



Curriculum – Eighth Grade Science

Capital's science curriculum is aligned with state and national standards. Teachers utilize research-based materials and strategies to provide all students with experiences in the life, earth, and physical sciences while developing critical thinking and problem-solving skills. Students will develop an understanding of important science concepts as they demonstrate process skills such as observing, measuring, predicting, and communicating. The science curriculum engages students in hands-on, inquiry-based, integrated units which serve as a foundation for success in an increasingly-complex scientific and technological world.

This year your child's curriculum will include the following:

Unit One: Delaware Ecosystems

Curricular Materials Utilized: Unit developed by the Delaware Science Coalition in conjunction with the University of Delaware.

Unit Overview: This unit focuses on the horseshoe crab/shorebird connection as a model to help students understand ecosystems. Students first examine how science is different from other disciplines. Students then look at where organisms live in order to establish the interaction of abiotic and biotic factors. Students learn a variety of sampling techniques and explore the effects of limiting factors on populations. Adaptations are investigated as they relate to the interaction of structure and function. Food webs and the flow of energy are a major focus before students cap the unit with a human impact/fisheries management computer activity.

Essential Questions:

- How is matter and energy transferred throughout an ecosystem?
- How does the total amount of matter and energy within an ecosystem change as it is transferred through the system?
- How do changes in the physical or biological conditions of an ecosystem alter the diversity of species in the system?
- How does the number of individuals within an ecosystem change as a result of interrelationships among organisms, availability of resources, natural disasters, habitat changes, and pollution?

Unit Two: Transformation of Energy

Curricular Materials Utilized: Unit developed by the Delaware Science Coalition in conjunction with

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Delaware State University and the University of Delaware.

Unit Overview: This unit is designed to set the stage for the entire 8th grade year. The unit starts out with an in-depth investigation of mechanical energy, progresses to the topic of heat energy, and ends with an investigation into the energy carried by waves. Energy transfers and energy transformations as well as the construction of energy chains are a key focus of the unit.

Essential Questions:

- What is the largest source of energy for the Earth and how does energy transformation drive physical, chemical and biological processes?
- What is the nature of heat energy?
- What are the properties of light and how does it interact with other materials?

Unit Three: Weather

Curricular Materials Utilized: Unit developed by the Delaware Science Coalition in conjunction with Delaware State University and the University of Delaware.

Unit Overview: The major theme throughout the unit is the effect of the Sun's energy on the creation of weather systems. Students collect and analyze local weather data over time to note relationships between current data such as temperature, humidity, barometric pressure, wind speed and direction, and cloud types and the existing weather and predict future weather.

Essential Questions:

- What properties of Earth's atmosphere can be observed and measured?
- What role does the heating of the Earth play in weather phenomena?
- What causes water to change state and be continually recycled?
- How do meteorologists study climatic patterns and predict weather changes?

Unit Four: Planetary Systems

Curricular Materials Utilized: FOSS Planetary Systems Module

Unit Overview: This unit emphasizes the use of knowledge and evidence to construct explanations for the structures and motions of objects in the Solar System. An advanced understanding of the motions of objects in our solar system and their effects on one another is developed as students study models to represent celestial activities.

Essential Questions:

- How is the regular and predictable motion of most objects in the solar system responsible for observed phenomena such as day and night, seasons, and eclipses?
- How do scientists gather information from which they can speculate about conditions on the members of our solar system?

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