FLOYD COUNTY SCHOOLS' CURRICULUM RESOURCES
"Building a Better Future for Every Child - Every Day!"
Summer 2012

Subject Content: _____Science_____Grade _____6th_____

TG **Indicates the Curriculum Map**

Weeks 1 – 3	Weeks 4 – 6
Unit/Topic **The Earth and the Universe/Scientific Method** The Earth system is in a constant state of change. These changes affect life on earth in many ways. Development of conceptual understandings about processes that shape the Earth begin at the elementary level with understanding *what* Earth materials are and that change occurs. At the middle level, students investigate *how* these changes occur. Finally, at the high school level, most of the emphasis is on *why* these changes occur. An understanding of systems and their interacting components will enable students to evaluate supporting theories of earth changes. At the heart of elementary students' initial understanding of the Earth's place in the universe is direct observation of the earth-sun-moon system. Students can derive important conceptual understandings about the system as they describe interactions resulting in shadows, moon phases and day and night. The use of models and observance of patterns to explain common phenomena is essential to building a conceptual foundation and supporting ideas with evidence at all levels. In middle school, students begin to look beyond what can be directly observed as they explore the earth-sun-moon system, as well as the rest of our solar system, employing the concept of scale within their models. Patterns play an important role as students seek to develop a conceptual understanding of gravity in their world and in the universe. High school is the time to bring all of the ideas together to look at the universe as a whole. Students will use evidence to evaluate and analyze theories related to the origin of the universe and all components of the universe.	**Unit/Topic** **The Earth and the Universe/Scientific Method** The Earth system is in a constant state of change. These changes affect life on earth in many ways. Development of conceptual understandings about processes that shape the Earth begin at the elementary level with understanding *what* Earth materials are and that change occurs. At the middle level, students investigate *how* these changes occur. Finally, at the high school level, most of the emphasis is on *why* these changes occur. An understanding of systems and their interacting components will enable students to evaluate supporting theories of earth changes. At the heart of elementary students' initial understanding of the Earth's place in the universe is direct observation of the earth-sun-moon system. Students can derive important conceptual understandings about the system as they describe interactions resulting in shadows, moon phases and day and night. The use of models and observance of patterns to explain common phenomena is essential to building a conceptual foundation and supporting ideas with evidence at all levels. In middle school, students begin to look beyond what can be directly observed as they explore the earth-sun-moon system, as well as the rest of our solar system, employing the concept of scale within their models. Patterns play an important role as students seek to develop a conceptual understanding of gravity in their world and in the universe. High school is the time to bring all of the ideas together to look at the universe as a whole. Students will use evidence to evaluate and analyze theories related to the origin of the universe and all components of the universe.
CORE CONTENT 4.1	

Common Core Standards	In this section IDENTIFY CORE CONTENT 4.1 Common Core Standards
SC-06-2.3.1 **Students will explain and predict phenomena (e.g., day, year, moon phases, eclipses) based on models/representations or data related to the motion of objects in the solar system (e.g., earth, sun, moon).** **Observations and investigations of patterns indicate that most objects in the solar system are in regular and predictable motion. Evaluation of this data explains such phenomena as the day, the year, phases of the moon and eclipses.** **DOK 3** **models.** **DOK 2**	**SC-06-2.3.3** **Students will compare constructive and destructive forces on Earth in order to make predictions about the nature of landforms.** **Landforms are a result of a combination of constructive and destructive forces. Collection and analysis of data indicates that constructive forces include crustal deformation, faulting, volcanic eruption and deposition of sediment, while destructive forces include weathering and erosion.** **DOK 2** .
SC-06-2.3.3 **Students will compare constructive and destructive forces on Earth in order to make predictions about the nature of landforms.** **Landforms are a result of a combination of constructive and destructive forces. Collection and analysis of data indicates that constructive forces include crustal deformation, faulting, volcanic eruption and deposition of sediment, while destructive forces include weathering and erosion.** **DOK 2**	**SC-06-2.3.2** **Students will explain cause and effect relationships in the Rock cycle.** **Materials found in the lithosphere and mantle are changed in a continuous process called the rock cycle, which can be investigated using a variety of**

CURRICULUM			CURRICULUM		
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**
Scientific Method	**The Earth & the Universe**	**The Earth & the Universe**	**Rock Cycle/Constructive & Destructive Forces**	**Rock Cycle/Constructive & Destructive Forces**	**Rock Cycle/Constructive & Destructive Forces**
I CAN STATEMENTS: I can use the process involved in the scientific method. I can identify the independent/manipulated variable I can identify dependent/responding variable I can write a correct hypothesis for an experiment. I can collect data and construct a table or graph to display the data. I can analyze the results of an experiment. I can develop a conclusion based upon the experiment	**I CAN STATEMENTS:** I can describe how rotation & revolution effects the following: ^day ^year ^moon phases ^eclipses I can Explain and predict phenomena (e.g., day, year, moon phases, eclipses) based on models/representations or data related to the motion of objects in the solar system (e.g., earth, sun, moon. I can describe the motion of objects in the solar system: -sun -moon -satellites -planets I can predict moon phases based on diagrams	**I CAN STATEMENTS:** I can Explain and predict phenomena (e.g., day, year, moon phases, eclipses) based on models/representations or data related to the motion of objects in the solar system (e.g., earth, sun, moon. I can identify and describe the following: -winter solstice -summer solstice -vernal equinox -autumnal equinox	**I CAN STATEMENTS:** I can explain the cause and effect relationships in the Rock cycle. I can explain how materials found in the lithosphere and mantle are changed in a continuous process called the rock cycle. I can identify constructive forces. I can identify destructive forces. I can describe how constructive and destructive forces change the surface of Earth. I can predict the results of constructive forces. I can predict the results of destructive forces. I can explain how landforms are a result of a	**I CAN STATEMENTS:** I can explain the cause and effect relationships in the Rock cycle. I can explain how materials found in the lithosphere and mantle are changed in a continuous process called the rock cycle. I can identify constructive forces. I can identify destructive forces. I can describe how constructive and destructive forces change the surface of Earth. I can predict the results of constructive forces. I can predict the results of destructive forces.	**I CAN STATEMENTS:** I can: explain the cause and effect relationships in the Rock cycle. I can explain how materials found in the lithosphere and mantle are changed in a continuous process called the rock cycle. I can identify constructive forces. I can identify destructive forces. I can describe how constructive and destructive forces change the surface of Earth. I can predict the results of constructive forces. predict the results of destructive forces.

performed.			combination of constructive and destructive forces. I can create a conclusion based on the collection and analysis of data indicates that constructive forces include crustal deformation, faulting, volcanic eruption and deposition of sediment, while destructive forces include weathering and erosion.	I can explain how landforms are a result of a combination of constructive and destructive forces. I can create a conclusion based on the collection and analysis of data indicates that constructive forces include crustal deformation, faulting, volcanic eruption and deposition of sediment, while destructive forces include weathering and erosion.	I can explain how landforms are a result of a combination of constructive and destructive forces. I can create a conclusion based on the collection and analysis of data indicates that constructive forces include crustal deformation, faulting, volcanic eruption and deposition of sediment, while destructive forces include weathering and erosion.
Critical Vocabulary Variable Control Manipulated Variable (Independent Variable) Responding Variable (Dependent Variable) Hypothesis Analyze/Analysis Conclusion	**Critical Vocabulary** Rotation Revolution Moon Phases new moon full moon waxing waning indirect light direct light gas planets rocky planets stars	**Critical Vocabulary** Gravity Mass Weight Astronomical Unit (AU) full moon waxing waning indirect light direct light gas planets rocky planets stars	**Critical Vocabulary** Rock Cycle Metamorphic Igneous Sedimentary Melting Heat & Pressure Volcanic Activity Deposition Compaction Cementation Landforms Constructive Forces	**Critical Vocabulary** Rock Cycle Metamorphic Igneous Sedimentary Melting Heat & Pressure Volcanic Activity Deposition Compaction Cementation Landforms Constructive Forces	**Critical Vocabulary** Rock Cycle Metamorphic Igneous Sedimentary Melting Heat & Pressure Volcanic Activity Deposition Compaction Cementation Landforms Constructive Forces

	galaxies elliptical Constellations Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune Comets	galaxies Constellations Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune Comets	Destructive Forces Weathering Mechanical Weathering Chemical Weathering Erosion	Destructive Forces Weathering Mechanical Weathering Chemical Weathering Erosion	Destructive Forces Weathering Mechanical Weathering Chemical Weathering Erosion
Suggested Strategies/Activities Students will: perform activities such as "How Many Drops of Water Will Fit on a Penny, Dime, Nickel, etc., and will identify the manipulated and responding variable. perform activities in which they will be write a correct problem statement, hypothesis, and will use data tables to record information and analyze the results. write appropriate conclusions based on the data.	Suggested Strategies/Activities Students will: create and analyze scale model of the solar system use flashlights and Styrofoam balls to investigate rotation, revolution and causes of day/night and seasons. create a diagram showing where Earth is in relation to the rest of the galaxy. create a model of the Earth, moon and Sun system to see how different orbits of the different bodies affect each other.	**Suggested Strategies/Activities** Students will describe characteristics of comets and asteroids in the solar system. predict the path of comets and asteroids. Field Trip to the Challenger Learning Center at Hazard Community Technical College. Field Trip to the Prestonsburg Science Center Planetarium.	**Suggested Strategies/Activities** Students will draw and label the processes involved during the Rock cycle *Bill Nye Video—"Rock Cycle" *www.learner.org/interactives/rockcycle *www.visionlearning.com *www.library.thinkquest.org view the 3 types of rock samples from collections *brain pop *brain pop create a model that shows the process of cementation of sedimentary rocks by pouring glue/water mixture	**Suggested Strategies/Activities** Students will Watch Bill Nye Video—"Weathering & Erosion" Google images of weathering & erosion use stream table to model different forms of water erosion. place whole and crushed Alka Seltzer tablets in water to investigate different rates of weathering create before and after model of landscapes to show effects of erosion over millions of years.	**Suggested Strategies/Activities** Students will Watch Bill Nye Video—"Weathering & Erosion" Google images of weathering & erosion use stream table to model different forms of water erosion place whole and crushed Alka Seltzer tablets in water to investigate different rates of weathering create before and after model of landscapes to show effects of erosion over millions of years.

	Group project—each group will be assigned a planet to investigate and will present the information to the class.		through sediments. create a model of metamorphic rock formation using layers of clay. use a rock cycle wheel to illustrate changes in rock	compare contents of various samples of soil.	compare contents of various samples of soil.
Balanced Assessment: Formative Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day Summative Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day Summative Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc.) **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day Summative Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day Summative Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day Summative Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day Summative Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**

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Weeks 7-9	Weeks 10-12
Unit/Topic **Structure and Transformation of Matter**	**Unit/Topic** **Structure and Transformation of Matter**
In this section IDENTIFY **CORE CONTENT 4.1** **Common Core Standards** **Structure and Transformation of Matter** A basic understanding of matter is essential to the conceptual development	**In this section IDENTIFY** **CORE CONTENT 4.1** **Common Core Standards** **Structure and Transformation of Matter** A basic understanding of matter is essential to the conceptual development of

ofother big ideas in science. In the elementary years of conceptual development,students will be studying properties of matter and physical changes of matterat the macro level through direct observations, forming the foundation for subsequent learning. During the middle years, physical and chemical changes in matter are observed, and students begin to relate these changes to the smaller constituents of matter—namely, atoms and molecules. By high school, students will be dealing with evidence from both direct and indirect observations (microscopic level and smaller) to consider theories related to change and conservation of matter. The use of models (and an understanding of their scales and limitations) is an effective means of learning about the structure of matter. Looking for patterns in properties is also critical to comparing and explaining differences in matter. **SC-06-1.1.2** **Students will identify and describe evidence of chemical and physical changes in matter.** **In chemical reactions, the total mass is conserved. Substances are often classified into groups if they react in similar ways. The patterns that allow classification can be used to infer or understand real life applications for those substances.** **DOK 2**	other big ideas in science. In the elementary years of conceptual development, students will be studying properties of matter and physical changes of matter at the macro level through direct observations, forming the foundation for subsequent learning. During the middle years, physical and chemical changes in matter are observed, and students begin to relate these changes to the smaller constituents of matter—namely, atoms and molecules. By high school, students will be dealing with evidence from both direct and indirect observations (microscopic level and smaller) to consider theories related to change and conservation of matter. The use of models (and an understanding of their scales and limitations) is an effective means of learning about the structure of matter. Looking for patterns in properties is also critical **SC-M6 1.1.1** **Students will explain how or why mixtures can be separated using physical properties.** **A mixture of substances often can be separated into the original substances by using one or more of its characteristic physical properties.**

CURRICULUM			CURRICULUM		
Week 7	**Week 8**	**Week 9**	**Week 10**	**Week 11**	**Week 12**
Identify **Chemical and Physical changes**	**Identify** **Chemical, changes, and reactions**	**Identify** **Chemical, changes, and reactions**	**Identify** **Chemical, changes, and reactions**	**Identify** **Chemical, changes, and reactions**	**Identify** **Chemical, changes, and reactions**

I CAN STATEMENTS: I can identify chemical properties. I can defend the Law of Conservation of Mass. I can distinguish between mixtures and compounds. I can use a hand lens and microscope to investigate a variety of substances including particles too small to be seen without magnification .	**I CAN STATEMENTS:** I can compare physical change to chemical change. I can classify objects using mass.	**I CAN STATEMENTS:** I can explore various procedures to see if it is possible to separate mixtures.	**I CAN STATEMENTS:** I can distinguish and categorize the four states of matter. I can explore various procedures to see if it is possible to separate mixtures. I can use physical properties to separate mixtures.	I CAN STATEMENTS: I can distinguish between acids and identify physical properties.	**I CAN STATEMENTS:** I can use physical properties to describe random objects. I can calculate density.
Critical Vocabulary States of matter Physical change Chemical change Density Boiling point Solubility Ignite Flammable Acid	**Critical Vocabulary** States of matter Physical change Chemical change Density Boiling point Solubility Ignite Flammable Acid	**Critical Vocabulary** States of matter Physical change Chemical change Density Boiling point Solubility Ignite Flammable Acid	**Critical Vocabulary** States of matter Physical change Chemical change Density Boiling point Solubility Ignite Flammable Acid	**Critical Vocabulary** States of matter Physical change Chemical change Density Boiling point Solubility Ignite Flammable Acid	**Critical Vocabulary** States of matter Physical change Chemical change Density Boiling point Solubility Ignite Flammable Acid

Bases Mixture Compound substance Chemical reaction Mass Conserved Classification Ductile Malleable Volume Buoyancy Law of the Conservation of Mass.	Bases Mixture Compound substance Chemical reaction Mass Conserved Classification Ductile Malleable Volume Buoyancy Law of the Conservation of Mass.	Bases Mixture Compound substance Chemical reaction Mass Conserved Classification Ductile Malleable Volume Buoyancy Law of the Conservation of Mass.	Bases Mixture Compound substance Chemical reaction Mass Conserved Classification Ductile Malleable Volume Buoyancy Law of the Conservation of Mass.	Bases Mixture Compound substance Chemical reaction Mass Conserved Classification Ductile Malleable Volume Buoyancy Law of the Conservation of Mass.	Bases Mixture Compound substance Chemical reaction Mass Conserved Classification Ductile Malleable Volume Buoyancy Law of the Conservation of Mass.
Suggested Strategies/Activities Students will experiment to: Separate sand, iron filings, gravel, salt and water. Students will perform acid/base test on a variety of mixtures.	**Suggested Strategies/Activities** Students will experiment to make elephant toothpaste. (homogeneous/heterogeneous mixtures).	**Suggested Strategies/Activities** Research projects Power point presentation	**Suggested Strategies/Activities** Research projects Power point presentation	**Suggested Strategies/Activities** Research projects Power point presentation	**Suggested Strategies/Activities** Research projects Power point presentation
Balanced Assessment: Formative Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day	**Balanced Assessment: Formative** Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day	**Balanced Assessment: Formative** Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day	**Balanced Assessment: Formative** Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day	**Balanced Assessment: Formative** Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day	**Balanced Assessment: Formative** Clickers White Boards Thumbs Up Exit Slip Quick Writes CPS System Problem of the Day

Summative Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Summative** Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Summative** Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Summative** Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Summative** Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Summative** Open Response Multiple Choice On-Demand Project (PowerPoint, Brochure, Poster, etc **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**
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Weeks 13-15	Weeks 16-18
Unit/Topic **Motion and Forces**	**Unit/Topic** **Motion and Forces**
Motion and Forces Whether observing airplanes, baseballs, planets, or people, the motion of all bodies is governed by the same basic rules. In the elementary years of conceptual development, students need multiple opportunities to experience, observe and describe (in words and pictures) motion, including factors (pushing and pulling) that affect motion. At the middle level, qualitative descriptions of the relationship between forces and motion will provide the foundation for quantitative applications of Newton's Laws. These ideas are more fully developed at the high school level along with the use of models to support evidence of motion in abstract or invisible phenomena such as electromagnetism. **SC-06-1.2.1** **Students will describe friction and make inferences about its effects on the motion of an object.** **When an unbalanced force (friction) acts on an object, the change in speed or direction depends on the size and direction of the force.** **DOK 3**	**Motion and Forces** Whether observing airplanes, baseballs, planets, or people, the motion of all bodies is governed by the same basic rules. In the elementary years of conceptual development, students need multiple opportunities to experience, observe and describe (in words and pictures) motion, including factors (pushing and pulling) that affect motion. At the middle level, qualitative descriptions of the relationship between forces and motion will provide the foundation for quantitative applications of Newton's Laws. These ideas are more fully developed at the high school level along with the use of models to support evidence of motion in abstract or invisible phenomena such as electromagnetism. **SC-06-1.2.1** **Students will describe friction and make inferences about its effects on the motion of an object.** **When an unbalanced force (friction) acts on an object, the change in speed or direction depends on the size and direction of the force.** **DOK 3**

CURRICULUM			CURRICULUM		
Week 13	**Week 14**	**Week 15**	**Week 16**	**Week 17**	**Week 18**
Friction and Forces	**Friction and Forces**	**Friction and Forces**	**Unbalanced and Forces**	**Unbalanced**	**Unbalanced**

I CAN STATEMENTS: I can identify forces I can explain how the force of gravity is related to mass. I can explain how forces of gravity is related to velocity.	I CAN STATEMENTS: I can calculate average speed velocity, distance and time.	I CAN STATEMENTS: I can explain Newton's Laws 1,2,and 3.	I CAN STATEMENTS: I can predict the outcome of a balanced force. I can predict the outcome of an unbalanced force.	I CAN STATEMENTS: I can use observations various tools and real life phenomena to discover effects of friction on unbalance objects.	I CAN STATEMENTS: I can explain how friction can impact the design of a mechanical system. I can apply Newton's Laws to everyday life.
Critical Vocabulary Speed gravity Acceleration Mass Weight inertia Force Balanced forces Velocity Newton's Law Motion Distance Position Resistance Momentum	Critical Vocabulary Speed gravity Acceleration Mass Weight inertia Force Balanced forces Velocity Newton's Law Motion Distance Position Resistance Momentum	Critical Vocabulary Speed gravity Acceleration Mass Weight inertia Force Balanced forces Velocity Newton's Law Motion Distance Position Resistance Momentum	Critical Vocabulary Speed gravity Acceleration Mass Weight inertia Force Balanced forces Velocity Newton's Law Motion Distance Position Resistance Momentum	Critical Vocabulary Speed gravity Acceleration Mass Weight inertia Force Balanced forces Velocity Newton's Law Motion Distance Position Resistance Momentum	Critical Vocabulary Speed gravity Acceleration Mass Weight inertia Force Balanced forces Velocity Newton's Law Motion Distance Position Resistance Momentum

Strategies/Activities	Strategies/Activities	Strategies/Activities	Strategies/Activities	Strategies/Activities	Strategies/Activities
Construct Models Research projects Power point presentation	Construct Models Research projects Power point presentation	Construct Models Research projects Power point presentation	Construct Models Research projects Power point presentation	Construct Models Research projects Power point presentation	Construct Models Research projects Power point presentation
Balanced Assessment: Formative Clickers Thumbs Exit Slip Quick writer **Summative** Open Response Multiple Choice On-demand Design of Authentic Product **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Clickers Thumbs Exit Slip Quick writer **Summative** Open Response Multiple Choice On-demand Design of Authentic Product **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Clickers Thumbs Exit Slip Quick writer **Summative** Open Response Multiple Choice On-demand Design of Authentic Product **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Clickers Thumbs Exit Slip Quick writer **Summative** Open Response Multiple Choice On-demand Design of Authentic Product **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Clickers Thumbs Exit Slip Quick writer **Summative** Open Response Multiple Choice On-demand Design of Authentic Product **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Clickers Thumbs Exit Slip Quick writer **Summative** Open Response Multiple Choice On-demand Design of Authentic Product **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**
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Weeks 19-21	Weeks 22-24
Unit/Topic **Energy Transformations**	**Unit/Topic** **Energy Transformations**
In this section IDENTIFY CORE CONTENT 4.1 Common Core Standards **Energy Transformations** Energy transformations are inherent in almost every system in the universe—from tangible examples at the elementary level, such as heat production in simple earth and physical systems to more abstract ideas beginning at middle school, such as those transformations involved in the growth, dying and decay of living systems. The use of models to illustrate the often invisible and abstract notions of energy transfer will aid in conceptualization, especially as students move from the macroscopic level of observation and evidence (primarily elementary school) to the microscopic interactions at the atomic level (middle and high school levels). Students in high school expand their understanding of constancy through the study of a variety of phenomena. Conceptual understanding and application of the laws of thermodynamics	**In this section IDENTIFY CORE CONTENT 4.1 Common Core Standards** **Energy Transformations** Energy transformations are inherent in almost every system in the universe—from tangible examples at the elementary level, such as heat production in simple earth and physical systems to more abstract ideas beginning at middle school, such as those transformations involved in the growth, dying and decay of living systems. The use of models to illustrate the often invisible and abstract notions of energy transfer will aid in conceptualization, especially as students move from the macroscopic level of observation and evidence (primarily elementary school) to the microscopic interactions at the atomic level (middle and high school levels). Students in high school expand their understanding of constancy through the study of a variety of phenomena. Conceptual understanding and application of the laws of thermodynamics connect ideas about matter with energy transformations within all living,

connect ideas about matter with energy transformations within all living, physical and earth systems. **SC-06-4.6.1** **Students will describe or explain the cause and effect relationships between oceans and climate.** **Oceans have a major effect on climate, because water in the oceans holds a large amount of heat.** **DOK 2** ***IDENTIFY GAPS for Math/Literacy in this section. These topics/skills need to be taught for 2 – 3 years to avoid gaps in student learning.***	physical and earth systems. **SC-06-4.6.2** **Students will describe:** • **the effect of the Suns' energy on the Earth system;** • **the connection/relationship between the Sun's energy and seasons.** **The Sun is the major source of energy for Earth. The water cycle, winds, ocean currents and growth of plants are affected by the Sun's energy. Seasons result from variations in the amount of the Sun's energy hitting Earth's surface.** **DOK 3** *SC-06-4.6.3* *Students will understand that, on its own, heat travels only from higher temperature object/region to lower temperature object or region. Heat will continue to flow in this manner until the objects reach the same temperature. For example, a cup of hot water will continue to cool down until it comes to the same temperature as the surrounding area. Usually when heat is transferred to or from an object, the temperature changes. The temperature increases if heat is added and the temperature decreases if the heat is removed.*

CURRICULUM			CURRICULUM		
Week 19	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Suns energy/ Earth's systems Week 24**
Oceans Climate	**Oceans Climate**	**Oceans Climate**	**Suns energy/ Earth's systems**	**Suns energy/ Earth's systems**	**Suns energy/ Earth's systems**
I CAN STATEMENTS:	**I CAN STATEMENTS:**	**I CAN STATEMENTS:**	**I CAN STATEMENTS:**	**I CAN STATEMENTS:**	**I CAN STATEMENTS:**

I can describe how oceans affect climates	I can describe how oceans affect climates I can describe or explain the cause and effect relationships between oceans and climate.	I can describe how oceans affect climates	I can describe how the sun affects water cycle. I can explain the water cycle.	I can explain how the sun affects Ocean Currents I can explain heat transfer radiation- conduction, radiation, convection.	I can explain how seasons occur – tilt of axis.
Critical Vocabulary Climate Temperature Water vapor Atmosphere Evaporation Condensation Precipitation	**Critical Vocabulary** Transpiration Weather El Nino Elevation Water cycle Photosynthesis Chloroplasts	**Critical Vocabulary** Ocean currents	**Critical Vocabulary** Conduction Convection Radiation Dense Transfer Increase	**Critical Vocabulary** Decrease Energy Seasons	**Critical Vocabulary** Climate, Temperature Water vapor Atmosphere Transpiration Weather El Nino Elevation Water cycle Photosynthesis Chloroplast Ocean currents Conduction Radiation Transfer energy
Suggested Strategies/Activities Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation

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Weeks 25-27	Weeks 28-30
Unit/Topic **Interdependence**	**Unit/Topic** **Interdependence**
Unifying Concepts **Interdependence** It is not difficult for students to grasp the general notion that species depend on one another and on the environment for survival. But their awareness must be supported by knowledge of the kinds of relationships that exist among organisms, the kinds of physical conditions that organisms must cope with, the kinds of environments created by the interaction of organisms with one another and their physical surroundings and the complexity of such systems. Elementary learners need to become acquainted with ecosystems that are easily observable to them by beginning to study the habitats of many types of local organisms. Students begin to investigate the survival needs of different organisms and how the environment affects optimum conditions for survival. In middle school, students should be guided from specific examples of the interdependency of organisms to a more systematic view of the interactions that take place among organisms and their surroundings. At the high school level, the concept of an ecosystem should bring coherence to the complex array of relationships among organisms and environments that students have encountered. Students growing **SC-06-4.7.1** **Students will describe the consequences of change in one or more abiotic factors on a population within an ecosystem.** **The number of organisms an ecosystem can support depends on the resources available and abiotic factors (e.g., quantity of light and water, range of temperatures, soil composition).**	**Unifying Concepts Interdependence** **Interdependence** It is not difficult for students to grasp the general notion that species depend on one another and on the environment for survival. But their awareness must be supported by knowledge of the kinds of relationships that exist among organisms, the kinds of physical conditions that organisms must cope with, the kinds of environments created by the interaction of organisms with one another and their physical surroundings and the complexity of such systems. Elementary learners need to become acquainted with ecosystems that are easily observable to them by beginning to study the habitats of many types of local organisms. Students begin to investigate the survival needs of different organisms and how the environment affects optimum conditions for survival. In middle school, students should be guided from specific examples of the interdependency of organisms to a more systematic view of the interactions that take place among organisms and their surroundings. At the high school level, the concept of an ecosystem should bring coherence to the complex array of relationships among organisms and environments that students have encountered. Students growing **SC-06-4.7.1** **Students will describe the consequences of change in one or more abiotic factors on a population within an ecosystem.** **The number of organisms an ecosystem can support depends on the resources available and abiotic factors (e.g., quantity of light and water, range of temperatures, soil composition).**

DOK 2understanding of systems in general will reinforce the concept of ecosystems. Stability and change in ecosystems can be considered in terms of variables such as population size, number and kinds of species, productivity and the effect of human intervention (*adapted from Benchmarks for Science Literacy, 1993).*			**DOK 2**understanding of systems in general will reinforce the concept of ecosystems. Stability and change in ecosystems can be considered in terms of variables such as population size, number and kinds of species, productivity and the effect of human intervention (*adapted from Benchmarks for Science Literacy, 1993).*		
			CURRICULUM		
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**
A biotic/Biotic Resources	**A biotic/Biotic Resources**	**A biotic/Biotic Resources**	**Population/Ecosystem**	**Population/Ecosystem**	**Population/Ecosystem**
I CAN STATEMENTS: I can describe how factors affect change in ecosystem a biotic/biotic. I can explain in habitat niche, population biomes ecosystem.	**I CAN STATEMENTS:** I can explain various forms of symbiosis mutualism, commensalisms, and parasitism. I can differentiate between biotic and an a biotic	**I CAN STATEMENTS:** I can explain various forms of symbiosis mutualism, commensalisms, and parasitism. I can predict how adaptations increase chance of survival.	**I CAN STATEMENTS:** I can explain various forms of symbiosis mutualism, commensalisms, and parasitism.	**I CAN STATEMENTS:** I can explain various forms of symbiosis mutualism, commensalisms, and parasitism.	**I CAN STATEMENTS:** I can explain various forms of symbiosis mutualism, commensalisms, and parasitism.

Critical Vocabulary A biotic Biotic Temperature Air Ecosystem Habitat Niche Population density Soil Light Water Carrying capacity Competition Supply and demand Symbiosis Mutualism Commensalism Parasitism	**Critical Vocabulary** A biotic Biotic Temperature Air Ecosystem Habitat Niche Population density Soil Light Water Carrying capacity Competition Supply and demand Symbiosis Mutualism Commensalism Parasitism	**Critical Vocabulary** A biotic Biotic Temperature Air Ecosystem Habitat Niche Population density Soil Light Water Carrying capacity Competition Supply and demand Symbiosis Mutualism Commensalism Parasitism	**Critical Vocabulary** **A** biotic Biotic Temperature Air Ecosystem Habitat Niche Population density Soil Light Water Carrying capacity Competition Supply and demand Symbiosis Mutualism Commensalism Parasitism	**Critical Vocabulary** A biotic Biotic Temperature Air Ecosystem Habitat Niche Population density Soil Light Water Carrying capacity Competition Supply and demand Symbiosis Mutualism Commensalism Parasitism	**Critical Vocabulary** A biotic Biotic Temperature Air Ecosystem Habitat Niche Population density Soil Light Water Carrying capacity Competition Supply and demand Symbiosis Mutualism Commensalism Parasitism
Suggested Strategies/Activities Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation
Balanced Assessment: Formative	**Balanced Assessment: Formative**	**Balanced Assessment: Formative**	**Balanced Assessment: Formative**	**Balanced Assessment: Formative**	**Balanced Assessment: Formative**

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Weeks 31-33	Weeks 34-36
Unit/Topic **Biological Change**	**Unit/Topic** **Biological Change**
In this section IDENTIFY **CORE CONTENT 4.1** **Common Core Standards** **Biological Change** The only thing certain is that everything changes. Elementary students build a foundational knowledge of change by observing slow and fast changes caused by nature in their own environment, noting changes that humans and other organisms cause in their environment and observing fossils found in or near their environment. At the middle school level, students study relationships among populations and ecosystems that contribute to the success or demise of a specific population or species. Students construct basic explanations that can account for the great diversity among organisms. The stage is set for high school students to evaluate the role natural selection plays in the diversity of species. Modern ideas of evolution provide a scientific explanation for three main sets of observable facts about life on earth: the enormous number of different life forms we see about us, the systematic similarities in anatomy and molecular chemistry we see within that diversity and the sequence of changes in fossils found in successive layers of rock that have been formed over more than a billion years (*Science for All Americans, p. 67)* **SC-06-3.5.1** **Students will explain that biological change over time accounts for the diversity of species developed through gradual processes over many generations.** **Biological adaptations include changes in structures, behaviors, or physiology that enhance survival and reproductive success in a particular environment.** **DOK 2**	**In this section IDENTIFY** **CORE CONTENT 4.1** **Common Core Standards** **Biological Change** The only thing certain is that everything changes. Elementary students build a foundational knowledge of change by observing slow and fast changes caused by nature in their own environment, noting changes that humans and other organisms cause in their environment and observing fossils found in or near their environment. At the middle school level, students study relationships among populations and ecosystems that contribute to the success or demise of a specific population or species. Students construct basic explanations that can account for the great diversity among organisms. The stage is set for high school students to evaluate the role natural selection plays in the diversity of species. Modern ideas of evolution provide a scientific explanation for three main sets of observable facts about life on earth: the enormous number of different life forms we see about us, the systematic similarities in anatomy and molecular chemistry we see within that diversity and the sequence of changes in fossils found in successive layers of rock that have been formed over more than a billion years (*Science for All Americans, p. 67)* *SC-06-3.5.2Students will understand that regulation of an organism's internal environment involves sensing the internal environment and changing physiological activities to keep conditions within the range required to survive. Maintaining a stable internal environment is essential for an organism's survival.*

CURRICULUM			CURRICULUM		
Week 31	**Week 32**	**Week 33**	**Week 34**		**Week 36**
Diversity of Species	**Biological Adaptation**	**Biological Adaptation**	**Organisms Internal Environment Required to survive**	**Organisms Internal Environment**	**Organisms Internal Environment**
I CAN STATEMENTS: I can predict how adaptation increase chance of survival. I can differentiate between a biotic and biotic factors.	**I CAN STATEMENTS:** I can identify and describe the role of herbivore, carnivore, omnivore, scavenger, decomposer, predator, prey	**I CAN STATEMENTS:** I can interpret a food chain, energy pyramid, food web.	**I CAN STATEMENTS:**	**I CAN STATEMENTS:**	**I CAN STATEMENTS:**
Critical Vocabulary Adaptation Homeostasis Hibernate Migration Dormancy Behavior Food web Herbivore Carnivore Omnivore	**Critical Vocabulary** Adaptation Homeostasis Hibernate Migration Dormancy Behavior Food web Herbivore Carnivore Omnivore	**Critical Vocabulary** Adaptation Homeostasis Hibernate Migration Dormancy Behavior Food web Herbivore Carnivore Omnivore	**Critical Vocabulary** Habitat Niche Population Community Biome Temperature	**Critical Vocabulary** Ecosystem Soil Light Water capacity competition	**Critical Vocabulary**

Scavenger Decomposer Internal Air External Predator Prey Food chain Light Water Capacity Niche Habitat Biome	Scavenger Decomposer Internal Air External Predator Prey Food chain Light Water Capacity Niche Habitat Biome	Scavenger Decomposer Internal Air External Predator Prey Food chain Light Water Capacity Niche Habitat Biome			
Suggested Strategies/Activities Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation	**Suggested Strategies/Activities** Construct Models Research projects Power point presentation
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