Newburyport Public Schools
The Port Where Tradition and Innovation Converge

Newburyport Science Curriculum Framework Guide -Grade 7

Focus Areas

In Grade 7 the focus on student learning in Science is on the following areas:

1. Earth's Systems
2. Earth and Human Activity
3. From Molecules to Organisms: Structures and Processes
4. Ecosystems: Interactions, Energy, and Dynamics
5. Motion and Stability: Forces and Interactions
6. Energy
7. Engineering Design
8. Technological Systems

Guiding Principles for Grade 7 Science

Earth and Space Science

- Explaining how Earth's surface has changed over different scales
- Developing a model of the sun and Earth's gravity in the water cycle
- Using data to explain that Earth's resources are unevenly distributed
- Communicating how past geologic events are used to make predictions
- Constructing an argument about human activities and technologies on the consumption of resources

Life Science

- Developing an argument that body systems interact for life functions
- Explaining how animal behaviors and plant structures lead to reproduction
- Interpreting data about available resources and organism populations
- Describing the relationship between organisms across ecosystems
- Developing a model to describe the transfer energy of matter in an ecosystem
- Analyzing data about disruptions to an ecosystem and population shifts
- Evaluating designs to protect an ecosystem
- Explaining biodiversity and resource availability within an ecosystem

Physical Science

- Analyzing data about the effects of electric charges on the strength of electric forces
- Interpreting data on the relationship of kinetic energy, mass, and speed
- Developing a model of the relative position and energy of objects
- Creating a device to control thermal energy transfer
- Investigating relationships involved in energy transfer
- Providing evidence linking changes in motion to energy transfer
- Modeling energy transfer mechanisms
- Describing the relationship between kinetic and potential energy

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Focus Areas

In Grade 6 the focus on student learning in Science is on the following areas:

1. Earth's Systems
2. Earth's Place in the Universe
3. Matter and Its Interactions
4. Motion and Stability: Forces and Interactions
5. Waves and their Applications in Technologies for Information Transfer
6. Engineering Design
7. Materials, Tools, and Manufacturing

Guiding Principles for Grade 7 Science

Technology/Engineering

- Constructing a prototype
- Explaining a communication system
- Comparing benefits and drawbacks of various communication systems
- Researching transportation systems
- Explaining how components of a structural system work together
- Using systems engineering to model components of technology systems

Science and Engineering Practices:

1. Ask Questions and Define Problems
2. Develop and Use Models
3. Plan and Carry Out Investigations
4. Analyze and Interpret Data 5. Use Mathematical and Computational Thinking
6. Construct Explanations and Design Solutions
7. Engage in Argument from Evidence
8. Obtain, Evaluate, and Communicate Information