**NACA Yearlong UbD Template**

**UbD Curriculum Template 2.0  
Designer: Charlene Lucero   
Date:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Stage 1 Desired Results** | | | |
| **Directions:** Choose multiple CCSS (or other standards), copy and paste them here, and unpack them for big ideas and assessment verbs by highlighting.  Common Core State Standards ([www.corestandards.org](http://www.corestandards.org)), Next Generation Science Standards (<http://www.nextgenscience.org>), Indigenous Standards (found in Course Sites).  MS-PS2: Motion and Stability: Forces and Interactions   * MS-PS2-1. Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects.\* * MS-PS2-2. Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object. * MS-PS2-5. Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.   MS-PS3: Energy   * MS-PS3-1. Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object. * MS-PS3-2. Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system. * MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.\* * MS-PS3-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample. * MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.   MS-PS4: Waves and Their Applications in Technologies for Information Transfer   * MS-PS4-1. Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave. * MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.   MS-ESS1: Earth’s Place in the Universe   * MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. * MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. * MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system. * MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth’s 4.6-billion-year-old history.   MS-ESS2: Earth’s Systems   * MS-ESS2-1. Develop a model to describe the cycling of Earth’s materials and the flow of energy that drives this process. * MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales. * MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. * MS-ESS2-4. Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity. * MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions. * MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.   MS-ESS3: Earth and Human Activity   * MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes. * MS-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. * MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.\* * MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems. * MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.   Strand I: Scientific Thinking and Practice  Standard I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.  5-8 Benchmark I: Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings.  1. Construct appropriate graphs from data and develop qualitative and quantitative statements about the relationships between variables being investigated.  2. Examine the reasonableness of data supporting a proposed scientific explanation.  3. Justify predictions and conclusions based on data.  5-8 Benchmark II: Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge.  1. Understand that scientific knowledge is continually reviewed, critiqued, and revised as new data become available.  2. Understand that scientific investigations use common processes that include the collection of relevant data and observations, accurate measurements, the identification and control of variables, and logical reasoning to formulate hypotheses and explanations.  3. Understand that not all investigations result in defensible scientific explanations.  5-8 Benchmark III: Use mathematical ideas, tools, and techniques to understand scientific knowledge.  1. Evaluate the usefulness and relevance of data to an investigation.  2. Use probabilities, patterns, and relationships to explain data and observations.  Strand II: Content of Science  Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.  5-8 Benchmark I: Know the forms and properties of matter and how matter interacts.  1. Understand that substances have characteristic properties and identify the properties of various substances (e.g., density, boiling point,  solubility, chemical reactivity).  2. Use properties to identify substances (e.g., for minerals: the hardness, streak, color, reactivity to acid, cleavage, fracture).  3. Know that there are about 100 known elements that combine to produce compounds in living organisms and nonliving substances.  4. Know the differences between chemical and physical properties and how these properties can influence the interactions of matter.  5-8 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy.  1. Identify various types of energy (e.g., heat, light, mechanical, electrical, chemical, nuclear).  2. Understand that heat energy can be transferred through conduction, radiation and convection.  3. Know that there are many forms of energy transfer but that the total amount of energy is conserved (i.e., that energy is neither created nor destroyed).  4. Understand that some energy travels as waves (e.g., seismic, light, sound), including:  • the sun as source of energy for many processes on Earth  • different wavelengths of sunlight (e.g., visible, ultraviolet, infrared)  • vibrations of matter (e.g., sound, earthquakes)  • different speeds through different materials.  5-8 Benchmark III: Describe and explain forces that produce motion in objects.  1. Know that every object exerts gravitational force on every other object dependent on the masses and distance of separation (e.g., motions of celestial objects, tides).  2. Know that gravitational force is hard to detect unless one of the objects (e.g., Earth) has a lot of mass.  Standard II (Life Science): Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.  5-8 Benchmark I: Explain the diverse structures and functions of living things and the complex relationships between living things and their environments.  1. Understand how organisms interact with their physical environments to meet their needs (i.e., food, water, air) and how the water cycle is essential to most living systems.  2. Describe how weather and geologic events (e.g., volcanoes, earthquakes) affect the function of living systems.  3. Describe how organisms have adapted to various environmental conditions.  5-8 Benchmark II: Understand how traits are passed from one generation to the next and how species evolve.  1. Understand that the fossil record provides data for how living organisms have evolved.  2. Describe how species have responded to changing environmental conditions over time (e.g., extinction, adaptation).  5-8 Benchmark III: Understand the structure of organisms and the function of cells in living systems.  1. Explain how fossil fuels were formed from animal and plant cells.  2. Describe the differences between substances that were produced by living organisms (e.g., fossil fuels) and substances that result from nonliving processes (e.g., igneous rocks).  Standard III (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth’s systems.  5-8 Benchmark I: Describe how the concepts of energy, matter, and force can be used to explain the observed behavior of the solar system, the universe, and their structures.  Universe  1. Describe the objects in the universe, including:  • billions of galaxies, each containing billions of stars  • different sizes, temperatures, and colors of stars in the Milky Way galaxy.  Solar System  2. Locate the solar system in the Milky Way galaxy.  3. Identify the components of the solar system, and describe their defining characteristics and motions in space, including:  • sun as a medium sized star  • sun’s composition (i.e., hydrogen, helium) and energy production  • nine planets, their moons, asteroids.  4. Know that the regular and predictable motions of the Earth-moon-sun system explain phenomena on Earth, including:  • Earth’s motion in relation to a year, a day, the seasons, the phases of the moon, eclipses, tides, and shadows moon’s orbit around Earth once in 28 days in relation to the phases of the moon.  5-8 Benchmark II: Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth’s systems.  Structure of Earth  1. Know that Earth is composed of layers that include a crust, mantle, and core.  2. Know that Earth’s crust is divided into plates that move very slowly, in response to movements in the mantle.  3. Know that sedimentary, igneous, and metamorphic rocks contain evidence of the materials, temperatures, and forces that created  Weather and Climate  4. Describe the composition (i.e., nitrogen, oxygen, water vapor) and strata of Earth’s atmosphere, and differences between the atmosphere  of Earth and those of other planets.  5. Understand factors that create and influence weather and climate, including:  • heat, air movement, pressure, humidity, oceans  • how clouds form by condensation of water vapor  • how weather patterns are related to atmospheric pressure  • global patterns of atmospheric movement (e.g., El Niño)  • factors that can impact Earth’s climate (e.g., volcanic eruptions, impacts of asteroids, glaciers).  6. Understand how to use weather maps and data (e.g., barometric pressure, wind speeds, humidity) to predict weather.  Changes to Earth  7. Know that landforms are created and change through a combination of constructive and destructive forces, including:  • weathering of rock and soil, transportation, deposition of sediment, and tectonic activity  • similarities and differences between current and past processes on Earth’s surface (e.g., erosion, plate tectonics, changes in  atmospheric composition)  • impact of volcanoes and faults on New Mexico geology.  8. Understand the history of Earth and how information about it comes from layers of sedimentary rock, including:  • sediments and fossils as a record of a very slowly changing world   * evidence of asteroid impact, volcanic and glacial activity.   Strand III: Science and Society  Standard I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by,  individuals and societies.  5-8 Benchmark I: Explain how scientific discoveries and inventions have changed individuals and societies.  1. Examine the role of scientific knowledge in decisions (e.g., space exploration, what to eat, preventive medicine and medical treatment).  2. Describe the technologies responsible for revolutionizing information processing and communications (e.g., computers, cellular phones, Internet)  [CCSS.ELA-LITERACY.RST.6-8.1](http:///h) Cite specific textual evidence to support analysis of science and technical texts.  [CCSS.ELA-LITERACY.RST.6-8.2](http:///h) Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.  [CCSS.ELA-LITERACY.RST.6-8.3](http:///h) Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.  [CCSS.ELA-LITERACY.RST.6-8.4](http:///h) Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6-8 texts and topics*.  [CCSS.ELA-LITERACY.RST.6-8.5](http:///h) Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.  [CCSS.ELA-LITERACY.RST.6-8.6](http:///h) Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.  Integration of Knowledge and Ideas:  [CCSS.ELA-LITERACY.RST.6-8.7](http:///h) Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).  [CCSS.ELA-LITERACY.RST.6-8.8](http:///h) Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.  [CCSS.ELA-LITERACY.RST.6-8.9](http:///h) Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.  Range of Reading and Level of Text Complexity:  [CCSS.ELA-LITERACY.RST.6-8.10](http:///h) By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently | | | |
| Other than the big ideas explicitly in the standards you chose, what big ideas might frame this yearlong curriculum?   1. Understanding the causes and potential societal consequences of natural Earth processes (e.g., earthquakes, floods, landslides, tsunamis, volcanic eruptions, weather, and global climate change) and the production, availability, and potential depletion of natural resources (e.g., water, soil, mineral, and energy) are of particular importance because they impact our economy, our security, and the safety and sustainability of our environment. 2. Earth processes and resources, is therefore critical to the well-being of humanity and the planet. 3. Students must acquire the scientific knowledge and skills to make informed decisions as citizens of our earth is vital. | | | |
| CHOSEN BIG IDEAS(S):  *Humans have an impact on the health and wellness of our earth; our understanding of earth is crucial to the sustainability of all life.* | ***Transfer*** | | |
| *I want my students to \_\_\_\_\_\_\_\_\_\_, so that in the long-run, on their own, they will be able to \_\_\_\_\_\_\_\_\_\_\_\_\_.*  *I want to my students to use scientific skills and the scientific process, so that in the long-run, on their own, they will be able to use the scientific skills and processes to research, develop new questions, answer questions, design and conduct experiments, and present their understandings and findings using qualitative and quantitative data on their own.* | | |
| ***Meaning*** | | |
|
| UNDERSTANDINGS  *Students will understand that…*   * *Science provides us with the foundation to develop understandings about our world and its impact on all living things. .* | | ESSENTIAL QUESTIONS   * *How do the interactions between living and non-living things impact the health and wellness of our earth and the sustainability of life?* * *How does our understanding of science contribute to indigenous philosophy of caring for mother earth?* * *How do advancements in science contribute to advancements in technology?* |
| ***Acquisition*** | | |
| *Students will know…*   * Unit 1: Energy   + The sun is the major source of energy for earth systems.   + Solar energy reaches the Earth as radiation in the form of visible light.   + Convection currents distribute the sun’s heat in the atmosphere and oceans.   + Heat is transferred in Earth solids by conduction.   + Energy can be carried from one place to another by heat flow, waves including water, light, sound or by moving objects.   + Energy is transferred and transformed between different forms of energy.   + Applications of energy doing work include experiences with windmills, water wheels, heat from a peanut, solar powered batteries and balloons. * Unit 2: Plate Tectonics   + Plate tectonics accounts for important features of the Earth’s surface and major geological events.   + Evidence for plate tectonics is derived from the fit of continents; the location of earthquakes, and midocean ridges; and distribution of fossils, rock types, and ancient climatic zones.   + The Earth is composed of several layers: a cold, brittle lithosphere, a hot, convecting mantle; and a dense, metallic core. These layers have different densities, compositions and temperatures (energy).   + Lithospheric plates the size of continents and oceans move at rates of centimeters per year responding to convection currents in the mantle.   + Geologic events, such as earthquakes and mountain building, result from movement of the plates.   + Earthquakes are sudden motions along the breaks in the crust called faults and that volcanoes and fissures are locations where magma reaches the surface.   + Epicenters of earthquake can be determined. The effects of the earthquake on any region varies, depends on the size of the earthquake, the distance of the region from the epicenter, the local geology, and the type of construction in the region.   + Every plate boundary is a dynamic place resulting in changes to the earth’s surface.   + Mountains and sea floor trenches can be explained if you understand the possible combinations of crust movement at the boundaries. When two continental plates collide, large mountain ranges (like the Himilaya) are formed. Because an oceanic plate will subduct, deep sea trenches result.   + Even transform boundaries involve great pressure that can alter land formations and result in small mountain ranges. Major features of New Mexico geology, including the Sandia Mountains as a result of the Rio Grande Rift. * Unit 3: Earthquakes & Volcanoes   + Geologic events, such as earthquakes and volcanoes result from movement of the plates.   + Every plate boundary is a dynamic place resulting in changes to the earth’s surface.   + Earthquakes are sudden motions along the breaks in the crust called faults and that volcanoes and fissures are locations where magma reaches the surface.   + Epicenters of earthquake can be determined by a variety of measures.   + The effects of the earthquake on any region varies, depends on the size of the earthquake, the distance of the region from the epicenter, the local geology, and the type of construction.   + Earthquake preparedness includes planning construction of buildings, location of buildings, and gathering supplies for a potential earthquake.   + Major features of New Mexico geology are formed by seismic activity and faults in the form of volcanoes. * Unit 4: Weathering and Erosion   + Rivers and streams are dynamic systems that erode, transport sediment, change course and flood their banks in natural recurring patterns.   + Rivers flow to beaches where sand supplied by the river is moved along the coast in predictable patterns by the action of waves. * Unit 5: Weathering and Climate   + The circulation of water creates various weather conditions.   + Weather conditions are created by different atmospheric pressures.   + are driven by weathering an d climate * Unit 6: Earth’s Place in the Universe   + The Earth-sun-moon system is used to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons   + Gravity has a role in the motions within galaxies and the solar system. * Unit 7: Earth & Human Activity   + The uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.   + Historical data can be used to predict future catastrophic events and inform the development of technologies to mitigate their effects.   + Methods for monitoring and minimizing human impact on the environment can be designed.   + The relationship between human population and per-capita consumption of natural resources impact Earth’s systems.   + Different factors cause global temperatures to rise. | | *Students will be skilled at…*   * Unit 1: Energy   + Science Process skills which form the foundation for scientific methods:     - *Observation*     - *Communication*     - *Classification*     - *Measurement*     - *Inference*     - *Prediction*   + *Demonstrating potential and kinetic energy*   + *Identifying forms of heat transfer*   + *Creating a model that demonstrates the difference between heat transfer and heat transformation*   + *Researching, evaluating and communicating the different applications of energy doing work.* * Unit 2: Plate Tectonics   + Researching reasons for the earth’s surface and geological events.   + Investigating theories about Pangaea   + Identifying methods of determining the locations of epicenters.   + Explaining the relationship between density and the layers of the earth   + Using a model to explain the differences between the earth’s surfaces.   + Identifying the relationship between the forms of heat transfer and the layers of the earth.   + Constructing explanations using clues and prior knowledge   + Use a model to observe and compare what happened to continents over time.   + Use a model and evidence to predict how the continents will change over time.   + Using a coordinate map to identify seismic activity   + Identifying the relationships between seismic activity and plate tectonics.   + Researching the major contributors to theories of the earth’s structure and communicating findings to whole group.   + Creating a model that demonstrates different types of plate boundaries.   + Identifying tools and technology used to gain evidence. * Unit 3: Earthquakes & Volcanoes   + Research and investigate data on earthquakes and volcanoes   + Plot historical earthquakes and volcanoes   + Identify the relationship between earthquake activity and plate boundaries.   + Use models to demonstrate the land formations that result from pushing of earth materials.   + Use a model explore and demonstrate formation of normal, reverse thrust and strike slip characteristics.   + Identify the results of the movement of rock layers overtime due to earthquakes.   + Explore evidence of different faults that move between different plate boundaries.   + Investigate and explore different seismic waves.   + Identify and explore the differences between P waves and S waves.   + Locate the epicenter of different earthquakes using speeds of S and P waves.   + Use the Wattsville and Mercalli Booklet to demonstrate how observations of phenomena can indicate the intensity and location of an earthquake.   + Identify different landforms in New Mexico and the impact these landforms have had on their community. * Unit 4: Weathering an Erosion   + Investigate and explore the difference between mechanical and chemical weathering.   + Investigate, explore and model the impact of wind.   + Investigate, explore and model the impact of glacial changes to the land.   + Investigate, explore and model the impact of water running downhill to the land.   + Investigate, explore and model current practices to study and protect various landforms in New Mexico. * Unit 5: Weathering and Climate   + Develop a model to describe the cycling of Earth’s materials and the flow of energy that drives this process.   + Use weather maps and data (e.g., barometric pressure, wind speeds, humidity) to predict weather.   + Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. * Unit 6: Earth’s Place in the Universe   + Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.   + Analyze and interpret data to determine scale properties of objects in the solar system.   + Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth’s 4.6-billion-year-old history * Unit 7: Earth & Human Activity   + Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.   + Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.   + Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.\*   + Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems.   + Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. |
| **Stage 2 – Evidence** | | | |
| **Evaluative Criteria** | | **Assessment Evidence** | |
| Standards-based A+ Rubric in Student-friendly Language   |  |  |  | | --- | --- | --- | | Performance Assessment Criteria and Standard Alignment | Complete | Needs Revision | | * Ask questions:   + that arise from careful observation of phenomena, models, or unexpected results, to clarify and/or seek additional information.   + identify and/or clarify evidence and/or the premise(s) of an argument.   + to determine relationships between independent and dependent variables and relationships in models.   + to clarify and/or refine a model, an explanation, or an engineering problem. |  |  | | * Develop and Use Models:   + Develop a model to describe, test and predict more abstract phenomena and design systems.   + Develop and/or revise a model to show the relationships between variables.   + Develop or modify a model based on evidence to match what occurs. |  |  | | * Plan and carry out investigations:   + Using multiple variables and provide evidence to support explanations and solutions.   + Plan an investigation individually and collaboratively.   + Conduct an investigation and/or evaluate or revise the experimental design to produce data to serve as the basis for evidence that meet the goals of an investigation.   + Evaluate the accuracy of various methods for collecting data.   + Collect data to produce data to support evidence to scientific questions. |  |  | | * Analyze and Interpret Data:   + Construct, analyze, and/or interpret displays of data to identify linear and nonlinear relationships.   + Use graphical displays, maps, charts, graphs and/or tables to identify relationships.   + Analyze and interpret data to determine similarities and differences in findings. |  |  | | * Use mathematics and Computational Thinking:   + Use digital tools to analyze data sets for patterns and trends.   + Use mathematical representations to describe and/or support scientific conclusions and design solutions.   + Apply mathematical concepts and/or processes to scientific and engineering questions and problems. |  |  | | * Construct Explanations and Design Solutions:   + Create, evaluate and/or refine a design solution.   + Construct an explanation that includes qualitative and quantitative relationships.   + Construct an explanation using models or representations.   + Construct a scientific explanation based on valid and reliable evidence obtained from multiple sources. |  |  | | * Engage in Argument from Evidence:   + Construct a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s). |  |  | | * Obtain, Evaluate and Communicate Information:   + Gather, read, synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported by evidence.   + Evaluate data, hypothesis and/or conclusions in scientific and technical texts. |  |  | | | PERFORMANCE TASK(S):    What (cognitive verb + big idea):  *Obtain, evaluate and communicate the impact humans have on the health and wellness of our earth and the sustainability of all life.*  Why (copied and pasted EUs from Stage 1):  *Science provides us with the foundation to develop understandings about our world and its impact on all living things. .*  How (GRASPS, written to and for students):  **Goal:** Students will apply understandings of human impact, natural phenomena and other factors that may contribute to changes on earth  **Role:** Community Liaison  **Audience:** A Native community of that represents multiple Tribal Nations of all ages.  **Situation:**  The Tribe has settled on land situated along a major fault line. Scientists predict major destruction to those inhabiting the land within the next six years.  **Product, Performance, and Purpose:**  In order to demonstrate understanding of a full-year of 6th grade science students will produce a visual of his/her choice that persuades the community to move from their current location.  **Standards and Criteria for Success:**  Rubric will be utilized. | |
|  | | OTHER EVIDENCE: | |
| |  | | --- | | **Stage 3 – Learning Plan** *What units will you teach, and what skills will students master, as a result of this yearlong curriculum?* |   2015 -2016 Academic Year Curriculum Map Template   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Unit Big Idea (Title) | Unit Essential Question(s) | Unit Standard(s) | Assessment(s) | Time Frame | | What big idea anchors this unit? | What EQ will anchor conceptual, critical thinking related to the big idea? | What core standard(s) anchors this unit, and therefore what observable skills will you evaluate? | What summative assessment will provide you evidence of skills and understanding? | What is the approximate time frame for the teaching and learning in this unit? | | 1. Unit 1: Exploring Energy | How does the sun’s energy flow through earth’s systems? | * MS-ESS2-1. Develop a model to describe the cycling of Earth’s materials and the flow of energy that drives this process. * MS-PS3-1. Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object. * MS-PS3-2. Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system. * MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.\* * MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. | Students will take a post assessment that consists of multiple choice questions, diagrams, a short answer response and an open-ended response. Alternative assessments will be provided to students who require specific accommodations.  In addition; construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. | 9 weeks | | 1. Unit 2: Plate Tectonics | How does plate tectonics account for the important features of the earth’s surface and major geological events? | * MS-ESS2-1. Develop a model to describe the cycling of Earth’s materials and the flow of energy that drives this process. * MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales. * MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. * MS-PS2-1. Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects.\* * MS-PS2-2. Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object. | Students will take a post assessment that consists of multiple choice questions, diagrams, a short answer response and an open-ended response. Alternative assessments will be provided to students who require specific accommodations.  Students will develop a model and construct an explanation that demonstrates various plate boundaries and the impact on earth’s surfaces in the State of New Mexico. | 5 weeks | | 1. Unit 3: Earthquakes & Volcanoes | What type of relationships exists between plate tectonics and the earth’s surface? | * MS-PS4-1. Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave. * MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. | Students will take a post assessment that consists of multiple choice questions, diagrams, a short answer response and an open-ended response. Alternative assessments will be provided to students who require specific accommodations.  Students will develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. | 4 weeks | | 1. Unit 4: Weathering & Erosion | How do the processes of weathering and erosion shape the earth? | * 5-8 Benchmark II: Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth’s systems. | Students will take a post assessment that consists of multiple choice questions, diagrams, a short answer response and an open-ended response. Alternative assessments will be provided to students who require specific accommodations. | 2 weeks | | 1. Unit 5: Weathering & Climate | How does weathering and climate influence weather conditions? | * MS-ESS2-4. Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity. * MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions. * MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. | Students will take a post assessment that consists of multiple choice questions, diagrams, a short answer response and an open-ended response. Alternative assessments will be provided to students who require specific accommodations.  Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. | 4 weeks | | 1. Unit 6: Earth’s Place in the Universe | How does the place of earth in the universe allow for life? | * MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. * MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. * MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system. * MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth’s 4.6-billion-year-old history. | Students will take a post assessment that consists of multiple choice questions, diagrams, a short answer response and an open-ended response. Alternative assessments will be provided to students who require specific accommodations.  Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons | 2 weeks | | 1. Unit 7: Earth & Human Activity | What is the relationship between the sustainability of life on earth and human activity? | * MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes. * MS-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. * MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.\* * MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems. * MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. | Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.  Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. | 4 weeks | | | | |