



Bedford Public Schools

Grade 3 – Science

As outlined in the 2016 Massachusetts Science and Technology/Engineering Frameworks: “In grade 3, students develop and sharpen their skills at obtaining, recording and charting, and analyzing data in order to study their environment. They use these practices to study the interactions between humans and earth systems, humans and the environment, and humans and the designed world. They learn that these entities not only interact but influence behaviors, reactions, and traits of organisms. Grade 3 students analyze weather patterns and consider humans’ influence and opportunity to impact weather-related events. In life science they study the interactions between and influence of the environment and human traits and characteristics. They use the engineering design process to identify a problem and design solutions that enhance humans’ interactions with their surroundings and to meet their needs. Students consider the interactions and consequent reactions between objects and forces, including forces that are balanced or not. Students reason and provide evidence to support arguments for the influence of humans on nature and nature on human experience.”

Click on the link below to access a copy of the 2016 Massachusetts Elementary and Secondary Science and Technology/Engineering Frameworks.

<http://www.doe.mass.edu/frameworks/scitech/2016-04.pdf>



Learning Expectations

[Life Science](#)

[Physical Science](#)

[Earth Science](#)

[Engineering Design Challenge](#)

Life Science: Animals and Plants (Life Cycles, Adaptations, and Survival)

Enduring Understandings In order to meet the expectations, students will need to understand that...	Essential Questions In order to understand, students will need to consider questions such as...	Knowledge and Skills Learning this material will require students to ...
<ul style="list-style-type: none"> Plants and animals have unique and diverse life cycles. Plants and animals have internal and external structures that support their survival, growth, behavior, and reproduction. Plants and animals have internal and external structures that support their survival, growth, behavior, and reproduction. Plants follow their life cycle from seed to seed. Plants are dependent on pollinators to reproduce. Plants and animals need certain things to live and grow. 	<ul style="list-style-type: none"> How are plants and animals similar? What conditions are essential for plant and animal growth? How do plants and animals use their environment to survive? How are plants and pollinators dependent on one another? How do plants and animals use adaptations to survive in their environment? 	<ul style="list-style-type: none"> Follow a specific planting procedure. Observe, describe, discuss, and record changes over time. Predict future plant growth. Observe and label parts of a lima bean, seeds, or plants. Develop a model to investigate four different growing conditions. Develop an argument: which model provides optimal growing conditions based on data collection through observation and discussion.

Physical Science: Forces, Motion and Magnets

Enduring Understandings In order to meet the expectations, students will need to understand that...	Essential Questions In order to understand, students will need to consider questions such as...	Knowledge and Skills Learning this material will require students to ...
<ul style="list-style-type: none">• Magnets have poles.• Like poles of magnets repel, while opposite poles attract.• Magnets are surrounded by magnetic fields.• Magnetic forces of attraction or repulsion can be intensified by increasing the magnetic fields.• Magnetic fields are not affected by non-magnetic materials.	<ul style="list-style-type: none">• How can we use the properties of magnets to design a transportation system?	<ul style="list-style-type: none">• Identify and define a transportation system.• Identify the parts of a maglev system and explain their function.• Identify and explain properties of magnets.• Identify how properties of magnets can help design a maglev transportation system.• Make predictions about the properties of magnets.

Earth Science: Weather and Climate

Enduring Understandings In order to meet the expectations, students will need to understand that...	Essential Questions In order to understand, students will need to consider questions such as...	Knowledge and Skills Learning this material will require students to ...
<ul style="list-style-type: none"> • Weather changes daily for a variety of reasons. • There is a difference between weather and climate. • The jet stream is a world-wide wind that drags along weather systems. • A natural disaster is the result of a natural hazard. Natural hazards cannot be minimized. However, engineers can design solutions to minimize the effects and impacts of natural hazards. 	<ul style="list-style-type: none"> • What is the difference between weather and climate? • How does weather change over time? • How do weather and climate affect life on earth? • What factors contribute to our daily weather conditions? 	<ul style="list-style-type: none"> • Analyze and graph daily local weather conditions and explain that weather changes over time. • Use graphs and tables of local weather data to describe and predict typical weather during a particular season. • Develop a model of a weather instrument to collect data. • Record patterns of weather across different times and areas and make predictions about what kind of weather might happen in the future. • Create a model of a weather map to communicate current weather conditions.

Engineering Design Challenge

The concepts of engineering are applied throughout our science units. However, the criteria below is more specific to the behaviors of what engineers do.

Enduring Understandings In order to meet the expectations, students will need to understand that...	Essential Questions In order to understand, students will need to consider questions such as...	Knowledge and Skills Learning this material will require students to ...
<ul style="list-style-type: none"> • Technology is anything created to solve a problem or meet a need. • An engineer is someone who uses her/his knowledge of science, math, and creativity to design objects, systems, or processes to solve patterns. • Problems can have multiple engineering solutions. • Nearly everything in the human world has been touched by engineering. • Technology affects the world both positively and negatively. 	<ul style="list-style-type: none"> • What are the technologies and who designs them? • What types of problems do engineers solve? 	<ul style="list-style-type: none"> • Apply the Engineering Design Process. • Apply science and math in engineering. • Employ creativity and careful thinking to solve problems. • Troubleshoot and learn from failure.