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Science Curriculum Guide — Grade 3

Theme: Human Interactions

In Third Grade, student scientists…

- obtain, record, and analyze data in order to study their environment.
- study interactions between humans and Earth systems, humans and the environment, and humans and the designed world. Students will learn that these relationships influence behaviors, reactions, and traits of organisms.
- analyze weather patterns and consider relationship of human influence and weather related events.
- study the interactions between the environment and human traits/characteristics.
- use the engineering design process to identify a problem and design solutions that enhance human's interactions with their surroundings and meet their needs.
- consider reactions between objects and forces.
- reason and provide evidence to support arguments about the influence of humans on nature and nature on the human experience.

MA Department of Education STE Curriculum Frameworks, 2016

Third Grade Content Standards

Earth and Space Science

- Earth's Systems
- Earth and Human Activity

Physical Science

- Motion and Stability: Forces and Interactions

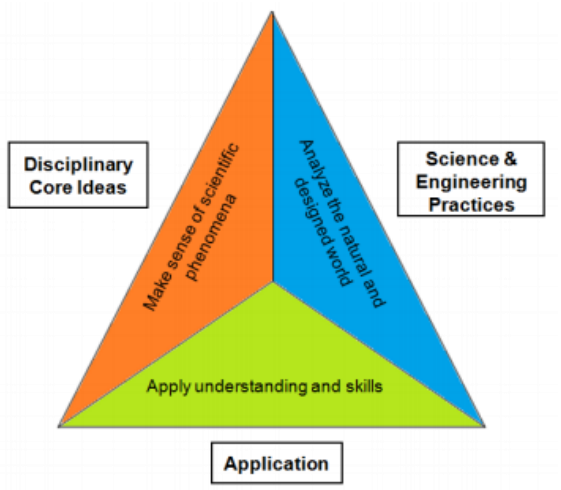
Life Science

- From Molecules to Organisms: Structures and Processes
- Heredity: Inheritance and Variations of Traits
- Biological Evolution: Unity and Diversity

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
Earth & Space Science: Earth's Systems	• How does data about weather help you make predictions? • How does the climate in different regions of the world impact weather patterns?	Know Atom Unit(s): • Earth in Motion • Weather and Water
Earth & Space Science: Earth and Human Activity	• With what quality do design solutions reduce damage caused by weather?	Know Atom Unit(s): • Weather and Water
Life Science: From Molecules to Organisms: Structures and Processes	• What do all organisms have in common? • What are ways that various organisms have unique and diverse life cycles?	Know Atom Unit(s): • Life on Earth • Life Cycles and Traits
Life Science: Heredity: Inheritance and Variations of Traits	• What can an analysis of data tell you about parental traits of animals and plants? • What is the difference between inherited characteristics and those that are results from environmental interactions?	Know Atom Unit(s): • Life Cycles and Traits
Life Science: Biological Evolution: Unity and Diversity	• How do fossils compare to current living organisms? What happened to those organisms? • How do variations in characteristics provide advantages of survival and reproduction? • How does living in a particular environment impact an animal's ability to survive well, survive less well, or not survive at all? • How do changes in a habitat impact an organism's ability to survive and reproduce? • What is the relationship between population and reproduction?	Know Atom Unit(s): • Life on Earth • Life Cycles and Traits
Physical Science: Motion and Stability: Forces and Interactions	• How do forces (like friction) effect objects? • What is the nature of the force between two magnets? • How can the force of magnets help solve problems?	Know Atom Unit(s): • Earth in Motion • Energy in Motion • Forces in Our Environment • Magnetism and Electricity
Technology/Engineering Engineering Design	• How can you design a problem based on a need or want? • How can you decide the strengths and weaknesses of solutions to a problem?	Know Atom Unit(s): • Weather and Water • Forces in Our Environment • Magnetism and Electricity • Patterns in Sound • Patterns in Light

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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.