Science 7 Curriculum

Unit Title: Energy Effects	**Duration:** 9 weeks

Objective: TLW recognize that the Sun creates energy through nuclear reactions and that only a small fraction of light, from the sun, provide energy to heat the Earth. That there are several types of waves and that waves interact with matter producing matter.

Standards: P.EN.M.3, P.EN.07.31, P.EN.07.31, P.EN.07.32, P.EN.07.33, P.EN.M.6, P.EN.07.61, P.EN.07.62, S.IP.M.1, S.IP.07.11, S.IP.07.12, S.IP.07.12, S.IP.07.13, S.IP.07.14, S.IP.07.15, S.IP.07.16, S.IA.M.1, S.IA.07.11, S.IA.07.12, S.IA.07.13, S.IA.07.14, S.IA.07.15, S.RS.M.1, S.RS.07.11, S.RS.07.12, S.RS.07.13, S.RS.07.14, S.RS.07.15, S.RS.07.16, S.RS.07.17, S.RS.07.18, S.RS.07.19,

Literacy Activities:

- Close Reading
- Pair Share
- Student /Teacher think aloud
- Contextual problem solving
- Scientific Writing using claim evidence and reasoning
- Guided note taking

Skills:

- Demonstrate the transformation of light energy from the Sun to heat heat energy using models and data
- Explain and demonstrate the effect of the tilt of the Earth to solar heating of different areas on Earth
- Explain and demonstrate, using data, how color affects absorption and reflection of light
- Research properties of the sun and explain that nuclear reactions on the sun produce heat and light
- Design and conduct investigations that demonstrate how different materials and features on Earth affect the heating of the Earth
- Use models to demonstrate how waves travel
- Use models to demonstrate and explain how light waves, sound waves, waves on water, and seismic waves transfer energy
- Analyze data and claims form investigations and research
- Compare and contrast different types of waves

Vocabulary:

Absorb	Liquids	Sound waves
Atoms	Matter	State of matter
Echo	Molecules	Sun’s radiation
Electromagnetic spectrum	Nuclear reaction	Transmit
Energy	Nucleus	Ultraviolet light
Energy transfer	Radiation	Vibration
Frequency	Reflec	Visible light
Gasses	Seismic waves	Wavelength
Heat energy	Solar energy	Waves
Infrared light	Solids	Water wave
Light energy	Sound	
Light waves	Sound energy	

Unit Title: Chemical Change	**Duration:** 9 weeks

Objective: TLW recognize that matter is composed of atoms and molecules and the elements are organized on the periodic table. They will differentiate between chemical and physical changes.

Standards: P.PM.M.1, P.PM.07.11, P.PM.M2, P.PM.07.21, P.PM.07.22, P.PM.07.23, P.PM.07.24, P.CM.M.2, P.CM.07.21, P.CM.07.22, P.CM.07.23, S.IP.M.1, S.IP.07.11, S.IP.07.12, S.IP.07.13, S.IP.07.14, S.IP.07.15, S.IP.07.16, S.IA.07.1, S.IA.07.11, S.IA.07.12, S.IA.07.13, S.IA.07.14, S.IA.07.15, S.RS.M.1, S.RS.07.11, S.RS.07.12, S.RS.07.13, S.RS.07.14, S.RS.07.15, S.RS.07.19

Literacy Activities:

- Close Reading
- Pair Share
- Student /Teacher think aloud
- Contextual problem solving
- Scientific Writing using claim evidence and reasoning
- Guided note taking

Skills:

- Construct models that demonstrate atoms and basic bonds that form molecules
- Describe the difference and similarities between atoms and molecules
- Explain how elements are arranged on the Periodic Table of the Elements
- Compare and contrast the physical and chemical properties of matter
- Measure the mass and volume of solids and liquids and calculate the density of the substances
- Explain that the size , mass, and arrangement of atoms or molecules of a substance determines its density
- Explain the relationship between temperature and density
- Measure the boiling, freezing, and melting points of water
- Use the physical and chemical properties of substances to differentiate and identify the substances
- Make observations of chemical reactions and describe the changes that occur
- Explain the conservation of matter in physical and chemical change
- Describe the reactants and products during chemical change

Vocabulary:

Acid	Conservation of matter	Mixtures
Air Currents	Convection	Molecule
Atom	Corrosion	Oxidation
Atomic Mass	Covalent bonds	Periodic Table of Elements
Atomic number	Density	pH
Base	Ductile	Physical change
Boiling point	Elements	Physical properties
Chemistry	Fahrenheit scale	Products
Celsius scale	Freezing point	Reactants
Chemical Change	Ionic bonds	Rusting
Chemical Reaction	Malleability	Solubility
Chemistry	Mass	Temperature
Closed system	Matter	Volume
Compounds	Melting point	
Conductivity	Metal	

Unit Title: Weather, Climate, and Me	**Duration:** 9 weeks

Objective: TLW explain that weather changes from day to day due to movement of air masses and that climate is the average, year after, year, weather conditions and patterns in a region. The will understand climate is change to Earth's weather and environment due to increased global temperatures. They will explain the water cycle involves the movement of water in the atmosphere and on Earth.

Standards: E.ES.M.1, E.ES.07.11, E.ES.07.12, E.ES.07.13, E.ES.M.4, E.ES.07.41, E.ES.07.42, E.ES.M.7, E.ES.07.71, E.ES.07.72, E.ES.07.73, E.ES.07.74, E.ES.M.8, E.ES.07.81, E.ES.07.82, E.FE.M.1, E.FE.07.11, E.FE.07.12, S.IP.M.1, S.IP.27.11, S.IP.07.12, S.IP.07.13, S.IP.07.14, S.IP.07.15, S.IP.07.16, S.IA.07.1, S.IA.07.11, S.IA.07.12, S.IA.07.13, S.IA.07.14, S.IA.07.15, S.IA.07.15, S.RS.M.1, S.RS.07.11, S.RS.07.12, S.RS.07.13, S.RS.07.14, S.RS.07.15, S.RS.07.16, S.RS.07.17, S.RS.07.18, S.RS.07.20

Literacy Activities:

- Close Reading
- Pair Share
- Student /Teacher think aloud
- Contextual problem solving
- Scientific Writing using claim evidence and reasoning
- Guided note taking

Skills:

- Collect weather data over a period of time
- Recognize trends and patterns in weather
- Explain the difference between weather and climate
- Describe how air masses form and move using a model
- Demonstrate through the use of a model and weather map, what happens two different air masses collide and form a front
- Explain convection in terms of weather and the movement of air masses
- Describe the difference between conduction and convection
- Explain why climate varies from place to place, including the effects of latitude altitude, locations near bodies of water and mountain ranges, and prevailing ocean and air currents.
- Describe the water cycle using models
- Explain climate change is due to human activity

Vocabulary:

Absorption	Dew	
Air Currents	Dew point	Ocean currents
Air Mass	Endangered species	Pollution
Air Pressure	Evaporation	Precipitation
Altitude	Fog	Solar energy
Aquifer	Front	Stationary front
Atmosphere	Greenhouse effect	Temperature
Barometric pressure	Greenhouse gases	Transpiration
Carbon footprint	Groundwater	Warm air mass
Climate	High pressure system	Warm front
Climate change	Humidity	Water cycle
Cold air mass	Infiltration	Watershed
Cold front	Low pressure system	Water vapor
Convection	Meteorologist	Weather

Unit Title: Cells, Heredity, and Photosynthesis	**Duration:** 9 weeks

Objective: TLW explain that organisms are made of cells that may specialize for a particular purpose and that cells function in similar ways in all organisms, compare sexual and asexual reproduction of organisms for the continuation of genetic characteristics, explain the process of photosynthesis.

Standards: L.OL.07.21, L.OL.07.22, L.OL.07.23, L.OL.07.24, L.OL.07.31, L.OL.07.32, L.OL.07.61, L.OL.07.62, L.OL.07.63, L.HE.07.21, L.HE.07.22, S.IP.07.11, S.IP.07.12, S.IP.07.13, S.IP.07.14, S.IP.07.15, S.IP.07.16, S.IA.07.11, S.IA.07.12, S.IA.07.13, S.IA.07.14, S.RS.07.11, S.RS.07.12, S.RS.07.13, S.RS.07.14, S.RS.07.16, S.RS.07.19, P.EN.07.43

Literacy Activities:

- Close Reading
- Pair Share
- Student /Teacher think aloud
- Contextual problem solving
- Scientific Writing using claim evidence and reasoning
- Guided note taking

Skills:

- Identify animal and plant cells
- Identify specialized cells
- Explain benefits and disadvantage of asexual and sexual reproduction
- Explain the process of photosynthesis as a chemical reaction

Vocabulary:

advantage	fertilization	photosynthesis
asexual reproduction	generations	products
carbon dioxide	growth	reactants
cell	light energy	sexual reproduction
cell division	microscope	specialized cell
cell growth	multicellular organism	tissue
development	organ	unicellular organism
disadvantage	organ system	