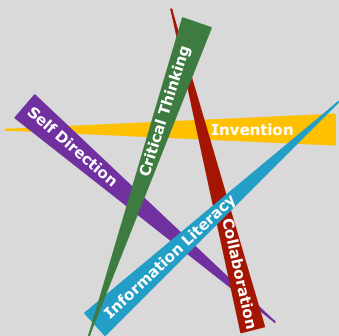


**Curriculum Development Course at a Glance  
Planning for 6<sup>th</sup> Grade Science**

<b>Content Area</b>	Science	<b>Grade Level</b>	6 <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. All matter is made of atoms, which are far too small to see directly through a light microscope. Elements have unique atoms and thus, unique properties. Atoms themselves are made of even smaller particles	SC09-GR.6-S.1-GLE.1	
	2. Atoms may stick together in well-defined molecules or be packed together in large arrangements. Different arrangements of atoms into groups compose all substances.	SC09-GR.6-S.1-GLE.2	
	3. The physical characteristics and changes of solid, liquid, and gas states can be explained using the particulate model	SC09-GR.6-S.1-GLE.3	
	4. Distinguish among, explain, and apply the relationships among mass, weight, volume, and density	SC09-GR.6-S.1-GLE.4	
2. Life Science	1. Changes in environmental conditions can affect the survival of individual organisms, populations, and entire species	SC09-GR.6-S.2-GLE.1	
	2. Organisms interact with each other and their environment in various ways that create a flow of energy and cycling of matter in an ecosystem	SC09-GR.6-S.2-GLE.2	
3. Earth Systems Science	1. Complex interrelationships exist between Earth's structure and natural processes that over time are both constructive and destructive	SC09-GR.6-S.3-GLE.1	
	2. Water on Earth is distributed and circulated through oceans, glaciers, rivers, ground water, and the atmosphere	SC09-GR.6-S.3-GLE.2	
	3. Earth's natural resources provide the foundation for human society's physical needs. Many natural resources are nonrenewable on human timescales, while others can be renewed or recycled	SC09-GR.6-S.3-GLE.3	

Curriculum Development Course at a Glance  
 Planning for 6<sup>th</sup> Grade Science

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

Unit Titles	Length of Unit/Contact Hours	Unit Number/Sequence
Changing Environments	4-6 weeks	1
Water	4-6 weeks	2
Building Blocks of Life	4-6 weeks	3
Environmental Systems	4-6 weeks	4

**Curriculum Development Overview  
Unit Planning for 6<sup>th</sup> Grade Science**

<b>Unit Title</b>	Changing Environments	<b>Length of Unit</b>	4-6 weeks
<b>Focusing Lens(es)</b>	Change Interactions	<b>Standards and Grade Level Expectations Addressed in this Unit</b>	SC09-GR.6-S.2-GLE.1 SC09-GR.6-S.2-GLE.2 SC09-GR.6-S.3-GLE.1
<b>Inquiry Questions (Engaging-Debatable):</b>	<ul style="list-style-type: none"> <li>How do changes in one (population) affect balance in an ecosystem?</li> <li>How would life / ecosystems be different if Earth's surface did not change?</li> </ul>		
<b>Unit Strands</b>	Life Science, Earth Systems Science		
<b>Concepts</b>	change, equilibrium/stability, ecosystems, environment, population, energy, matter, flow, cycle, surface features, constructive/destructive forces, interaction, patterns		

<b>Generalizations</b> My students will <b>Understand</b> that...	<b>Guiding Questions</b>	
	<b>Factual</b>	<b>Conceptual</b>
The interactions among organisms in an ecosystem facilitate the flow of energy and cycling of matter and follow predictable patterns. (SC09-GR.6-S.2-GLE.2-EO.c; IQ.2; N.3)	<p>What biotic and abiotic factors comprise ecosystems? (SC09-GR.6-S.2-GLE.1-EO.c)</p> <p>What are ways that we can describe and measure populations and ecosystems? (SC09-GR.6-S.2-GLE.1-EO.a)</p> <p>How does a food web show the flow of energy through an ecosystem? patterns (SC09-GR.6-S.2-GLE.2-EO.b)</p> <p>What "jobs" do organisms do to facilitate the flow of energy and cycling of matter? patterns (SC09-GR.6-S.2-GLE.2-EO.c; IQ.2)</p>	<p>How do biotic and abiotic factors interact in an ecosystem? (SC09-GR.6-S.2-GLE.1-EO.c)</p> <p>Why are there generally more producers than consumers in an ecosystem? (SC09-GR.6-S.2-GLE.1-EO.c)</p> <p>How does the flow of energy compare and contrast with the cycling of matter? patterns (SC09-GR.6-S.2-GLE.2-EO.c)</p>
The interaction between Earth's constructive and destructive forces explains both the pattern and changes in surface features on Earth. (SC09-GR.6-S.3-GLE.1-EO.a; IQ. 2; RA.1)	<p>What constructive and destructive forces affect Earth's surface features?</p> <p>How does Earth's surface change over time? (SC09-GR.6-S.3-GLE.1-EO.b,c; IQ.2; RA.2; N.2)</p>	<p>How do forces inside the Earth and on the surface build, destroy, and change Earth's crust? (SC09-GR.6-S.3-GLE.1-EO.a; IQ. 1; RA.1)</p> <p>How do changes in Earth's surface alter the nonliving environment of ecosystems? (SC09-GR.6-S.3-GLE.1-EO.b; RA.1)</p>

**Curriculum Development Overview  
Unit Planning for 6<sup>th</sup> Grade Science**

Changes in the environment can determine the survival of populations and the stability of ecosystems. (SC09-GR.6-S.2-GLE.1-EO.a; IQ.1)	What types of environmental changes can occur? (SC09-GR.6-S.2-GLE.1-EO.a) What is meant by “equilibrium” of an ecosystem? (SC09-GR.6-S.2-GLE.1-EO.c; IQ.2)	How do environmental changes explain why populations decrease or increase? (SC09-GR.6-S.2-GLE.1-EO.a) How do environmental changes affect the survival of individual organisms, populations and species? (SC09-GR.6-S.2-GLE.1-EO.a)
A general understanding of ecosystems and environmental change allows scientists to predict and model potential impacts on populations of organisms. (SC09-GR.6-S.2-GLE.1-EO.b, d; N.1)	How do models help scientists to predict future events? (SC09-GR.6-S.2-GLE.1-EO.d; RA.1; N.3)	How might future environmental changes affect the survival of individual organisms, populations and species? (SC09-GR.6-S.2-GLE.1-EO.d; N.3) and (SC09-GR.6-S.3-GLE.1-EO.ac, N.2)

<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 difference between biotic and abiotic (SC09-GR.6-S.2-GLE.1-EO.c)</li> <li>• The reasons why there are generally more producers than consumers in an ecosystem (SC09-GR.6-S.2-GLE.1-EO.c)</li> <li>• How food webs help us visualize the flow of energy through and ecosystem (SC09-GR.6-S.2-GLE.2-EO.b)</li> <li>• Matter cycles within ecosystems (SC09-GR.6-S.2-GLE.2-EO.c; IQ.1)</li> <li>• Earth’s surface is constantly changing (SC09-GR.6-S.3-GLE.1-EO.c; IQ.1)</li> <li>• Examples of how forces inside the Earth contribute to changes in the surface of Earth’s crust (SC09-GR.6-S.3-GLE.1-EO.a; IQ.1)</li> <li>• The constructive and destructive forces brought about by changes to the Earth’s surface (SC09-GR.6-S.3-GLE.1-EO.a; IQ.1)</li> <li>• How environmental conditions affect the survival of individual organisms, populations and entire species (SC09-GR.6-S.2-GLE.1-EO.d; N.3) and (SC09-GR.6-S.3-GLE.1-EO.ac, N.2)</li> </ul>	<ul style="list-style-type: none"> <li>• Develop, communicate and justify an evidence-based explanation about why there generally are more producers than consumers in an ecosystem (SC09-GR.6-S.2-GLE.2-EO.a)</li> <li>• Design a food web diagram to show the flow of energy through an ecosystem (SC09-GR.6-S.2-GLE.2-EO.b)</li> <li>• Compare and contrast the flow of energy with the cycling of matter in ecosystems (SC09-GR.6-S.2-GLE.2-EO.c)</li> <li>• Gather, analyze and communicate an evidence-based explanation for the complex interaction between Earth’s constructive and destructive forces (SC09-GR.6-S.3-GLE.1-EO.a)</li> <li>• Gather, analyze and communicate evidence from text and other sources that explains the formation of surface features (SC09-GR.6-S.3-GLE.1-EO.b)</li> <li>• Use or create a computer simulation for planets’ changing surface (SC09-GR.6-S.3-GLE.1-EO.c)</li> <li>• Practice the collaborative inquiry process that scientists use to identify local evidence of constructive and destructive forces (SC09-GR.6-S.3-GLE.1; N.1)</li> <li>• Create and compare models of natural processes that affect structures (SC09-GR.6-S.3-GLE.1; N.2)</li> <li>• Interpret and analyze data about changes in environmental conditions (SC09-GR.6-S.2-GLE.1-EO.a)</li> <li>• Develop, communicate, and justify an evidence-based explanation about how ecosystems interact (SC09-GR.6-S.2-GLE.1-EO.b)</li> <li>• Model equilibrium in an ecosystem (SC09-GR.6-S.2-GLE.1-EO.c)</li> <li>• Examine, evaluate, question, and ethically use information from a variety of sources to investigate how environmental conditions affect survival (SC09-GR.6-S.2-GLE.1-EO.d)</li> </ul>

**Curriculum Development Overview  
Unit Planning for 6<sup>th</sup> Grade Science**

<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>Ecosystems change over time as populations interact with each other and the changing environment.</i></p>
<p><b>Academic Vocabulary:</b></p>	<p>analyze, interpret, evidence, interactions</p>
<p><b>Technical Vocabulary:</b></p>	<p>weathering, erosion, deposition, constructive forces, destructive forces, ecosystem, population, species, crust, survival, equilibrium, producers, consumers, food web, food chain,</p>

**Curriculum Development Overview  
Unit Planning for 6<sup>th</sup> Grade Science**

<b>Unit Title</b>	Water, Water Everywhere	<b>Length of Unit</b>	4-6 weeks
<b>Focusing Lens(es)</b>	Cycle	<b>Standards and Grade Level Expectations Addressed in this Unit</b>	SC09-GR.6-S.1-GLE.3 SC09-GR.6-S.1-GLE.4 SC09-GR.6-S.3-GLE.2
<b>Inquiry Questions (Engaging-Debatable):</b>	<ul style="list-style-type: none"> <li>• How do daily decisions impact the quality of water in the water cycle?</li> <li>• Would a new “visitor” to Earth see five oceans or only one?</li> <li>• Why is water an essential substance for supporting life?</li> <li>• How would life be different if all matter had the same density?</li> </ul>		
<b>Unit Strands</b>	Physical Science, Earth Science		
<b>Concepts</b>	resources, cycle, balance, system, change, properties, structure/form, phase, water, activity, quality		

<b>Generalizations</b> My students will <b>Understand</b> that...	<b>Guiding Questions</b>	
	<b>Factual</b>	<b>Conceptual</b>
The structure/form and availability of water changes as it cycles in predictable patterns (SC09-GR.6-S.3-GLE.2-EO.a; IQ.1)	<p>What states of matter can water exist as on Earth? (SC09-GR.6-S.3-GLE.2-EO.a)</p> <p>What processes (condensation, evaporation, freezing and melting) account for changes in states of matter of water? (SC09-GR.6-S.3-GLE.2-EO.b)</p>	How is water cycled on earth? (SC09-GR.6-S.3-GLE.2-EO.a)
Some properties of water change based on its phase which leads to greater understanding of its limitations and benefits (SC09-GR.6-S.1-GLE.3-EO.a; RA.1)	<p>How does the density of water change with the phase? (SC09-GR.6-S.1-GLE.3-EO.a; IQ.1)</p> <p>What objects of specific densities will float or sink in water? (SC09-GR.6-S.1-GLE.4-EO.c)</p>	What would be the implications if solid water was denser than liquid water? (SC09-GR.6-S.1-GLE.4-EO.a; IQ.1)
Many properties of water are interrelated; one property change (e.g., temperature) often causes changes in another property (chain reaction or cause and effect) (SC09-GR.6-S.1-GLE.3-EO.b; IQ.2)	<p>What are the properties of water?</p> <p>How are volume, mass, weight and density measured (tools, units)? (SC09-GR.6-S.1-GLE.4-EO.c)</p>	<p>Describe situations in which mass, weight, volume, or density would be most useful to know about an object. (SC09-GR.6-S.1-GLE.4; IQ.3)</p> <p>How are the various properties of water inter-related? Why does weight and not mass change due to gravitational force? (SC09-GR.6-S.1-GLE.4-EO.d)</p>
Human activities (including increased atmospheric pollution) can determine the quality and availability of water locally and worldwide (SC09-GR.6-S.3-GLE.2-EO.c, d; IQ.3; RA.1)	<p>What factors determine water quality? (SC09-GR.6-S.3-GLE.2-EO.c; IQ.3; RA.1)</p> <p>What water sources exist on Earth, and how do they vary in distribution? (SC09-GR.6-S.3-GLE.2-EO.a)</p>	Where does water go after it is used in houses or buildings? (SC09-GR.6-S.3-GLE.2-EO.e)

**Curriculum Development Overview  
Unit Planning for 6<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 distribution and recycling of water in various forms and locations (SC09-GR.6-S.3-GLE.2-EO.a)</li> <li>• How to describe water by its properties ( including mass, weight, volume, and density) (SC09 – GR.6-S.1-GLE.4-EO.c)</li> <li>• Different phases of water (solid, liquid, and gas) and each phase’s unique properties.</li> <li>• The reasons why changes in temperature are not always equivalent to changes in state. (SC09-GR.6-S.1-GLE.3-EO.b)</li> <li>• The unique properties of solids, liquids and gasses that make them useful in different situations. (SC09 – GR.6-S.1-GLE.3; RA.1)</li> <li>• How gravitational force can change the weight (and not the mass)of an object. (SC09-GR.6-S.1-GLE.4-EO.d)</li> <li>• The reasons why mass, weight and volume affect density. (SC09-GR.6-S.1-GLE.4-EO.c)</li> <li>• Specific tools used to gather information about mass, weight, volume and density. (SC09-GR.6-S.1-GLE.4-EO.e)</li> <li>• The causes and effects of water pollution in local and world water distributions (SC09-GR.6-S.3-GLE.2-EO.d)</li> <li>• The relationships between water systems and local, regional, and world population development. (SC09-GR.6-S.3-GLE.2; RA.2)</li> </ul>	<ul style="list-style-type: none"> <li>• Ask testable questions and make falsifiable hypotheses about water distribution (SC09-GR.6-S.3-GLE.2; NA 1)</li> <li>• Use evidence to model how water is transferred throughout the earth. (SC09-GR.6-S.3-GLE.2-EO.b)</li> <li>• Create and evaluate models to represent water circulation and distribution. (SC09-GR.6-S.3-GLE.2; NS. 2)</li> <li>• Gather and analyze data from a variety of print resources and investigations to account for local and world-wide water circulation and distribution patterns. (SC09-GR.6-S.3-GLE.2-EO.a)</li> <li>• Calculate the density of a sample, predict its ability to float or sink in a liquid of known density, design and perform the experiment, and justify discrepancies. (SC09-GR.6-S.1-GLE.4; NS.1)</li> <li>• Ask testable questions and make a falsifiable hypothesis about density and design an inquiry based method to find an answer. (SC09-GR.6-S.1-GLE.4;NS.2)</li> <li>• Select proper tools to measure the mass and volume of an object and use appropriate units. (SC09-GR.6-S.1-GLE.4; NS.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>Water on earth exists in many different forms, each with its own properties. Mass, weight, volume, and density are properties of water that can be measured with the right tools.</i></p>
<p><b>Academic Vocabulary:</b></p>	<p>predict, measure, calculate, model (noun), model (verb)</p>
<p><b>Technical Vocabulary:</b></p>	<p>condensation, evaporation, melt, freeze, mass, weight, volume, density, units, grams, kilograms, liters, milliliters, g/cm<sup>3</sup>, g/ml, tools, gravity,</p>

**Curriculum Development Overview  
Unit Planning for 6<sup>th</sup> Grade Science**

<b>Unit Title</b>	Building Blocks of Life	<b>Length of Unit</b>	4-6 weeks
<b>Focusing Lens(es)</b>	Complexity Structure	<b>Standards and Grade Level Expectations Addressed in this Unit</b>	SC09-GR.6-S.1-GLE.1 SC09-GR.6-S.1-GLE.2 SC09-GR.6-S.1-GLE.4
<b>Inquiry Questions (Engaging-Debatable):</b>	<ul style="list-style-type: none"> <li>• Are space travel and the colonization of places like the moon or mars possible?</li> <li>• Do the Laws of Physics apply constantly across the universe?</li> <li>• How would the human body be affected by space travel?</li> <li>• Is anything in the world not made of matter?</li> </ul>		
<b>Unit Strands</b>	Physical Science		
<b>Concepts</b>	properties, structure, function, substance, energy, relationship, foundation, order, patterns, bonds, interaction, matter, atoms, molecules, mass volume, density, weight		

<b>Generalizations</b> My students will <b>Understand</b> that...	<b>Guiding Questions</b>	
	<b>Factual</b>	<b>Conceptual</b>
Relationships between atoms and molecules determine the complexity and properties of matter (SC09-GR.6-S.1-GLE.1-EO.a) and (SC09-GR.6-S.1-GLE.2-EO.b)	In what ways does the relationship between atoms and molecules determine the complexity of matter? (SC09-GR.6-S.1-GLE.1,2)	How does the interaction of things we can't see affect what we can see?
Structure of matter creates predictable patterns in the universe. (SC09-GR.6-S.1.GLE.1-EO.b,c)	In what ways does the arrangement of atoms in elements create predictable structures of matter? (SC09-GR.6-S.1.GLE.1-EO.b,c)	How does the understanding of the basic building blocks of matter help us to predict the substance of the universe? (SC09-GR.6-S.1.GLE.1-EO.b; IQ.1; RA.1)
Gravitational forces interact and act with matter in the universe in predictable ways. (SC09-GR.6-S.1-GLE.4)	What is the relationship between mass, volume and density, and do these terms relate to weight? (SC09-GR.6-S.1.GLE.2-EO.b)	If weight and mass are not the same thing, why might people use the words interchangeably? (SC09-GR.6-S.1.GLE.4; IQ.2)
Mass, weight, and volume determine an object's or a liquid's density. (SC09-GR.6-S.1-GLE.4-EO.c)	What are the differences between mass, volume, and weight?	If two objects have the same mass, how would the density differ if one was larger than the other?
The arrangement of atoms in matter defines the density of matter. (SC09-GR.6-S.1-GLE. 3-EO.c,d)	What state of matter is the densest?	Why is the solid state of matter usually the most dense? Why do balloons float?



**Curriculum Development Overview  
Unit Planning for 6<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>• Chemical and nuclear reactions based on atomic and molecular structure (SC09-GR.6-S.1-GLE.1)</li> <li>• The fundamental building blocks of matter(SC09-GR.6-S.1-EO.a)</li> <li>• Particle theory of matter and characteristics of the particle model (SC09-GR.6-S.1-EO.b)</li> <li>• The atomic model as the foundation for all chemistry (SC09-GR.6-S.1-EO.c)</li> <li>• The history of the scientific investigations and the relationship to the understanding of the nature of matter. (SC09-GR.6-S.1-EO.d)</li> <li>• The consistency of living things in relation to the matter in the rest of the universe. (SC09-GR.6-S.1-GLE.1;RA.1)</li> <li>• The similarities and differences between elements and compounds. (SC09-GR.6-S.1-GLE.2-EO.a)</li> <li>• Why atoms form into molecules with different properties than their components. . (SC09-GR.6-S.1-GLE.2-EO.b)</li> <li>• The structure of a molecule. (SC09-GR.6-S.1-GLE.2-EO.c)</li> <li>• How gravitational force can change the weight (and not the mass)of an object. (SC09-GR.6-S.1-GLE.4-EO.d)</li> <li>• The relationship between acceleration due to gravity wand the mass and weight of an object. (SC09-GR.6-S.1-GLE.2-EO.b)</li> <li>• The relationship between mass, volume, and density. (SC09-GR.6-S.1-GLE.2-EO.d &amp; e)</li> <li>• Units of measure for mass, volume, and density. (SC09-GR.6-S.1-GLE.2;N.3)</li> </ul>	<ul style="list-style-type: none"> <li>• Apply an understanding of atomic and molecular structure (SC09-GR.6-S.1-GL.1)</li> <li>• Identify evidence that suggests there is a fundamental building block of matter (SC09-GR.6-S.1-GL.1-EO.a)</li> <li>• Use the particle model of matter to illustrate characteristics of different substances(SC09-GR.6-S.1-GL.1-EO.b)</li> <li>• Develop an evidence based scientific explanation of the atomic model (SC09-GR.6-S.1-GL.1-EO.c)</li> <li>• Find and evaluate appropriate information from reference books, journals, magazines, online references, and databases to compare and contrast historical explanations for the nature of matter(SC09-GR.6-S.1-GL.1-EO.d)</li> <li>• Work in groups using the writing process to effectively communicate an understanding of the particle model of matter. (SC09-GR.6-S.1-GL.1;N.1)</li> <li>• Use technology to share research findings about historical explanations for the nature of matter and to publish information to various audiences. (SC09-GR.6-S.1-GL.1;N.2)</li> <li>• Create models that explain the particle theory of matter. (SC09-GR.6-S.1-GL.1;N.3)</li> <li>• Recognize and describe the ethical traditions of science: (SC09-GR.6-S.1-GL.1;N.4)</li> <li>• Explain the similarities and differences between elements and compounds (SC09-GR.6-S.1-GL.2-EO.a)</li> <li>• Identify evidence that atoms form into molecules with different properties than their components. ((SC09-GR.6-S.1-GL.2-EO.b)</li> <li>• Find and evaluate information from a variety of resources. (SC09-GR.6-S.1-GL.2-EO.c)</li> <li>• Use models and/or electronic media to show and understand how molecules are made of atoms (SC09-GR.6-S.1-GL.2;N.1)</li> <li>• Investigate how our current understanding of matter has developed through centuries of scientific investigations (SC09-GR.6-S.1-GL.2;N.2)</li> <li>• Predict how changes in acceleration due to gravity will affect the mass and weight of an object (SC09-GR.6-S.1-GL.4-EO.b)</li> <li>• Predict how mass, weight, and volume affect density (SC09-GR.6-S.1-GL.4-EO.c)</li> <li>• Measure mass and volume, and use these quantities to calculate density (SC09-GR.6-S.1-GL.4-EO.d)</li> <li>• Use tools to gather, view, analyze, and report results for scientific investigations about the relationships among mass, weight, volume, and density (SC09-GR.6-S.1-GL.4-EO.e)</li> </ul>

**Curriculum Development Overview  
Unit Planning for 6<sup>th</sup> Grade Science**

<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>Substances behave differently based upon their atomic and molecular structure. Compounds are a combination of elements and have different properties than their individual elements. Mass is the amount of matter in an object and is independent of gravitational force. Weight is a measure of gravitational force on an object.</i></p>
<p><b>Academic Vocabulary:</b></p>	<p>compare and contrast, interactions, processes, illustrate, explain, examine, interact, analyze, predict, communicate, evaluate, gather, develop, design, justify, apply, interpret, relationship, identify, model, determine, similarities, differences, evidence, investigate, calculate, measure, function</p>
<p><b>Technical Vocabulary:</b></p>	<p>matter, atoms, elements, compounds, properties, particles, building blocks of matter, particle model, particle theory of matter, molecules, arrays, substances, components, mass, weight, volume, density, gravitational force, acceleration, atomic structure, molecular structure, chemical reactions, nuclear reactions</p>

**Curriculum Development Overview  
Unit Planning for 6<sup>th</sup> Grade Science**

<b>Unit Title</b>	<b>Environmental Systems</b>	<b>Length of Unit</b>	4-6 weeks
<b>Focusing Lens(es)</b>	Interconnections	<b>Standards and Grade Level Expectations Addressed in this Unit</b>	SC09-GR.6-S.2-GLE.1 SC09-GR.6-S.2-GLE.2 SC09-GR.6-S.3-GLE.1 SC09-GR.6-S.3-GLE.2
<b>Inquiry Questions (Engaging-Debatable):</b>	<ul style="list-style-type: none"> <li>Do human behaviors influence the destructive and constructive forces that already naturally shape our Earth?</li> <li>What, if any, are the connections between human behavior and natural disasters? (i.e. Hurricane Sandy)?</li> <li>How do natural disasters affect human behavior?</li> </ul>		
<b>Unit Strands</b>	Earth Science, Life Science		
<b>Concepts</b>	cycle, systems, energy, rules, interactions, change, environment, survival, model, natural event, process, dynamics, universal, foundation, forces, conservations, earth and human activity, interrelationships, biotic, abiotic		

<b>Generalizations</b> My students will <b>Understand</b> that...	<b>Guiding Questions</b>	
	<b>Factual</b>	<b>Conceptual</b>
Survival of organisms depends on the interaction of complex systems. (SC09-GR.6-S.3.GLE.2) and (SC09-GR.6-S.2.GLE.1)	How does the lack or abundance of water impact human civilizations and populations? (SC09-GR.6-S.3.GLE.2; IQ.2)	Why do all organisms value survival? How do your daily decisions impact the quality of water in the water cycle? (SC09-GR.6-S.3.GLE.2; IQ.3)
Earth and human activity impact the overall balance of Earth's systems. (SC09-GR.6-S.2.GLE.2)	What understandings of the cycling of matter and energy have helped mitigate environmental problems? (SC09-GR.6-S.2.GLE.2-EO.b)	Why would humans want to have balanced systems? Why do the choices that humans make impact overall balance of Earth's systems?
Different systems undergo cyclical changes that follow specific rules. (SC09-GR.6-S.2.GLE.2)	How does climate change affect ecosystems? What "job" do organisms do to facilitate the flow of energy and cycling of matter? (SC09-GR.6-S.2.GLE.2-EO.b; IQ.1)	Why does one change in a system affect another system?
Changes in the environment have a dynamic effect on cycles. (SC09-GR.6-S.2-GLE.1)	What is climate change? (SC09-GR.6-S.2-GLE.1-EO.a)	How do changes in the environment impact cycles? (SC09-GR.6-S.2-GLE.1-EO.a)
The flow of energy relates to the cycling of matter in an ecosystem which contributes to conservation of mass and energy (SC09-GR6-S.2-GLE.2-EO.c)	How does energy flow through a food web? (SC09-GR6-S.2-GLE.2-EO.c)	Why is it important to protect endangered species?

**Curriculum Development Overview  
Unit Planning for 6<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 differences and interactions between the abiotic and biotic environment (SC09-GR6-S.2-GLE.1)</li> <li>• That changes in environmental conditions – such as climate change – and populations (SC09-GR6-S.2-GLE.1.EO.a)</li> <li>• The impact of ecosystems’ interactions with the global environment (SC09-GR6-S.2-GLE.1.EO.b)</li> <li>• What equilibrium in an ecosystem looks like, including basic inputs and outputs (SC09-GR6-S.2-GLE.1-EO.c)</li> <li>• The effects of changes in an ecosystem (e.g., climate change can impacts organisms, populations, and species through the removal of a predator) (SC09-GR6-S.2-GLE.1-EO.c)</li> <li>• Environmental conditions that affect the survival of individual organisms (SC09-GR6-S.2-GLE.1-EO.d)</li> <li>• There are generally more producers than consumers in an ecosystem (SC09-GR6-S.2-GLE.2-EO.a)</li> <li>• The flow of energy through an ecosystem using a food web (SC09-GR6-S.2-GLE.2-EO.b)</li> <li>• Examples of how the interaction between constructive and destructive forces shape the Earth’s structure (SC09-GR6-S.3-GLE.1-EO.a)</li> <li>• Tools and sources which can be used to find information about the Earth’s surface features (SC09-GR6-S.3-GLE.1-EO.b)</li> <li>• Models that illustrate how water is transferred throughout the earth (SC09-GR6-S.3-GLE.2-EO.b)</li> <li>• Some solutions and proposed solutions related to problems of water quality, circulation, and distribution – both locally and worldwide (SC09-GR6-S.3-GLE.2-EO.c)</li> <li>• The causes and effects of water pollution in local and world water distributions (SC09-GR6-S.3-GLE.2-EO.d)</li> <li>• Where water goes after it is used in houses or buildings (SC09-GR6-S.3-GLE.2-EO.e)</li> </ul>	<ul style="list-style-type: none"> <li>• Explain and illustrate with examples how living systems interact with the biotic and abiotic environment (SC09-GR6-S.2-GLE.1)</li> <li>• Interpret and analyze data about changes in environmental conditions (SC09-GR6-S.2-GLE.1.EO.a)</li> <li>• Develop, communicate, and justify an evidence based explanation about how ecosystems interact with and impact the global environment (SC09-GR6-S.2-GLE.1.EO.b)</li> <li>• Model equilibrium in an ecosystem(SC09-GR6-S.2-GLE.1-EO.c)</li> <li>• Predict how a change in ecosystems impacts an organism, population and species(SC09-GR6-S.2-GLE.1-EO.c)</li> <li>• Examine, evaluate, question, and ethically use information from a variety of sources. (SC09-GR6-S.2-GLE.1-EO.d)</li> <li>• Develop, communicate, and justify why there are more producers and consumers in an ecosystem (SC09-GR6-S.2-GLE.2-EO.a)</li> <li>• Design a food web to show the flow of energy in an ecosystem (SC09-GR6-S.2-GLE.2-EO.b)</li> <li>• Compare and contrast the flow of energy with the cycling of matter in an ecosystem (SC09-GR6-S.2-GLE.2-EO.c)</li> <li>• Gather, analyze, and communicate an explanation for the interactions between Earth’s constructive and destructive forces(SC09-GR6-S.3-GLE.1-EO.a)</li> <li>• Gather, analyze and communicate evidence that explains the formation of Earth’s surface features (SC09-GR6-S.3-GLE.1-EO.b)</li> <li>• Use a computer simulation for Earth’s changing crust (SC09-GR6-S.3-GLE.1-EO.c)</li> <li>• Gather, analyze data to investigate the account for local and world-wide water circulation and distribution patterns (SC09-GR6-S.3-GLE.1-EO.a)</li> <li>• Use evidence to model how water is transferred throughout the earth (SC09-GR6-S.3-GLE.2-EO.b)</li> <li>• Identify problems, and propose solutions related to water quality, circulation, and distribution-both locally and worldwide (SC09-GR6-S.3-GLE.2-EO.c)</li> <li>• Identify the various causes and effects of water pollution local and world water distributions (SC09-GR6-S.3-GLE.2-EO.d)</li> <li>• Describe where water goes after it is used in houses or buildings (SC09-GR6-S.3-GLE.2-EO.e)</li> <li>• Use simulations to understand the Earth’s changing crust (SC09-GR6-S.3-GLE.1-EO.c)</li> <li>• Use resources and investigations to account for local and world-wide water circulation and distribution patterns (SC09-GR6-S.3-GLE.1-EO.a)</li> </ul>

**Curriculum Development Overview  
Unit Planning for 6<sup>th</sup> Grade Science**

<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>Climate change is the result of human interactions and environmental changes.          Human behaviors affect the flow of energy in an environmental system.</i></p>
<p><b>Academic Vocabulary:</b></p>	<p>compare and contrast, interactions, processes, illustrate, explain, examine, interact, analyze, predict, communicate, evaluate, gather, develop, design, justify, apply, interpret, relationship</p>
<p><b>Technical Vocabulary:</b></p>	<p>forces, energy, matter, survival, biodiversity, biosphere, ecosystems, organisms, abiotic, biotic, environmental changes, cycling of matter, crust, geologic events, natural events, water distributed, water circulated, local water circulation, world-wide water circulation, local water distribution patterns, water quality, water circulation, water distribution, water pollution, water cycle, water conservation, water systems, water-use, irrigation patterns</p>