE.1-EO.a)</p> <p>How does classifying mixtures and solutions help our understanding of them? (SC09-GR.7-S.1-GLE.1-EO.a)</p> <p>When is it useful to separate mixtures? When is it detrimental to separate mixtures? (SC09-GR.7-S.1-GLE.1-EO.a)</p>
Scientific investigations often guide the exploration of the properties of matter helpful in determining if a substance is composed of different types of natural resources (e.g. fossil fuels) and if the substance can be used for human consumption (SC.09-GR.7-S.1-GLE.1-EO.b; RA.1,2)	How do we know that substances are composed of different types of matter? (SC09-GR.7-S.1-GLE.1-EO.a)	How much difference must there be among the properties of substances for the properties to be useful in separating the substances? (SC.09-GR.7-S.1-GLE.1-EO.a; IQ.3)
The separation of mixtures allows for purification of materials which often facilitates the creation of new materials or enhances existing products which may drive what industries manufacture (SC09-GR.7-S.1-GLE.1-EO.b; RA.1)	<p>What properties are important in mining and oil refining processes? (SC09-GR.7-S.1-GLE.1-EO.b; RA.2)</p> <p>How are the method used for separation of mixtures in mining and single-stream recycling plants the same? How are they different? (SC09-GR.7-S.1-GLE.1-EO.b; RA.2)</p>	Why is separating mixtures important to industries? (SC09-GR.7-S.1-GLE.1-EO.b; RA.1, 2)

**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Critical Content:</b> <b>My students will Know...</b>	<b>Key Skills:</b> <b>My students will be able to (Do)...</b>
<ul style="list-style-type: none"> <li>The physical properties of a substance in a mixture such as boiling point, melting point, freezing point, solubility, magnetic properties, physical size, and density (SC.09-GR.7-S.1-GLE.1-EO.a;IQ.2,3)</li> <li>Matter’s physical properties which can be used to separate mixtures and solutions (SC.09-GR.7-S.1-GLE.1)</li> <li>Examples of how the separation of mixtures helps to understand the variations of matter in its composition (SC.09-GR.7-S.1-GLE.1; IQ.3;RA.1,2,3; N.2,4)</li> <li>Various techniques and tools used to separate mixtures and substances (SC.09-GR.7-S.1-GLE.1-EO.b;IQ.1,2;RA.1,2;N.1,2,4)</li> <li>Properties of matter used to determine usefulness in industrial manufacturing (SC.09-GR.7-S.1-GLE.1-EO.b;IQ.1,2;RA.1)</li> </ul>	<ul style="list-style-type: none"> <li>Identify properties of substance in a mixture that could be used to separate those substance from each other (SC.09-GR.7-S.1-GLE.1-EO.a)</li> <li>Develop and design a scientific investigation to separate the components of a mixture (SC.09-GR.7-S.1-GLE.1-EO.b)</li> <li>Use specific techniques to separate mixtures and solutions (e.g. NAME A FEW) (SC.09-GR.7-S.1-GLE.1-EO.b;IQ.1,2;RA.1,2;N.1,2,4)</li> <li>Evaluate and critique experimental procedures designed to separate mixtures (SC.09-GR.7-S.1-GLE.1; N.2)</li> <li>Describe ways in which scientists study mixtures (SC.09-GR.7-S.1-GLE.1; N.3)</li> <li>Ask testable questions and make falsifiable hypothesis to perform separation of mixtures (SC.09-GR.7-S.1-GLE.1; N.1)</li> <li>Evaluate and critique experimental procedures designed to separate mixtures (SC.09-GR.7-S.1-GLE.1; N.2)</li> <li>Share experimental data, and respectfully discuss inconsistent results (SC.09-GR.7-S.1-GLE.1; N.3)</li> </ul>

<p><b>Critical Language:</b> includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline.          EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: <i>“Mark Twain exposes the hypocrisy of slavery through the use of satire.”</i></p>	
<p><b>A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):</b></p>	<p><i>I can classify matter based on physical properties such as its boiling point, density, or attraction to metal.          I can separate a mixture if I know the properties of the matter in a substance.</i></p>
<p><b>Academic Vocabulary:</b></p>	<p>classify, compare, contrast, separate, properties, evaluate, critique, investigate, substances, inconsistent results, variation</p>
<p><b>Technical Vocabulary:</b></p>	<p>mixture, solubility, density, boiling point, melting point, freezing point, filtration, solution, matter, falsifiable hypothesis, experimental procedures, magnetic properties, physical size</p>

**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Unit Title</b>	Adaptations of Life Over Time		<b>Length of Unit</b>	5-6 weeks
<b>Focusing Lens(es)</b>	Change/Context Environment	<b>Standards and Grade Level Expectations Addressed in this Unit</b>	SC09-GR.7-S.2-GLE.1	
<b>Inquiry Questions (Engaging-Debatable):</b>	<ul style="list-style-type: none"> <li>• Is there strength in diversity? How does diversity impact species survival?</li> <li>• Why can we find evidence of life on top of mountains?</li> <li>• Why is the relationship between nature and nurture important for survival of a species?</li> <li>• How would the world be different if organisms did not change over time?</li> </ul>			
<b>Unit Strands</b>	Life Science			
<b>Concepts</b>	change, evidence, time, extinction, traits, adaptation, interaction, survival, reproduction, environment, theory, biological evolution, diversity, organisms, differential survival, reproductive success, evolution, resistance, genetic traits, species			

<b>Generalizations</b> My students will <b>Understand</b> that...	<b>Guiding Questions</b>	
	<b>Factual</b>	<b>Conceptual</b>
Changes in environmental conditions often alter the reproductive success of individual organisms and entire species (SC.09-GR.7-S.2-GLE.5; RA.1)	What traits must an organism express to be successful? (SC09-GR.7-S.2-GLE.1-EO.a) What causes a species to go extinct? (SC09-GR.7-S.2-GLE.1-EO.a)	How is the use of the word “adaptation” different in everyday usage than in biology? (SC.09-GR.7-S.2-GLE.1; IQ.2)
Species that do not adapt become extinct (SC.09-GR.7-S.2-GLE.5; RA.1)	Why don’t organisms become extinct? (SC09-GR.7-S.2-GLE.1-EO.a)	Why do some species survive better than others? (SC09-GR.7-S.2-GLE.1-EO.a; IQ.1) What happens to the system when a species becomes extinct? (SC09-GR.7-S.2-GLE.1-EO.a; IQ.1)
Organisms with certain traits have a higher potential for survival and reproduction within specific environments where those traits are favorable (SC.09-GR.7-S.2-GLE.1-EO.a,b,d; IQ.1)	What determines which traits help an organism survive in its environment? (SC09-GR.7-S.2-GLE.1-EO.a; IQ.1) What positive or negative influence can humans have on a species’ ability to adapt to an environment? (SC09-GR.7-S.2-GLE.1-EO.a; IQ.1)	Why are some organisms more successful at reproducing than others? (SC09-GR.7-S.2-GLE.1-EO.a,b; IQ.1, 2) How does our knowledge of how organisms adapt to their environment help us modify organisms for human benefit (corn)? (SC09-GR.7-S.2-GLE.1-EO.a,b; IQ.1, 2; N.2)



**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Critical Content:</b> <b>My students will Know...</b>	<b>Key Skills:</b> <b>My students will be able to (Do)...</b>
<ul style="list-style-type: none"> <li>• Examples of traits that are beneficial or detrimental to the survival of a species (natural Selection). (SC09-GR.7-S.2-GLE.1-EO.a)</li> <li>• What adaptation means and how it impacts survival and reproductive success. (SC09-GR.7-S.2-GLE.1-EO.b)</li> <li>• Reasons why biological evolution accounts for the unity and diversity of living organisms (SC09-GR.7-S.2-GLE.1-EO.d)</li> <li>• Why individual organisms with certain traits are more likely than others to survive and have offspring in a specific environment (SC09-GR.7-S.2-GLE.1-EO.a)</li> <li>• Specific adaptations that provide evidence about differential survival and reproductive success (SC09-GR.7-S.2-GLE.1-EO.a, b; IQ.2)</li> <li>• The relationship between an organism's traits and its potential for survival and reproduction (SC09-GR.7-S.2-GLE.1-EO.a; IQ.1)</li> <li>• The evolution of bacteria related to survival in the presence of the environmental pressure of antibiotics - giving rise to antibiotic resistance (SC09-GR.7-S.2-GLE.1; RA.1)</li> <li>• Reasons why species that live with humans -such as rats and pigeons - are more common around towns and cities (SC09-GR.7-S.2-GLE.1; RA.2)</li> </ul>	<ul style="list-style-type: none"> <li>• Develop, communicate, and justify an evidence-based explanation for why a given organism with specific traits will or will not survive to have offspring in a given environment. SC.09-GR.7-S.2-GLE.1-EO.a)</li> <li>• Analyze and interpret data about specific adaptations (SC09-GR.7-S.2-GLE.1-EO.b)</li> <li>• Use information and communication tools to gather information from credible sources, analyze findings, and draw conclusions to create and justify an evidence-based scientific explanation. (SC09-GR.7-S.2-GLE.1-EO.c)</li> <li>• Use computer simulations to model differential survival and reproductive success associated with specific traits in a given environment. (SC09-GR.7-S.2-GLE.1-EO.d)</li> <li>• Analyze and interpret data about specific adaptations to provide evidence and develop claims about differential survival and reproductive success (SC09-GR.7-S.2-GLE.1-EO.b)</li> <li>• Use information and communication technology tools to gather information from credible sources, analyze findings, and draw conclusions to create and justify an evidence-based scientific explanation (SC09-GR.7-S.2-GLE.1-EO.c)</li> <li>• Use computer simulations to model differential survival and reproductive success associated with specific traits in a given environment (SC09-GR.7-S.2-GLE.1-EO.d)</li> </ul>

<p><b>Critical Language:</b> includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline.          EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: <i>“Mark Twain exposes the hypocrisy of slavery through the use of satire.”</i></p>	
<p><b>A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):</b></p>	<p><i>Organisms interact with their environment and adapt to its changing conditions or become extinct, which has happened throughout the history of Earth.</i></p>
<p><b>Academic Vocabulary:</b></p>	<p>interpret, survive, relationship, potential, environment, evidence, theory, claims, consequences, critique, analyze, interaction, diversity</p>
<p><b>Technical Vocabulary:</b></p>	<p>traits, adaptations, organisms, reproduction, evolution, extinction, survival, environment, resistance, genetic traits, populations, species.</p>

**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Unit Title</b>	Geologic Events Through Time		<b>Length of Unit</b>	7-9 weeks
<b>Focusing Lens(es)</b>	Change Time	<b>Standards and Grade Level Expectations Addressed in this Unit</b>	SC09-GR.7-S.3-GLE.2 SC09-GR.7-S.2-GLE.5	
<b>Inquiry Questions (Engaging-Debatable):</b>	<ul style="list-style-type: none"> <li>• How would the world be different if organisms and the environment did not change over time?</li> <li>• How is it helpful to our understanding of time and Earth's history to track time through geology?</li> <li>• Why is it challenging for people to think in terms of geologic time?</li> </ul>			
<b>Unit Strands</b>	Earth Science, Life Science			
<b>Concepts</b>	Order, Change, Evolution, Time, Interaction, organism, environment, extinction, structure, scale, traits, evidence			

<b>Generalizations</b> My students will <b>Understand</b> that...	<b>Guiding Questions</b>	
	<b>Factual</b>	<b>Conceptual</b>
Organisms interacting with their environment and adapting to its changing conditions over time influence the survival or extinction patterns of species. (SC.09-GR.7-S.2-GLE.5; RA.1)	What causes a species to go extinct? (SC.09-GR.7-S.2-GLE.5-EO.b) What are some ways that organisms adapt to their environment? (SC.09-GR.7-S.2-GLE.5-EO.a)	How do the patterns of survival of one organism impact survival of others? (SC.09-GR.7-S.2-GLE.5-EO.a)
Geologic time, observed in land formations and rock layers, indicate major change events in Earth's history (SC.09-GR.7-S.3-GLE.2-EO.b,c,d; IQ.1; RA.1)	How can major geologic events be attributed to plate movement? (SC.09-GR.7-S.3-GLE.1;IQ.1)	Why is understanding Earth's geologic history important today? (SC.09-GR.7-S.3-GLE.2-EO.c)
Evidence is used to determine the order of events in geologic time. (SC.09-GR.7-S.3-GLE.2-EO.d)	How do people know which layer of rock is older? (SC.09-GR.7-S.3-GLE.2-EO.c; RA.1;N.2)	Why are fossils important in understanding geologic history? (SC.09-GR.7-S.3-GLE.2-EO.c; RA.1;N.2)
Similar traits of modern organisms and their predecessors provide evidence for evolution (SC.09-GR.7-S.2-GLE.5-EO.a; IQ.1)	How does the fossil record show how organisms have evolved? (SC.09-GR.7-S.2-GLE.5-EO.a; IQ.1) and (SC.09-GR.7-S.3-GLE.2-EO.c; RA.1;N.2) What might life on Earth have been like in the distant past, and what evidence is there for this?	What evidence is there that supports the theory of evolution? (SC.09-GR.7-S.2-GLE.5-EO.a; IQ.1) and (SC.09-GR.7-S.3-GLE.2-EO.c; RA.1;N.2) How does the evidence about the way life has evolved on Earth over long periods of time tell us? (SC.09-GR.7-S.2-GLE.5-EO.a; IQ.1) and (SC.09-GR.7-S.3-GLE.2-EO.c; RA.1;N.2)

**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Critical Content:</b> <b>My students will Know...</b>	<b>Key Skills:</b> <b>My students will be able to (Do)...</b>
<ul style="list-style-type: none"> <li>• Major events in Earth’s geologic history (SC.09-GR.7-S.3-GLE.2-EO.c)</li> <li>• The causes and effects of mass extinction (SC09-GR.7-S.2-GLE.5-EO.c,d)</li> <li>• Fossil records used to study the geological/biological history of the Earth (past and present) (SC.09-GR.7-S.2-GLE.5-EO.a)</li> <li>• The difference between absolute and relative fossil dating (SC.09-GR.7-S.3-GLE.2; RA.2)</li> <li>• The geologic time scale and sequence of geologic events (SC.09-GR.7-S.3-GLE.2-EO.a)</li> <li>• The difference between direct and indirect evidence (SC.09-GR.7-S.3-GLE.2-EO.d)</li> </ul>	<ul style="list-style-type: none"> <li>• Identify, describe, and determine the sequence of major events in Earth’s geologic history by examining rock layers, fossil records, and other geologic evidence. (SC.09-GR.7-S.3-GLE.2-EO.c,d)</li> <li>• Analyze and interpret data that show human evolution. (SC09-GR.7-S.2-GLE.5_EO.c)</li> <li>• Trace lines of evolution using a variety of resources and media (SC.09-GR.7-S.2-GLE.5-EO.a,c)</li> <li>• Analyze and critique causes and effects of mass extinction and use technology to share findings (SC.09-GR.7-S.2-GLE.5-EO.b,d)</li> <li>• Describe the geologic time scale and why it is used (SC.09-GR.7-S.3-GLE.2-EO.a)</li> <li>• Identify and describe the impact of major geologic events on life on Earth (SC.09-GR.7-S.3-GLE.2-EO.b)</li> <li>• Identify and describe major events in Earth’s geologic history (SC.09-GR.7-S.3-GLE.2-EO.c)</li> <li>• Use direct and indirect evidence to determine the sequence of events in geologic time (SC.09-GR.7-S.3-GLE.2-EO.d)</li> <li>• Interpret and analyze data from the fossil record to support a claim that organisms and environments have evolved over time (SC.09-GR.7-S.2-GLE.5-EO.a)</li> </ul>

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<p><b>A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):</b></p>	<p><i>Geologic time is shown and scaled through rock layers, fossil records, and other geological evidence.</i></p>
<p><b>Academic Vocabulary:</b></p>	<p>theory, time scale, layers, analyze, succession, sequence, simulation, models</p>
<p><b>Technical Vocabulary:</b></p>	<p>geologic time, fossil record, fossil, lithosphere, sedimentation</p>

**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Unit Title</b>	Shake, Rattle and Roll		<b>Length of Unit</b>	3-5 weeks
<b>Focusing Lens(es)</b>	Interactions Patterns	<b>Standards and Grade Level Expectations Addressed in this Unit</b>	SC09-GR.7-S.3-GLE.1	
<b>Inquiry Questions (Engaging- Debatable):</b>	<ul style="list-style-type: none"> <li>• If Earth’s tectonic plates are constantly interacting, why don’t people feel the movement?</li> <li>• Why do some countries have mountains and not others? Canyons?</li> </ul>			
<b>Unit Strands</b>	Earth Science			
<b>Concepts</b>	change, time, interaction, motion, force, tectonic plates, patterns, geologic events,			

<b>Generalizations</b> My students will <b>Understand</b> that...	<b>Guiding Questions</b>	
	<b>Factual</b>	<b>Conceptual</b>
Tectonic plates, which are in constant motion, interact to induce geologic events due to forces within the Earth (SC.09-GR.7-S.3-GLE.1-EO.a)	What evidence supports the theory of plate tectonics? (SC.09-GR.7-S.3-GLE.1; IQ.2) What are the effects of plate movement along plate boundaries? (SC.09-GR.7-S.3-GLE.1; IQ.3) What are the constructive and destructive forces associated with volcanoes? (SC.09-GR.7-S.3-GLE.1)	How does the movement of plates affect life on Earth? (SC.09-GR.7-S.3-GLE.1-EO.b; IQ.3) Why do people continue to live at or near plate boundaries? (SC.09-GR.7-S.3-GLE.1; IQ.3) Why do most earthquakes and volcanoes occur at plate boundaries? (SC.09-GR.7-S.3-GLE.1; IQ.3)
Major events (changes) in geologic time form patterns evidenced in land formations and rock layers (SC.09-GR.7-S.3-GLE.1-EO.d)	How can major geologic events be attributed to plate movement? (SC.09-GR.7-S.3-GLE.1; IQ.1)	Why is understanding Earth’s geologic history important today? (SC.09-GR.7-S.3-GLE.1; RA.1)
Interactions between tectonic plates and landforms result in natural events which can (positively or negatively) impact communities (SC.09-GR.7-S.3-GLE.1-EO.d; RA.2)	What types of natural hazards would one witness due to plate tectonics? (SC.09-GR.7-S.3-GLE.1-EO.c)	How does the movement of tectonic plates cause natural hazards? Would these hazards still exist if the tectonic plates did not move? (SC.09-GR.7-S.3-GLE.1-EO.c; RA.1)

**Curriculum Development Overview  
Unit Planning for 7<sup>th</sup> Grade Science**

<b>Critical Content:</b> My students will <b>Know</b> ...	<b>Key Skills:</b> My students will be able to <b>(Do)</b> ...
<ul style="list-style-type: none"> <li>• The components of the lithosphere (e.g., plates that move and interact) (SC.09-GR.7-S.3-GLE.1)</li> <li>• The movements of tectonic plates and their effects ( e.g., earthquakes, volcanoes, mountain formation, and mid-ocean ridges) (SC.09-GR.7-S.3-GLE.1)</li> <li>• The major geologic events that attributed to plate movements (SC.09-GR.7-S.3-GLE.1; IQ.1)</li> <li>• The effects of plate movement along plate boundaries (SC.09-GR.7-S.3-GLE.1; IQ.2)</li> <li>• Geologic “hot spots” and how they are used in building design (SC.09-GR.7-S.3-GLE.1-EO.c; RA.2)</li> </ul>	<ul style="list-style-type: none"> <li>• Identify, interpret, and explain models of plate motions on Earth and how they cause major geologic events (SC.09-GR.7-S.3-GLE.1-EO.b)</li> <li>• Gather, analyze, and communicate data that explains Earth’s plates, plate motions, and the results of plate motions (SC.09-GR.7-S.3-GLE.1-EO.a)</li> <li>• Use maps to locate likely geologic “hot spots”, using evidence of earthquakes and volcanic activity (SC.09-GR.7-S.3-GLE.1-EO.c)</li> <li>• Use web-based or other technology tools to show connections and patterns in data about tectonic plate boundaries and earthquakes, volcanic eruptions, and mountain formation ((SC.09-GR.7-S.3-GLE.1-EO.d)</li> <li>• Trace the development of a scientific theory using the theory of plate tectonics (SC.09-GR.7-S.3-GLE.1; N.2)</li> <li>• Describe the ethical traditions of science: value peer review; truthful reporting of methods and outcomes; making work public; and sharing a lens of professional skepticism when reviewing the work of others (SC.09-GR.7-S.3-GLE.1; N.3)</li> </ul>

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<p><b>A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):</b></p>	<p><i>Earth is composed of plates that interact and move in various ways, causing major geologic events such as earthquakes, volcanic eruptions, mid-ocean ridges, and mountain formations. (SC.09-GR.7-S.3-GLE.1)</i></p>
<p><b>Academic Vocabulary:</b></p>	<p>theory, time scale, layers, analyze, simulation, models</p>
<p><b>Technical Vocabulary:</b></p>	<p>lithosphere, sedimentation, eruption, earthquake, volcano, plate, plate boundaries, mid-ocean ridges, folding faulting, plate tectonics</p>