6th Grade Science Curriculum Overview

Sixth Grade Science is an issue-oriented science course that teaches students to make decisions based on scientific evidence rather than emotion. This course explores six units from Issues and Earth Science; *Exploring the Solar System, The Earth in Space, Weather and Atmosphere, Plate Tectonics, Rocks and Minerals, Natural Hazards, and Earth's Resources and Human Impact*. We also use OpenSciEd and Stanford Earth to investigate *The Human Impact on the Earth.* The Glencoe Earth and Space iScience textbook will be utilized to supplement and support the laboratory experiences, thereby further emphasizing the development of scientific literacy. Access to every activity and reading will be available on Schoology.

Skills to be developed throughout the course:

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

In Gower Middle 6th Grade Science Classrooms:

- Students will 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.
- Students will develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
- Students will analyze and interpret data to determine the scale properties of objects in the solar system.
- 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.
- Students will analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
- Students will learn to develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
- Students will learn to construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
- Students will learn to analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of past plate motions.
- Students will learn to develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
- Students will learn to collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.
- Students will learn to 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 learn to apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
- Students will construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
- Students will ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
- Students will be able to define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- Students will be able to evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- Students will be able to analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- Students will be able to develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Units of Study:

- Exploring the Solar System
- The Earth in Space
- Weather and Atmosphere
- Plate Tectonics and Rock Cycling
- Rocks and Minerals
- Natural Hazards
- Earth's Resources and Human Impact

The Learning Standards for this course are:

- Earth's Place in the Universe
- Earth's Systems
- Earth and Human Activity
- Engineering Design