7th Grade Science

Click **HERE** for Curriculum Map

Click **HERE** for Current OK State Standards.

Curriculum Resource - TPT Kesler Science 5e Model - Click **HERE**

Textbook: *Oklahoma Elevate Science* by Miller, Padilla, Wysession; Savvas Learning Company

1st quarter

Unit 1 Weather - Atmosphere

Big Picture

-Recognize that a limited number of the major known elements comprise the largest portion of the atmosphere.
-Identify the composition of the atmosphere.
-Identify the layers of Earth's atmosphere.
-Demonstrate how the sun's energy impacts weather and atmospheric movement.
-Identify the four main cloud types.

Essential Questions

-What is the composition of the Earth's atmosphere?
-What are the layers of the Earth's atmosphere?

***Unit Projects*:** Problem-Based Learning
-Challenge Its
-Choice Project:/Research

Unit 1 Weather - Convection Currents

Big Picture

-Recognize that the sun provides the energy that drives convection within the atmosphere and oceans, producing winds and ocean currents.

Essential Question

-How does the sun's energy drive convection within the atmosphere and oceans, producing winds and ocean currents.

***Unit Projects*:** Problem-Based Learning
-Challenge Its
-Choice Projects
-Design a Demonstration

Possible Field Trip

-Channel 6 Weather Station

2nd quarter

Unit 1 Weather - Weather Maps

Big Picture

-Identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressure and fronts.

Essential Questions

-How can you use weather maps to explain global weather patterns and their influence on local weather.

***Unit Projects*:** Problem-Based Learning
-Challenge Its
-Predicting the Weather is no Sport

Unit 2 - Earth and Human Activities

Big Picture

-Research and debate the the advantages and disadvantage of renewable energy resources.
-Research and debate the the advantages and disadvantage of non-renewable energy resources.
-Examine 6 different types of water pollution.
-Generate ideas for reducing water pollution.

Essential Questions

-What are the advantages and disadvantages of renewable and non-renewable energy sources?
-What are some different types of water pollution?
-How can water be conserved?
-How can my research findings be presented in a debate format?

***Unit Projects*:** Problem-Based Learning
-Challenge Its
-Choice Project (includes water research)

Possible Field Trip

-Tulsa Recycling or The MET

3rd quarter

Unit 3 - Chemistry

Big Picture

-Atoms
-Periodic Table and Reactivity
-Elements, Compounds and Mixtures
-Chemical Bonds
-Counting Elements and Atoms
-Balancing Chemical Equations
-Acids and Bases

Essential Questions

-What is the basic structure of atoms?
-How is an atom's mass calculated?
-Which subatomic particles are electrically charged?
-Where are the three main subatomic particles located?
-How do protons determine an atom's identity?
-How do valence electrons determine an atom's chemical properties, including reactivity?
-Why do compounds bond?
-How are elements classified on the periodic table?
-What elements mostly make up Earth, living matter, the oceans and the atmosphere?
-What is the difference between an element and a compound?
-Why do compounds bond?
-How are valence electrons related to chemical bonds?
-What is covalent bonding?
-What is ionic bonding?
-How are chemical formulas used to identify substances?
-How do chemical formulas determine the number of atoms of each element using subscripts, coeffients, and parantheses?
-What are the differences between acids and bases?
-How are ions related to acids and bases?
-How do you test for acids and bases using pH?

***Unit Projects*:** Problem-Based Learning
-Challenge Its
-Choice Projects
-Research Options
-Teaching Methods

4th quarter

Unit 4 -Ecosystems

Big Picture

-Describe biotic and abiotic parts of an ecosystem.
-Diagram the flow of energy through living systems.
-Process of photosynthesis.
-Describe producer/consumer, predator/prey, and parasite/host relationship.
-Identify the basic characteristics of a symbiotic relationship.
-Describe biodiversity.

Essential Questions

-What are the biotic and abiotic parts of an ecosystem?
-How do organisms and populations in an ecosystem depend on and compete for biotic and abiotic factors?
-How can you diagram the energy flow through a living system?
-How would you describe food webs In different ecosystems?
-How is the flow of energy through an energy pyramid diagrammed?
-How does the radiant energy from the sun change into chemical energy through the process of photosynthesis in a green plant?
-How does the Law of Conservation of Mass relate to photosynthesis?
-How can you describe organisms' relationships in a food web?
-How can you describe organism relationships in land/water ecosystems?
-What is a symbiotic relationship and what are examples of each?
-What is the difference between mutualism, commensalism, and parasitism?
-How does biodiversity contribute to the sustainability of an ecosystem?

***Unit Projects*:** Problem-Based Learning
-Challenge Its
-Choice Projects
-Design a food web
-Develop a flow chart
-Research Options

Possible Field Trip

-Tulsa Zoo or Oklahoma Aquarium

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