
Coal City Unit District #1
Sixth Grade
Science Curriculum

- SC.6:1 Students will demonstrate understanding of how different variables will affect both potential and kinetic energy and design. (NGSS MS-PS3-1; MS-PS3-2)**
- SC.6:1-1 Diagram and describe the relationship between the distance an object is off the ground or the amount an object's shape is changed and its potential energy.
- SC.6:1-2 Define kinetic energy as energy dealing with motion.
- SC.6:1-3 Explain how the mass and speed of an object will affect the amount of kinetic energy.
- SC.6:1-4 Design an experiment to test the kinetic energy of objects with different masses and speeds.
- SC.6:1-5 Generate graphs based on data gathered in experiments.
- SC.6:1-6 Interpret graphical data to determine how kinetic energy is linked to mass and speed.
- SC.6:2 Students will demonstrate understanding of thermal energy and its transfer from one object to another. (NGSS MS-PS3-3; MS-PS3-4)**
- SC.6:2-1 Define temperature as the average kinetic energy of the particles in an object.
- SC.6:2-2 Discuss what causes changes in temperatures and give examples of objects that change temperatures at different rates.
- SC.6:2-3 Prepare a plan to test how differences in both mass and substance will affect the transfer of energy by measuring temperature and predict the outcomes of these tests.
- SC.6:2-4 Define thermal energy and heat.
- SC.6:2-5 Discuss ways to increase and decrease the transfer of thermal energy and appraise the effectiveness of each system qualitatively.

SC.6:3 Students will demonstrate understanding of the relationship between the motion of an object and both the forces and energy entering and exiting the system. (NGSS MS-PS2-1; MS-PS2-2; MS-PS3-5)

- SC.6:3-1 State that for something to be in motion, energy has to be added/used.
- SC.6:3-2 Diagram and identify the location of energy entering and exiting a system.
- SC.6:3-3 State all matter has mass and use tools to measure mass (e.g. balance).
- SC.6:3-4 Define inertia (Newton's 1st Law) and describe how mass affects an object's motion.
- SC.6:3-5 Describe what counts as a force how they cause an object to go in motion.
- SC.6:3-6 Predict the outcomes of collisions between different objects and explain how if a force is applied to an object in a collision, an equal force is applied to the other object.

SC.6:4 Students will demonstrate understanding of factors that affect the strength of magnetic forces. (NGSS MS-PS2-3; MS-PS2-5)

- SC.6:4-1 Explain what causes magnetic forces.
- SC.6:4-2 Identify that opposite forces attract when dealing with electromagnetic fields.
- SC.6:4-3 Design and analyze an experiment to test different objects that exert magnetic fields and discuss ways to make them more effective.

SC.6:5 Students will demonstrate understanding of gravity and how it affects motion of celestial bodies. (NGSS MS-ESS1-2, MS-PS2-4)

- SC.6:5-1 State that gravity is attractive and present between all objects with mass.
- SC.6:5-2 Identify examples where gravity exists in the universe.
- SC.6:5-3 Compare the pull on an object by different objects with differing masses.
- SC.6:5-4 Diagram how gravitational forces hold solar systems and galaxies together.

SC.6:6 Students will demonstrate understanding of celestial bodies. (NGSS MS-ESS1-1; MS-ESS1-3)

- SC.6:6-1 Identify the basic properties of different celestial bodies.
- SC.6:6-2 Identify and explain how tools are used to observe and measure celestial bodies.
- SC.6:6-3 Analyze pictorial data to make size comparisons of celestial bodies.
- SC.6:6-4 Discuss the movement of the sun, Earth and moon in relation to one another.
- SC.6:6-5 Illustrate the how the positions of the Sun, Earth, and Moon form eclipses.
- SC.6:6-6 Predict and illustrate how the tilt of the Earth on its axis causes unequal sunlight and heating (seasons).

SC.6:7 Students will demonstrate understanding of the basics of air masses and their effects on weather. (NGSS MS-ESS2-5; MS-ESS2-6)

- SC.6:7-1 Define basic weather terms: weather, climate, temperature, humidity, pressure, precipitation, and wind.
- SC.6:7-2 Identify and compare the differences between warm and cold air masses and their effect on local weather.
- SC.6:7-3 Identify how low and high pressure regions cause convection currents.
- SC.6:7-4 Identify how the Coriolis Effect contributes to the currents to cause global winds.
- SC.6:7-5 Identify basic cloud types.
- SC.6:7-6 Identify the basic components of a weather map and predict local weather based on weather maps and pictorial evidences.

SC.6:8 Students will demonstrate understanding of the methods of predicting, monitoring, and reducing the impact of weather related catastrophes. (NGSS MS-ESS3-2)

- SC.6:8-1 Give examples of weather related catastrophes.
- SC.6:8-2 Discuss tools used to collect data on weather related catastrophes.
- SC.6:8-3 Identify regions that are mostly affected by specific weather related catastrophes.
- SC.6:8-4 Identify ways to reduce the impact of weather related catastrophes on man-made structures.

SC.6:9 Students will demonstrate understanding of human impact on the environment that may cause global temperature change and possible solutions to minimize said impact. (NGSS MS-ESS3-5)

- SC.6:9-1 Identify ways that humans and natural processes are affecting the environment and therefore weather.
- SC.6:9-2 Describe different ways humans obtain electrical energy.
- SC.6:9-3 Compare and contrast the pros and cons of different electrical energy sources.
- SC.6:9-4 List ways in which humans have impacted the environment focusing on air pollution and devise possible ways to minimize current environmental impacts.

SC.6:10 Students will demonstrate understanding of how the increase in human population has affected natural resources. (NGSS MS-ESS3-4)

- SC.6:10-1 Identify that population increase is happening based on survey data.
- SC.6:10-2 Identify that resource consumption has increased due to population increases.
- SC.6:10-3 Describe the consequences to the environment based on increased human population.
- SC.6:10-4 Argue for or against unchecked resource usage.