7th GRADE SCIENCE CURRICULUM

Grade Level(s): 7th Grade	**Curriculum Author(s):** Kari McCarthy and Taryn Fernandez
Course Description: 7th grade science is a combination of physical science, earth and space science, and life science designed to prepare students for continued studies in science via phenomena-based learning. The units are designed utilizing resources from OpenSciEd, a state-endorsed hub for high quality science teaching and learning materials. Through investigation, problematizing, and putting pieces together, students will gain understanding of chemical reactions, human body interactions, photosynthesis and matter cycling, plate tectonics and the rock cycle.	

Year At A Glance			
Unit Title	**Overarching Essential Question**	**Overarching Enduring Understanding**	**Vision of A Learner "I Can" Statements**
Atomic Structure & the Periodic Table	What Makes Up Everything Around Us?	A substance is made of the same type of molecules (or atoms throughout). The number, type, and arrangement of atoms in the molecules that make up a substance are unique to that substance.	TCC2 (6-8) CCE3 (6-8) TI2 (6-8) P4 (6-8)
Chemical Reactions and Matter	How can we make something new that was not there before?	In a chemical reaction, the particles that make up old substances can be broken apart and the atoms that make them up can be rearranged to form new molecules to make new substances. We can use properties to help identify different substances.	TCC2 (6-8) CCE3 (6-8) TI3 (6-8) P4 (6-8)
Chemical Reactions and Energy	How can we use chemical reactions to design a solution to a problem?	Energy transfers from the system of atoms that rearrange during the chemical reaction to surrounding systems. The more reactants we use in a chemical reaction, the more energy is being transferred into or out of the system. The evidence of this is a greater temperature change. Engineers use a cyclical process (Define, Develop, Optimize) to design solutions. Designs and instructions need to be peer tested to inform modifications that will lead to a better solution.	TCC1 (6-8) CCE2 (6-8) DE4 (6-8) TI1 (6-8) P2 (6-8)

[Metabolic Reactions]()	How do things inside our bodies work together to make us feel the way we do?	In a healthy digestive system, multiple subsystems, or organs, work together to help the body break large food molecules down into smaller food molecules. A chemical reaction happens in the cells of the body to provide them with energy. The reaction helps us explain why certain materials that we take into our bodies, like oxygen and food, are different from the materials that leave our bodies, like carbon dioxide and water. If our activity level increases, the chemical reaction happens faster to meet cells' needs.	TCC3 (6-8) CCE4 (6-8) DE2 (6-8) AA4 (6-8)
[Matter Cycling and Photosynthesis]()	Where does food come from, and where does it go next?	The outputs of living things become the inputs of other living things and part of the nonliving components of the system. Systems consist of living (producers, consumers, and decomposers) and nonliving (air and water) components where atoms are continuously recycled between these components.	TCC4 (6-8) CCE3 (6-8) DE1 (6-8) P1 (6-8)
[Plate Tectonics and Rock Cycling]()	What causes Earth's surface to change?	Movement in the mantle with movement of plates at Earth's surface and determine causal and correlational relationships between plate movement, earthquakes, volcanoes, erosion, and magma movement along with their related energy sources.	TCC2 (6-8) CCE1 (6-8) TI2 (6-8) AA1 (6-8)

Unit 1 - Atomic Structure and the Periodic Table

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

This unit is designed to build foundational understanding of atomic structure and how it connects to the periodic table, supporting the following NGSS performance expectations:

- **MS-PS1-1:** Develop models to describe the atomic composition of simple molecules and extended structures.
- **MS-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.
- **MS-PS1-3:** Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.

Vision of A Learner Attributes: Students will be able to independently use their learning to... (“I can” statements to be demonstrated)

- **TCC2 (6-8):** Evaluate data gathered from multiple perspectives and draw conclusions.
- **CCE3 (6-8):** Participate in collaborative conversations by actively listening, formulating questions, making connected comments, and providing feedback.
- **TI2 (6-8):** Identify lesson objectives and apply the best resources to support learning.
- **P4 (6-8):** Step outside their comfort zone because they recognize that mistakes are opportunities to learn and grow.

Understandings: Students will understand that...	**Essential Questions:**
• All matter is made up of atoms, which are composed of protons, neutrons, and electrons. • The periodic table is a tool that organizes elements based on patterns in atomic structure and properties. • Patterns in atomic structure help predict how elements will behave in chemical reactions.	1. What are atoms made of and how do they differ from each other? 2. How does the periodic table help us understand the properties of elements? 3. Why do certain elements react with others?

Students will know...	Students will be able to...
● The basic structure of an atom (nucleus, protons, neutrons, electrons). ● Elements are organized on the periodic table by atomic number and similar properties. ● Group and period trends help predict element behavior.	● Develop models of atoms including subatomic particles. ● Use the periodic table to identify and compare elements. ● Analyze patterns in atomic structure to make predictions about reactivity. ● Communicate how atomic structure relates to the properties of elements.

Key Vocabulary: Atom, proton, neutron, electron, nucleus, element, atomic number, atomic mass, periodic table, group/family, period, reactivity, valence electron, isotope, molecule, compound, model, matter

Assessment Evidence

Performance Tasks:	Other Evidence:
● Atomic Model Construction Task ● Periodic Table Exploration Project	● Practice using the periodic table to determine atomic properties. ● Quizzes on subatomic particles and element identification. ● Modeling of atoms and elements using manipulatives. ● CER responses to reactivity comparisons

Learning Plan

COLLABORATE AND COMMUNICATE EFFECTIVELY

- **CCE3 (6-8):** I can participate in collaborative conversations by actively listening, formulating questions, making connected comments and providing various types of feedback to my peers.
    - *Atomic Model Construction Task*

TAKE INITIATIVE

- **TI2 (6-8)**: I can identify my objectives and apply the best resources to my learning.
    - *Periodic Table Exploration Project*

PERSEVERE

- **P4 (6-8):** I can step outside my comfort zone because I recognize that my mistakes are not failures, but rather an opportunity to learn and grow.
    - *CER responses to reactivity comparisons*

Teacher Resources: Teacher developed lessons, Generation Genius, Gizmos, IXL

Unit 2 - Chemical Reactions and Matter

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

PS1.A: Structure and Properties of Matter

- Substances are made from different types of atoms, which combine with one another in various ways.
- Atoms form molecules that range in size from two to thousands of atoms.
- Solids may be formed from molecules, or they may be extended structures with repeating subunits (e.g., crystals).
- Each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it.

PS1.B: Chemical Reactions

- Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants.
- The total number of each type of atom is conserved, and thus the mass does not change.

LS1-D: Information Processing

- Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. The signals are then processed in the brain, resulting in immediate behaviors or memories.

Vision of A Learner Attributes: Students will be able to independently use their learning to... ("I can" statements to be demonstrated)

- **TCC2 (6-8):** Evaluate data gathered from multiple perspectives and draw conclusions.
- **CCE3 (6-8):** Participate in collaborative conversations by actively listening, formulating questions, making connected comments, and providing feedback
- **TI3 (6-8):** Compose specific questions that are relevant to a task to support learning.
- **P4 (6-8):** Step outside their comfort zone because they recognize that mistakes are opportunities to learn and grow.

Understandings: Students will understand that…

- In a closed system, no matter can get in or out, so the mass stays the same even when changes happen to the matter (such as becoming a gas).
- In an open system, matter can get in or out, so the mass can change if that happens.
- Properties don't change for a substance like flammability, melting/boiling point, and density.
- During a chemical reaction, new substances are produced from the old substances. Some of the particles that make up the original substances break apart and/or join to make new types of particles.

Essential Questions:

- Which combinations of the substances in a bath bomb produce a gas?
- What gas(es) could be coming from the bath bomb?
- How can particles of a new substance be formed out of the particles of an old substance?
- When energy from a battery was added to water, were the gases produced made of the same particles as were produced from heating the water?
- How can a new substance (a gas) be produced and the total mass of the closed system not change?

Students will know...

- Which substance(s) could or could not be produced in the process of substances being mixed together
- What tests could be done on gases to help identify substances
- Molecules are made of atoms and all the substances in our world are made of very few types of atoms.
- In a chemical reaction, the particles that make up old substances can be broken apart and the atoms that make them up can be rearranged to form new molecules to make new substances.

Students will be able to...

- Develop and revise models representing chemical reactions at the particle level.
- Plan and conduct investigations to gather and interpret data.
- Construct scientific explanations using evidence.
- Identify whether a chemical reaction has occurred based on properties and mass data.

Key Vocabulary: Claim, evidence, reasoning, atom,element, molecule, substance,compound, mixture, chemical reaction, physical change, property, density, flammability, solubility, conductivity, melting/boiling point, state of matter, reactant, product, mass conservation, particle model

Assessment Evidence	
Performance Tasks: ● Explaining Another Phenomenon ● Constructing a Revised Explanation	**Other Evidence:** ● Chemical Reactions and Matter: End of Unit Summative Assessment ● Testing Combinations of Substances ● Chemical and Physical Changes STEM Case (Gizmos)

Learning Plan
THINK CRITICALLY AND CREATIVELY ● **TCC2 (6-8)** I can evaluate data gathered from multiple perspectives and draw conclusions. ○ *Explaining Another Phenomenon* **COLLABORATE AND COMMUNICATE EFFECTIVELY** ● **CCE3 (6-8):** I can participate in collaborative conversations by actively listening, formulating questions, making connected comments and providing various types of feedback to my peers. ○ *Constructing a Revised Explanation* **PERSEVERE** ● **P4 (6-8):** I can step outside my comfort zone because I recognize that my mistakes are not failures, but rather an opportunity to learn and grow. ○ *Testing Combinations of Substances* ○ *Chemical and Physical Changes STEM Case*
Teacher Resources: OpenSciEd Resources - Unit 7.1, Gizmos from Explore Learning, IXL

Unit 3 - Chemical Reactions and Energy

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

PS1.B: Chemical Reactions

- Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants.
- The total number of each type of atom is conserved, and thus the mass does not change.
- Some chemical reactions release energy, others store energy

PS3.A: Definitions of Energy

- The term “heat” as used in everyday language refers both to thermal energy (the motion of atoms or molecules within a substance) and the transfer of that thermal energy from one object to another. In science, heat is used only for this second meaning; it refers to the energy transferred due to the temperature difference between two objects.
- The temperature of a system is proportional to the average internal kinetic energy and potential energy per atom or molecule (whichever is the appropriate building block for the system’s material). The details of that relationship depend on the type of atom or molecule and the interactions among the atoms in the material.

ETS1.B. Developing Possible Solution
- A solution needs to be tested, and then modified on the basis of the test results, in order to improve it.
- There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.
- Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors.
- Models of all kinds are important for testing solutions.

ETS1.C. Optimizing the Design Solution

- Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process - that is, some of the characteristics may be incorporated into the new design.
- The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution.

Vision of A Learner Attributes: Students will be able to independently use their learning to... ("I can" statements to be demonstrated)

- **TCC1 (6-8):** Ask relevant questions to evaluate possible solutions.
- **CCE2 (6-8):** Use feedback to revise work and increase learning.
- **DE4 (6-8)**: Be respectful and responsible and build positive relationships with all members of the school community.
- **TI1 (6-8):** Create a plan with manageable steps to reach goals.
- **P2 (6-8):** Monitor their learning through strategies and self-assessment for growth.

Understandings: Students will understand that...

- Energy transfers from the system of atoms that rearrange during the chemical reaction to surrounding systems
- Chemical reactions can absorb or release thermal energy (endothermic and exothermic reactions).
- The more reactants we use in a chemical reaction, the more energy is being transferred into or out of the system. The evidence of this is a greater temperature change.
- Engineers use a cyclical process (Define, Develop, Optimize) to design solutions.
- Design performance needs to be optimized by revising and retesting.
- Designs and instructions need to be peer tested to inform modifications that will lead to a better solution.

Essential Questions:

- How can we heat up food when we don't have our typical methods available?
- What other chemical reactions could we use to heat up food?
- How much of each reactant should we include in our homemade flameless heater?
- How can we use evidence of energy change to improve a design?
- What makes a design successful and how do we make it better?

Students will know…

- Temperature changes can indicate energy changes in chemical reactions.
- Endothermic reactions absorb heat; exothermic reactions release heat.

Students will be able to…

- Analyze data to determine energy changes in chemical reactions.
- Design, test, and revise a thermal energy device.

• Energy can be transferred into or out of a system.	• Collaboratively use criteria and constraints to improve a design. • Construct models to show energy transfer in chemical reactions.
Key Vocabulary: Thermal energy, endothermic, exothermic, temperature, chemical reaction, system, surroundings, energy transfer, criteria, constraints, design solution.	
Assessment Evidence	
Performance Tasks: • Design Challenge • Thermal Energy Explanation	**Other Evidence:** • Teamwork Self-Assessment • Peer Feedback on Designs • Feel the Heat Gizmo • Analyzing and Presenting Information (CER)
Learning Plan	

COLLABORATE AND COMMUNICATE EFFECTIVELY
• **CCE2 (6-8):** I can use rubrics, peer editing, conferences, and other feedback to revise my work and increase my learning
    ○ *Design Challenge and Thermal Energy Explanation*
 	
DEMONSTRATE EMPATHY
• **DE4 (6-8):** I can be respectful and responsible and build positive relationships with all members of the school community.
    ○ *Discussions and participation during presentation of guest speaker*
 	
PERSEVERE
• **P2 (6-8):** I can identify my relative strengths as well as areas for improvement. I can set goals, use strategies for improvement, and monitor my own learning through various means of self-assessment in order to experience growth.
    ○ *Teamwork Self-Assessment and Peer Feedback on Designs*	

Teacher Resources: OpenSciEd Resources - Unit 7.2, Gizmos from Explore Learning, IXL	

Unit 4 - Metabolic Reactions (A Medical Mystery)
Desired Results - Goals, Transfer, Meaning, Acquisition
Established Goals: LS1.A Structure and Function ● In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. LS1.B Growth and Development of Organisms ● The growth of an animal is controlled by genetic factors,* food intake, and interactions with other organisms, and each species has a typical adult size range. LS1.C Organization for Matter and Energy Flow in Organisms ● Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy. PS3.D Energy in Processes and Everyday Life ● Cellular respiration in plants and animals involves chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials.
Vision of A Learner Attributes: Students will be able to independently use their learning to... (“I can” statements to be demonstrated) ● **TCC3 (6-8)**: Combine new information with their own ideas to generate solutions. ● **CCE4 (6-8):** Express ideas in a variety of ways, according to context, purpose, and audience. ● **DE2 (6-8):** Recognize feelings in themselves and others and respond with respect and empathy. ● **AA4 (6-8):** Seek opportunities to learn more and continue to push their thinking.

Understandings: Students will understand that… ● In biology, there is a fundamental relationship between structure and function. ● The human body is organized into different levels — cells, tissues, organs, and systems — and how these levels work together to perform functions like digestion and cellular respiration. ● These levels work together to move molecules like oxygen and glucose to cells, where chemical reactions release energy. ● Cells are the basic unit where energy is released from food.	**Essential Questions:** ● How do things inside our bodies work together to make us feel the way we do? ● How does food give us energy and help our bodies grow? ● What happens to food after we eat it? ● How do different parts of our body work together to use food as fuel?
Students will know… ● Cells in the body carry out chemical reactions that break down food molecules. ● These reactions produce energy or form new molecules for growth and repair. ● Organs and subsystems in the body interact to digest and distribute nutrient ● A chemical reaction happens in the cells of the body to provide them with energy. The reaction helps us explain why certain materials that we take into our bodies, like oxygen and food, are different from the materials that leave our bodies, like carbon dioxide and water.	**Students will be able to...** ● Use arguments supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. ● Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. ● 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. ● Develop models to describe the atomic composition of simple molecules and extended structures. ● Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

Key Vocabulary: Metabolism, metabolic reaction, digestion, chemical reaction, food molecule, nutrients, macronutrient, energy, glucose, oxygen, carbon dioxide, circulatory system, digestive system, cellular respiration, cell membrane, nucleus, mitochondria, system interaction, matter cycling, energy flow.

Assessment Evidence	
Performance Tasks: ● Argue From Evidence What's Causing M'Kenna's Symptoms ● Brown Bear Hibernation Task	**Other Evidence:** ● Eliminate Possible Conditions and Identify Missing Evidence ● Digestive System Gizmos

Learning Plan
THINK CRITICALLY AND CREATIVELY ● **TCC2 (6-8**) I can evaluate data gathered from multiple perspectives and draw conclusions. ○ *Brown Bear Hibernation Task* **COLLABORATE AND COMMUNICATE EFFECTIVELY** ● **CCE4 (6-8):** I can express my thoughts and ideas, both verbally and in writing, in order to defend my perspective. I can do this via essays, performance-based projects, whole group, and/or small group discussions ○ *Argue From Evidence What's Causing M'Kenna's Symptoms* **DEMONSTRATE EMPATHY** ● **DE2 (6-8)** I can recognize feelings in myself and others and respond with respect and empathy. ○ *Eliminate Possible Conditions and Identify Missing Evidence* ○ *Classroom discussions around anchoring phenomena*
Teacher Resources: OpenSciEd Resources - Unit 7.3, BSCS Science Learning - A Medical Mystery, Teacher- developed Google Site, IXL

Unit 5 - Matter Cycling and Photosynthesis

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

LS1.C: Organization for Matter and Energy Flow in Organisms

- Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use.

LS2.B: Cycle of Matter and Energy Transfer in Ecosystems

- Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem.
- Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments.
- The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem.

PS1.A: Structure and Properties of Matter

- Each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it.

PS1.B: Chemical Reactions

- Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants.

PS3.D: Energy in Chemical Processes and Everyday Life

- The chemical reaction by which plants produce complex food molecules (sugars) requires an energy input (i.e., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon-based organic molecules and release oxygen. (secondary)

Vision of A Learner Attributes: Students will be able to independently use their learning to... (“I can” statements to be demonstrated)

- **TCC4 (6-8)**: Apply learning to new experiences, determine if it works, and adjust in the future.

- **CCE3 (6-8)**: Participate in collaborative conversations by actively listening, formulating questions, making connected comments, and providing feedback.
- **DE1 (6-8):** Search for and compare multiple perspectives.
- **AA2 (6-8):** Identify past successful strategies and apply them independently.
- **P1 (6-8):** Identify personal strengths and challenges and develop strategies to overcome obstacles.

Understandings: Students will understand that...	**Essential Questions:**
• Plants make their own food through photosynthesis by using sunlight, carbon dioxide, and water. • Matter cycles and energy flows within ecosystems, starting with producers like plants. • Growth in plants is due to the rearrangement of matter through chemical processes. • If plants make sugar (through photosynthesis) faster than their cells use it for energy (through cellular respiration), they store up that extra food by converting it to starches (or fats). These can be used later for fuel or building blocks. • Systems consist of living (producers, consumers, and decomposers) and nonliving (air and water) components where atoms are continuously recycled between these components.	• How do plants grow without eating food? • How do matter and energy move through living systems? • Where is the food (molecules) in plants coming from? • Why do plants need light? • Why don’t plants die when they can’t make food? • What happens to food that doesn’t get eaten?
Students will know …	**Students will be able to…**
• Photosynthesis converts light energy into stored chemical energy. • Plants use photosynthesis to create the molecules that begin energy transfer in food chains. • During the process of photosynthesis, energy is transferred from the sunlight to the plant. All plants make their own food molecules through the process of photosynthesis.	• 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. • Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. • Gather and make sense of information to describe that synthetic

Photosynthesis occurs in the chloroplasts of plant cells. ● Carbon, hydrogen, and oxygen atoms are rearranged to form glucose in plants. ● Matter cycles between the air and living things. ● Resource availability affects ecosystem populations.	materials come from natural resources and impact society. ● Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function. (Specifically, chloroplasts and mitochondria.)

Key Vocabulary: Photosynthesis, matter, energy, glucose, carbon dioxide, water, sunlight, oxygen, food molecules, macronutrients, producers, consumers, decomposers, ecosystem, food chain, chemical reaction, cell wall, chloroplast, mitochondria, structure, function, carbon cycle, resource availability.

Assessment Evidence

Performance Tasks:	Other Evidence:
● Matter Cycling: Mid-Unit Performance Task ● Whale Fall Task	● Comparing and Critiquing Arguments About Water In Plants ● Ecosystems STEM Case on Gizmos ● Discussions and Participation in field trip

Learning Plan

COLLABORATE AND COMMUNICATE EFFECTIVELY

- **CCE3 (6-8)**: I can participate in collaborative conversations by actively listening, formulating questions, making connected comments and providing various types of feedback to my peers.
  - *Matter Cycling: Mid-Unit Performance Task*
  - *Whale Fall Task*

ADAPT AND ADJUST

- **AA2 (6-8):** I can identify past successful strategies and apply them independently.
  - *Ecosystems STEM Case on Gizmos*

Teacher Resources: OpenSciEd Resources - Unit 7.4, Gizmos from Explore Learning, IXL

Unit 6 - Plate Tectonics and Rock Cycling
Desired Results - Goals, Transfer, Meaning, Acquisition
Established Goals: ESS1.C. The History of Planet Earth ● The geologic time scale interpreted from rock strata provides a way to organize Earth's history . Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. ● Tectonic processes continually generate new ocean sea floor at ridges and destroy old seafloor at trenches. ESS2.A. Earth's Materials and Systems ● The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. ESS2.B. Plate Tectonics and Large-Scale System Interactions ● Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart. (
Vision of A Learner Attributes: Students will be able to independently use their learning to... ("I can" statements to be demonstrated) ● **TCC2 (6-8):** Evaluate data gathered from multiple perspectives and draw conclusions. ● **CCE1 (6-8):** Contribute to discussions with peers and teachers, respecting differing viewpoints and responding thoughtfully. ● **TI2 (6-8):** Identify objectives and apply the best resources to their learning. ● **AA1 (6-8):** Implement different pathways to success and recognize the pros and cons of each.

Understandings: Students will understand that...	**Essential Questions:**
• Earth’s surface is shaped by both constructive (uplift, volcanoes) and destructive (weathering, erosion) geological processes. • Plate tectonics is the unifying theory that explains the movement of Earth's plates and associated phenomena like earthquakes, mountain formation, and seafloor spreading. • Rock cycling and Earth’s internal energy contribute to the continual reshaping of Earth's surface. • Earth processes like earthquakes and volcanoes are correlated, however, both earthquakes and volcanoes are primarily caused by the movement and interaction of tectonic plates.	• What causes mountains to grow, shrink, or stay the same? • How do plate tectonics explain patterns in landforms and geologic activity? • How does Earth’s surface change over time and space?
Students will know…	**Students will be able to…**
• Plate boundaries are sites of major geological activity. • Geological processes operate over various time and spatial scales. • Rocks are cycled through Earth’s systems by energy flows and geologic activity. • The distribution of fossils and rocks provides evidence of plate motion. • Regions of different continents that share similar fossils and similar rocks suggest that, in the geologic past, those sections of the continent were once attached and have since separated. • Surface features will continue to change in the future as geoscience processes continue to occur.	• Develop models that show the cycling of Earth’s materials and the flow of energy. • Analyze geologic and fossil data to infer past plate movements. • Construct explanations for how Earth’s surface is shaped by internal and external processes. • Apply data to explain elevation changes in mountain ranges.

Key Vocabulary: magnitude, earthquake, earthquake depth, epicenter, causation, correlation, magma, lava, ore deposits, sediment, bedrock, sedimentary rock, metamorphic rock, igneous rock, crust, mantle, plate, oceanic, continental, destructive, constructive	
Assessment Evidence	
Performance Tasks: • Mountain Elevation Model Task • End of Unit - Performance Task Choice Board	**Other Evidence:** • Student-created diagrams of tectonic plate boundaries. • Seismic and volcanic activity data analysis tasks. • Analyzing and Interpreting Earthquake and Volcano Data (Correlation vs. Causation)
Learning Plan	
THINK CRITICALLY AND CREATIVELY • **TCC2 (6-8):** I can evaluate data gathered from multiple perspectives and draw conclusions. ○ *Analyzing and Interpreting Earthquake and Volcano Data (Correlation vs. Causation)* **TAKE INITIATIVE** • **TI2 (6-8):** I can identify my objectives and apply the best resources to my learning. ○ *End of Unit - Performance Task Choice Board* **ADAPT AND ADJUST** • **AA1 (6-8):** I can implement different pathways to success and recognize the pros and cons of each. ○ *Mountain Elevation Model Task*	
Teacher Resources: OpenSciED Resources -Unit 6.4, IXL	