

Acton-Boxborough Regional School District
Grade 4 Science and Technology/Engineering Overview

Through interrelated cross-disciplinary investigations in Earth Science and Physical Science, fourth graders explore phenomena in the world around them and do what scientists and engineers do. They ask questions and define problems, analyze and interpret data, obtain and communicate information, construct arguments, provide evidence, and design solutions. These are the Science and Engineering Practices in action, and they are skills that are critical, not to science alone, but across the curriculum disciplines.

Earth's Changing Landscape

- Part 1: Climate and Natural Resources - in conjunction with Social Studies regions study
- Part 2: Earth Materials (TERC Inquiry Project)
- Part 3: Changes and Interactions of Earth Materials

Essential Questions:

How do scientists study earth's materials?

Which properties of earth materials change, which stay the same?

How do natural processes affect life on earth?

Energy, Waves and Information Transfer

- Part 1: What Can We Observe about Energy? (National Energy Education Development Project)
- Part 2: Focus on Energy (TERC)
- Part 3: Waves, Energy, and Information (Amplify Science)
- Part 4: Information Transfer: Light and Eyes

Essential Questions:

Why do things happen?

Where does the energy come from?

Where does the energy go?

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Investigation Title	Rationale	MA STE Standards Addressed
Earth's Changing Landscape <ol style="list-style-type: none"> 1. Climate and Natural Resources 2. Earth Materials 3. Changes and Interactions of Earth Materials 	<p>The Earth Science and Physical Science core ideas of these three investigations form the base for future understanding of basic chemistry, physics, geology, and climate science. These core ideas are introduced in grades K, 2, and 3 and further developed each year in grades 5-12. By creating a scientific community in the classroom, these investigations also focus on developing students' experience with the Science Practices. The Science Practices, especially that of arguing from evidence, are developed and refined each year, K-12.</p>	<p>4-ESS1-1 4-ESS2-1 4-ESS2-2 4-ESS3-1 4-ESS3-2 3-ESS2-2 3-LS4-1 3-LS4-4 5-PS1-3 (builds towards)</p>
Energy, Waves, and Information Transfer <ol style="list-style-type: none"> 1. What Can We Observe about Energy? 2. Focus on Energy 3. Waves, Energy, and Information 4. Information Transfer: Light and Eyes 	<p>This investigation focuses on the Physical Science core idea of Energy, pulling together and building upon students' introductory experiences with energy in each of the primary grades. The components of this investigation aim to give students the experiences and vocabulary to be able to begin to explain how and why phenomena happen in the physical world around them. This core idea is further developed each year in grades 5-12.</p>	<p>4-PS3-2 4-PS3-3 4-PS3-4 4-PS4-1 4-PS4-2 4-PS4-3 4-ESS3-1 4.3-5-ETS1-3 4.3-5-ETS1-5(MA)</p>