



Bedford Public Schools

Grade 2 – Science

In grade 2, students examine rocks and minerals and experiment to discover the various properties of them. Students use their understanding of simple machines to explore force and motion. Second grade students study various insects. They compare the life cycles of living things. Finally, students engage in technology and engineering through the collaborative use of a hands-on kit that seeks to solve a problem through designing a solution.

The Elementary Science Standards – Core Ideas and the Scientific Process

Students in kindergarten through grade five begin to develop an understanding of the four disciplinary core ideas of physical sciences, life sciences, earth and space sciences, and the engineering design process, including its application to real life. Students are guided and taught to think like scientists using inquiry based thinking and questioning, formulating hypotheses, recording observations, making claims using evidence, and forming conclusions. Students are encouraged to communicate their discoveries with peers and learn to represent their thinking in charts, tables, diagrams, graphic organizers, and lists, as is appropriate for their grade level.



Learning Expectations

[Physical Science](#)

[Earth and Space Sciences](#)

[Life Science](#)

[Technology/Engineering](#)

Physical Science: Matter and Its Interactions - Energy Simple Machines

<p>Enduring Understandings In order to meet the standards, the students will need to understand that . . .</p>	<p>Essential Questions In order to understand, students will need to consider questions such as . . .</p>	<p>Knowledge and Skills Learning this material will require students to . . .</p>
<ul style="list-style-type: none"> • Objects can be made to move in different ways. • The motion of an object can be changed by pushing or pulling it. • Simple machines can be used to make pushing or pulling another object easier. • Friction can make machines work better or slow them down. • Simple machines are found in everyday life. 	<ul style="list-style-type: none"> • How do scientists learn new things? • What patterns can we observe in nature that helps us predict how things will react in the future? • How can we influence the way things behave in the natural world? • How do scientists use tools to help them understand our world? • What effect do simple machines have on various populations? 	<ul style="list-style-type: none"> • Describe a simple machine. • Describe the different patterns objects move in. • Explore the impact of friction on the way machines work. • Compare the speed of race cars on different surfaces. • Design and conduct an experiment to show the effects of friction on the relative temperature and speed of objects that rub against each other.

Earth and Space Sciences – Soil and Rocks

Enduring Understandings In order to meet the standards, the 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 . . .
<p style="text-align: center;">Soil</p> <ul style="list-style-type: none"> • Soil provides many of the basic needs of plants. • Some soils are better for plants than others. • Soil can be found to have different properties. • Soil can be classified by its properties. • The different properties of soil will affect its ability to hold water. <p style="text-align: center;">Rock</p> <ul style="list-style-type: none"> • Rocks can show us about changes in our world that happened many years ago. • We can classify Earth’s materials by their properties. • Natural forces can create and break down rocks. • There are three different types of rock. 	<ul style="list-style-type: none"> • How do humans and plants interact in an ecosystem? • How do scientists investigate soil? • How do scientists learn new things? • What patterns can we observe in nature that help us to predict how things will react in the future? • How can we influence the way things behave in the natural world? • How do scientists use tools to help them understand our world? • What interesting information can rocks tell us about the past? 	<ul style="list-style-type: none"> • Describe the connections between soil type and plant growth. • Create a model/drawing of different kinds of soil. • Explain the relationship between animals, plants and conditions in a habitat. • Identify three different types of soil. • Describe and classify different kinds of materials by observable properties of color, strength, flexibility, hardness, texture, and absorbency. • Test different materials and analyze the data obtained to determine which materials have the properties that are best suited for an intended purpose. • Create models that demonstrate how some of Earth’s materials are formed. • Explain the ways in which scientists classify objects. • Recognize that rocks are non living things. • Compare the relationship between models and the natural world. • Describe how metamorphic rocks are formed.

Life Science: Insects and Ecosystems - Interactions, Energy, and Dynamics

<p>Enduring Understandings In order to meet the standards, the students will need to understand that . . .</p>	<p>Essential Questions In order to understand, students will need to consider questions such as . . .</p>	<p>Knowledge and Skills Learning this material will require students to . . .</p>
<ul style="list-style-type: none"> • Insects have unique characteristics. • Insects interact with and affect other organisms in the environment. • A habitat provides basic needs for organisms. 	<ul style="list-style-type: none"> • What effect do animals have on their environment? • How do scientists use tools to help them understand our world? • How do scientists learn new things? • What patterns can we observe in nature that helps us predict how things will react in the future? • How can we influence the way things behave in the natural world? 	<ul style="list-style-type: none"> • Describe the different classifications of insects. • Compare and explain the ways animals interact with their environments through their senses. • Develop and use models to compare how plants and animals depend on their surroundings and other living things to meet their needs in the places they live.

Technology/Engineering: Hand Pollinators

<p>Enduring Understandings In order to meet the standards, the students will need to understand that . . .</p>	<p>Essential Questions In order to understand, students will need to consider questions such as . . .</p>	<p>Knowledge and Skills Learning this material will require students to . . .</p>
<ul style="list-style-type: none"> • Engineering is a scientific study that combines science, math and problem-solving skills. • The engineering design process is an agreed upon process for designing, building, testing and improving solutions to problems. • Engineers use technology to assist them in designing solutions to problems. • Different materials have different properties. • Pollination is part of a natural plant reproductive system in which insects participate. • If the process of pollination is disturbed in any way, plant reproduction may be hindered. • Engineers can use technology to design and build an effective pollinator for a plant if the process of natural pollination has been disturbed. 	<ul style="list-style-type: none"> • What is an engineer? • What is technology? • How can following the engineering design process assist engineers in solving problems? • How can a person combine his/her knowledge of insects and the pollination system of plants with the engineering design process to help solve a problem where the natural system of pollination has been altered? 	<ul style="list-style-type: none"> • Define what an engineer is and does. • Identify steps of the engineering design process. • Identify problems and engineering solutions associated with their grade level’s challenge. • Conduct a controlled experiment and compare experimental results and observations. • Predict experimental results. • Analyze results of controlled experiments to inform decisions about solutions to problems. • Work in a team to design, build, test, and improve solutions to a problem. • Analyze their models for strengths and weaknesses based on observations made during testing. • Analyze data from tests of two objects designed to solve the same design problem to compare the strengths and weaknesses of how each object performs. • Imagine ways to improve their designs and implement some of their improvement ideas. • Brainstorm ideas for designing hand pollinators. • Make detailed plans for hand pollinators, including labeled diagrams and materials lists. • Create hand pollinators from their plans and test their designs using model flowers.