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Science Curriculum Guide **Kindergarten**

Theme: Reasons for Change

In Kindergarten, student scientists…

- build on early experiences and observations about the world around them.
- use observations to identify why changes occur and as evidence to support a claim.
- learn that animals and plants need food, water, and air, but that plants, unlike animals, make their own food.
- build quantitative knowledge about temperature, weather, and their impacts on various materials.
- observe that sunlight shining on a surface creates a temperature change and design a structure to reduce the warming impacts.
- investigate motions of objects by changing the strength and direction of pushes and pulls.

MA Department of Education STE Curriculum Frameworks, 2016

Kindergarten Content Standards

Earth and Space Science

- Earth's Systems
- Earth and Human Activity

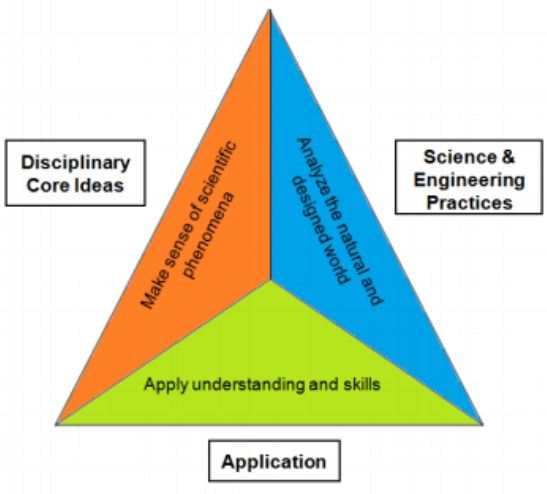
Life Science

- From Molecules to Organisms: Structures and Processes

Physical Science

- Matter and Its Interactions
- Motion and Stability: Forces and Interactions
- Energy

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
Earth & Space Science: Earth's Systems	• What patterns exist in our local weather? How can you describe these patterns with numbers? • What examples do you have that plants and animals can change the environment? What evidence do you have?	Calendar Routines *Feel The Wind* read aloud *The Water Cycle* read aloud *Oh Say Can You Say, What's The Weather Today?* read aloud *Four Seasons Make A Year* read aloud *Know Atom lesson: Weather in Our World*
Earth & Space Science: Earth and Human Activity	• How do people predict the weather? • How can weather forecasting help people prepare and respond to local weather? • What solutions could help a person reduce the natural resources he/she uses?	*Weather Forecasting* read aloud *Tornado Alert* read aloud *Houses and Homes* read aloud *Recycle* read aloud *The 3 R's* read aloud *Know Atom lesson: Weather in Our World*
Life Science: From Molecules to Organisms: Structures and Processes	• What do all animals and plants need to survive? • How do plants get food? • How do animals get food? • What happens to plants and animals over time?	*What's Alive* read aloud *Oh Say Can You Seed* read aloud *Houses and Homes* read aloud *Know Atom lesson: Living Things Change*
Physical Science: Matter and Its Interactions	• How do temperatures impact materials? • What is the difference between solid and liquid?	*Video: "Matter Chatter; 3 States of Matter Song"* *Know Atom lesson: Weather in Our World*
Physical Science: Motion and Stability: Forces and Interactions	• What are forces? • How do strength and direction impact forces? • How do pushes and pulls impact the motion of an object?	*Pushes and Pulls* read aloud *What Is Friction* read aloud *Roll, Slope, & Slide* read aloud Forces & Motion Unit *Know Atom lesson: Making Things Move*
Physical Science: Energy	• How do materials on Earth's surface get warm? • How does sunlight impact Earth's materials? • How can structures reduce the impact of sunlight on an area?	*The Sun, Our Nearest Star* read aloud Sun & Shade Unit Sunlight & Engineering Unit *Know Atom lesson: Weather in Our World*

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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.