Physical Science Overview

Big Question #1: How do we explain a phenomenon?
Unit 1: Scientific Method and Process
Topics: Scientific Method, Deductive Reasoning, Critical Thinking, Argument Construction (Claim, Evidence, Reasoning)
Goal: Learn the process of science and how statements or claims can be supported by data collected from experiments. Answering the question will be driven not by prior knowledge but by what can be investigated and supported by data and information.
PROJECT: Black Box Creation

Big Question #2: What forces are involved in playing a sport?
Unit 2: Motion and Forces
Topics: Motion, Acceleration, Forces
Problems for Unit: The Fastest Human (Motion), Rescue Force (Forces)
Goal: Explain motion through graphs and compare objects motions speed and velocities. Understand how forces impact the motion of objects and synthesize how altering motion is dependent on altering forces.

Unit 3: Energy
Topics: Nature of Energy, Conversion of Energy, Thermal Energy, Work and Power
Problems for Unit: Keep it Warm, Keep it Chill (Conservation of Energy, Thermal Energy)
Goal: Understand the transformative nature of energy. Use the principles of conservation to relate between its various forms. Describe Work and Power in ways that connect to the real world.
PROJECT: Action Steps: Students will look at a sport and evaluate multiple movements and components to assess the energy and forces present in the sport.

SEMESTER 2

Big Question #3: Where does light come from?
Units: Chemical and Physical Changes, Atomic Structure, Periodic Table
Topics: Identifying chemical and physical properties, subatomic particles, classification of matter, periodic table organization, periodic trends, electron configurations
Goals: Use understanding of the makeup of matter to support large scale behaviors including physical and chemical properties. Understanding of location and behavior of electrons will support justifications for locations on the periodic table and interactions atoms have with each other.
PROJECT:

Big Question #4: How do we know what comes out of a reaction?
Units: Chemical formulas, Balancing equations, Reactions
Topics: Writing chemical names, formulas and equations, balancing chemical equations, predicting products
Goals: Modeling of chemical reactions through words or equations will allow students to summarize phenomena. Once patterns of reactions are established students will predict outcomes of reactions and apply conservation of mass to ensure particles are accounted for throughout a chemical change.
PROJECT:

Big Question #5: How do chemists communicate their results?
Units: Molar mass, molar conversions, stoichiometry
Topics:Molar mass, The Mole, molar conversions, stoichiometry
Goals: Using math students will support findings of experiments and prove outcomes of reactions. Relationships between reactants and products will be solidified and proportional representation established through balanced equations will lead to understanding of particle interactions.
PROJECT: