

Reading Public Schools

Instilling a joy of learning and inspiring the innovative leaders of tomorrow



Science Curriculum Guide

Grade 1

Theme: Describing Patterns

In First Grade, student scientists...

- describe patterns of motion between the Sun, Moon, and stars in relation to the Earth.
- identify seasonal patterns from sunrise/sunset data.
- examine seasonal data on temperature and rainfall to describe patterns over time.
- investigate sound and light through various materials.
- compare different ways animal and plants use their body parts and senses to grow and survive.
- consider differences and similarities of plants and animals that identify them as belonging to a group.
- understand the power of patterns to predict future events in the natural and designed world.

MA Department of Education STE Curriculum Frameworks, 2016

First Grade Content Standards

Earth and Space Science

- Earth's Place in the Universe

Life Science

- From Molecules to Organisms: Structures and Processes
- Heredity: Inheritance and Variation of Traits

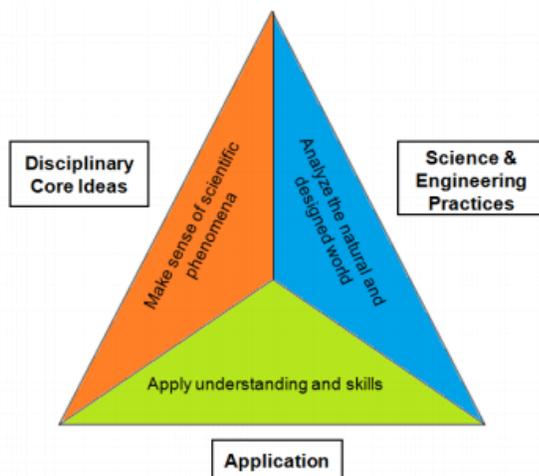
Physical Science

- Waves and Their Applications in Technologies for Information Transfer

Technology/Engineering

- Engineering Design

Components of STE Standards



The STE standards are designed to include three interrelated components: conceptual understanding of disciplinary core ideas, science and engineering practices, and application to the natural and designed world.

MA Department of Education STE Curriculum Frameworks, 2016

Science and Engineering Practices

The practice standards describe behaviors that scientists engage in as they investigate, build models, and construct theories about the natural world. They are a set of practices that engineers use as they design and build models and systems to solve problems. They are the skills that provide the foundation for scientific and technical reasoning.

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



Core Ideas	Essential Questions	Resources/ Instructional Tools
<p>Earth & Space Science: Earth's Place in the Universe</p>	<ul style="list-style-type: none"> • How do the sun, moon, and stars move? What does this movement tell us? • How does data (about sunrise/sunset, temperature, weather patterns) help us form understandings about seasonal patterns? 	<p>Calendar Routines <i>What Makes Day and Night?</i> read aloud <i>Sunshine Makes the Seasons</i> read aloud Patterns in the Sky Unit Changing Seasons Unit</p> <p><i>Know Atom lesson: Earth & Moon Patterns</i></p>
<p>Life Science: From Molecules to Organisms: Structures and Processes</p>	<ul style="list-style-type: none"> • How are animal body parts and senses used? • What do plant body parts do for the plant? • How do behaviors of animal parents impact their offspring? 	<p><i>What's Alive?</i> read aloud <i>How a Seed Grows</i> read aloud <i>Insects</i> read aloud <i>Ant Cities</i> read aloud <i>Beavers</i> read aloud Seeds and Leaves Unit Animals on Earth Unit Mimicking Plants and Animals Unit Animal Behaviors Unit</p> <p><i>Know Atom lesson: Engineering Dams</i></p>
<p>Life Science: Heredity: Inheritance and Variation of Traits</p>	<ul style="list-style-type: none"> • What are similarities and differences between plants and/or animals of the same kind? 	<p><i>What's Alive</i> read aloud <i>Beavers</i> read aloud Seeds and Leaves Unit Animal Behaviors Unit</p>
<p>Physical Science: Waves and Their Applications in Technologies for Information Transfer</p>	<ul style="list-style-type: none"> • How are vibrations and sound related? • How do different materials interact with light? • How can light or sound send a signal over a distance? 	<p><i>All About Sound</i> read aloud <i>Vibrations Make Sound</i> read aloud <i>Day Light Night Light</i> read aloud <i>Sending Messages with Light and Sound</i> read aloud Hearing and Sound Unit Sight and Light Unit Communication over Distances Unit</p> <p><i>Know Atom lesson: Materials and Light</i></p>
<p>Technology/Engineering Engineering Design</p>	<ul style="list-style-type: none"> • How can you get information about a situation people want to change? How does this help you develop a solution? • What are multiple solutions to a problem? How can you represent them? 	<p><i>Engineers Solve Problems</i> read aloud <i>Beavers</i> read aloud Mimicking Plants and Animals Unit Animal Behaviors Unit</p> <p><i>Know Atom lesson: Engineering Dams</i></p>

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Curriculum Guide Overview

Curriculum Guide	Curriculum guides are public documents that are aligned with the Massachusetts Department of Education Curriculum Frameworks. They focus on the set of standards that students will learn within certain disciplines at appropriate grade levels. Curriculum Guides are intended for teachers, parents, and the wider school community as an overview document of the course of study for the year.
Curriculum Map	Curriculum maps are internal documents utilized as planning tools for teachers. Curriculum maps keep a focus on the end-of-year standards and chart a course for the teaching and learning over the year. They are typically organized in a grade-level overview organized by month or marking period. Curriculum maps typically include; standards and expectations for the grade/content, essential skills/concepts, methods of assessment, and major content resources. Maps are never “done” as ongoing work of educators include revisions, additions, and revisits to the maps. They provide an overview for the year while also allowing educators to see a vertical picture of how the content develops as students progress through each grade.
Theme	Each grade is focused on a grade-level theme that links the standards and all four Science, Technology, and Engineering disciplines together. The standards used as the foundation of our curriculum come directly from the Massachusetts Department of Education Curriculum Frameworks. State standards may be viewed here: http://www.doe.mass.edu/frameworks/
Content Standards	Content Standards describe what students should know and be able to do within each grade-level.
Science & Engineering Practices	While presented as distinct skill sets, the eight practices intentionally overlap and interconnect. These skills should be reflected in curricula and instruction that engage students in an integrated use of the practices.
Core Ideas	Core ideas are the “big ideas” within each discipline under which the specific standards are organized.
Essential Questions	Essential questions are questions that are not answerable with an easy answer or a simple instruction. The purpose of essential questions is to provide opportunities for inquiry into the learning and act as an umbrella to anchor the unit/lesson.
Resources/ Instructional Tools	Resources identified in Curriculum Guides are not intended to be exhaustive, nor are they intended to be prescriptive. The resources identified may function as a menu of curriculum resources from which educators identify the most appropriate tools to utilized in their classrooms. More specifics about identified resources are identified within the curriculum map documents.