

CDSM Grade Kindergarten Overview

Narrative: Reasons for Change

In kindergarten, students build on early experiences observing the world around them as they continue to make observations that are more quantitative in nature and help them identify why some changes occur. Students begin to learn to use these observations as evidence to support a claim through growing language skills. They learn that all animals and plants need food, water, and air to grow and thrive and that the fundamental difference between plants and animals is a plant's ability to make its own food. Students build their quantitative knowledge of temperature in relationship to the weather and its effect on different kinds of materials. They observe that the amount of sunlight shining on a surface causes a temperature change and they design a structure to reduce the warming effects of sunlight. They investigate motions of objects by changing the strength and direction of pushes and pulls. They provide examples of plants and animals that can change their environment through their interactions with it. In kindergarten science, students begin to identify reasons for changes in some common phenomena.

The following is a suggested sequence of units. Teachers might decide to use a different sequence, while showing connections between the units. The suggested sequence of units begins with building a routine for observing the weather and changes in the season. Students will observe these changes throughout the year. Sun's Energy allows students to physically observe change in a concrete way that meets the developmental needs of the students at this age. Students then continue with developing a routine for understanding their role in taking care of the world, providing ways for classrooms to develop routines for recycling and conservation to develop long term habits. Pushes and pulls allows students again to concretely observe in the physical world change. In the spring, as the season changes, students learn about the life cycle and changes in animals and plants. Again, as their community changes, students can engage appropriately in observing the changes in their community.

*Units 1, 3, 5 and 6 have set lessons however they are also expected to be on-going throughout the year. For example, in Unit 6 we learn about the life cycle of pumpkins, and apples in the fall, but in the spring we learn about other plants and flowers.

Unit name	Pacing <i>Number of weeks proposed</i>	Instructional Block <i>Number of lessons</i>	Standards and Scientific Practices
1. Weather Forecasting	4 weeks ongoing	16 lessons No CEPA	K-ESS2-1 K-ESS3-2 K-PS1-1(MA) 1.Asking questions (for science) and defining problems (for engineering) 3.Planning and carrying out investigations 4.Analyzing and interpreting data 7.Engaging in argument from evidence 8.Obtaining, evaluating, and communicating information
2. Sun's Energy	3 weeks	10 lessons CEPA 2 lessons	K-PS3-1 K-PS3-2 3.Planning and carrying out investigations 6.Constructing explanations (for science) and designing solutions (for engineering)
3. Taking Care of Our World	2 weeks ongoing	8 lessons No CEPA	K-ESS3-3 1.Asking questions (for science) and defining problems (for engineering) 8.Obtaining, evaluating, and communicating information
4. Push and Pull	6 weeks	19 lessons No CEPA	K-PS2-1 3.Planning and carrying out investigations
5. Animal Needs and Growth	5 weeks ongoing	18 lessons No CEPA	K-LS1-1 K-LS1-2(MA) K-ESS2-2 1.Asking questions (for science) and defining problems (for engineering) 3.Planning and carrying out investigations 4.Analyzing and interpreting data



			7.Engaging in argument from evidence 8.Obtaining, evaluating, and communicating information
6. Plant Needs and Growth	3 weeks ongoing	10 lessons No CEPA	K-LS1-1 K-LS1-2(MA) K-ESS2-2 1.Asking questions (for science) and defining problems (for engineering) 3.Planning and carrying out investigations 4.Analyzing and interpreting data 7.Engaging in argument from evidence 8.Obtaining, evaluating, and communicating information
	Total: 25 weeks		

“The amount of time individual students need to achieve STE standards will vary. The chart below provides the time assumed to be provided for STE instruction by grade span to inform the standards development:

Grade Span	Assumed Minutes per Day (Hours per week)
K–2	25 minutes/day (~2 hours/week)
3–5	35 minutes/day (~3 hours/week)
6–8	55 minutes/day (~4.5 hours/week)
9–12	65 minutes/day (~5.5 hours/week)

Schools may take more or less time, depending on local factors that determine curriculum programming within a specific context. STE instruction may be a dedicated time in the school schedule or may be integrated with instruction of other subjects. The goal is for all students to have regular STE instruction every year.” - 2016 *Massachusetts Science and Technology/Engineering Curriculum Frameworks, p.14*

