

Old Sturbridge Village and the Massachusetts Science and Technology/Engineering Curriculum Framework



Old Sturbridge Village provides enrichment of curriculum standards that complement classroom instruction not only for History and Social Sciences, but also for Science. Through demonstrations ranging from agricultural to food preservation and observations of the local environment, students engage their knowledge of Chemistry, Physical Science and Life Science. Students at all levels can access and enjoy the benefits of a fieldtrip at Old Sturbridge Village through hands on interaction, primary sources, and group discussion and reflection.

Curriculum Framework: <http://www.doe.mass.edu/frameworks/scitech/2016-04.pdf>

Pre-Kindergarten: The World Around Me

PreK-ESS2-5(MA). Describe how local weather changes from day to day and over the seasons and recognize patterns in those changes.

PreK-ESS2-6(MA). Provide examples of the impact of weather on living things.

PreK-ESS3-1(MA). Engage in discussion and raise questions using examples about local resources (including soil and water) humans use to meet their needs.

PreK-ESS3-2(MA). Observe and discuss the impact of people's activities on the local environment.

PreK-PS1-2(MA). Investigate natural and human-made objects to describe, compare, sort, and classify objects based on observable physical characteristics, uses, and whether something is manufactured or occurs in nature.

Kindergarten: Reasons for Change

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment.

K-LS1-1. Observe and communicate that animals (including humans) and plants need food, water, and air to survive. Animals get food from plants or other animals. Plants make their own food and need light to live and grow.

K-PS2-1. Compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

Grade 1: Describing Patterns

1-LS1-1. Use evidence to explain that (a) different animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air, and (b) plants have roots, stems, leaves, flowers, and fruits that are used to take in water, air, and other nutrients, and produce food for the plant.

1-LS1-2. Obtain information to compare ways in which the behavior of different animal parents and their offspring help the offspring to survive.

1.K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change that can be solved by developing or improving an object or tool.

Grade 2: Wholes and Parts

2-ESS2-2. Map the shapes and types of landforms and bodies of water in an area.

2-LS2-3(MA). Develop and use models to compare how plants and animals depend on their surroundings and other living things to meet their needs in the places they live.

Grade 3: Human Interactions

3-ESS2-1. Use graphs and tables of local weather data to describe and predict typical weather during a particular season in an area.

3-ESS2-2. Obtain and summarize information about the climate of different regions of the world to illustrate that typical weather conditions over a year vary by region.

3-LS4-3. Construct an argument with evidence that in a particular environment some organisms can survive well, some survive less well, and some cannot survive.

3-PS2-1. Provide evidence to explain the effect of multiple forces, including friction, on an object.

Grade 4: Matter and Energy

4-ESS3-1. Obtain information to describe that energy and fuels humans use are derived from natural resources and that some energy and fuel sources are renewable and some are not. (Clarification Statements: Examples of renewable energy resources could include wind energy, water behind dams, tides, and sunlight)

Grade 5: Connections and Relationships in Systems

5-ESS3-1. Obtain and combine information about ways communities reduce human impact on the Earth's resources and environment by changing an agricultural, industrial, or community practice or process.

5-PS1-2. Measure and graph the weights (masses) of substances before and after a reaction or phase change to provide evidence that regardless of the type of change that occurs when heating, cooling, or combining substances, the total weight (mass) of matter is conserved.

5-PS1-3. Make observations and measurements of substances to describe characteristic properties of each, including color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility.

5-PS1-4. Conduct an experiment to determine whether the mixing of two or more substances results in new substances with new properties (a chemical reaction) or not (a mixture).

5.3-5-ETS3-1(MA). Use informational text to provide examples of improvements to existing technologies (innovations) and the development of new technologies (inventions). Recognize that technology is any modification of the natural or designed world done to fulfill human needs or wants.

Grade 6: Structure and Function

6.MS-PS1-8(MA). Conduct an experiment to show that many materials are mixtures of pure substances that can be separated by physical means into their component pure substances.

6.MS-ETS2-1(MA). Analyze and compare properties of metals, plastics, wood, and ceramics, including flexibility, ductility, hardness, thermal conductivity, electrical conductivity, and melting point.

6.MS-ETS2-3(MA). Choose and safely use appropriate measuring tools, hand tools, fasteners, and common hand-held power tools used to construct a prototype.

Grade 7: Systems and Cycles

7.MS-LS2-4. Analyze data to provide evidence that disruptions (natural or human-made) to any physical or biological component of an ecosystem can lead to shifts in all its populations.

7.MS-ETS3-3(MA). Research and communicate information about how transportation systems are designed to move people and goods using a variety of vehicles and devices.

7.MS-ETS3-4(MA). Show how the components of a structural system work together to serve a structural function. Provide examples of physical structures and relate their design to their intended use. (Clarification Statements: Examples of components of a structural system could include foundation, decking, wall, and roofing.)

Grade 8: Cause and Effect

8.MS-LS1-7. Use informational text to describe that food molecules, including carbohydrates, proteins, and fats, are broken down and rearranged through chemical reactions forming new molecules that support cell growth and/or release of energy.

8.MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

8.MS-ETS2-4(MA). Use informational text to illustrate that materials maintain their composition under various kinds of physical processing; however, some material properties may change if a process changes the particulate structure of a material. (Clarification Statements: Examples of physical processing can include cutting, forming, extruding, and sanding)

8.MS-ETS2-5(MA). Present information that illustrates how a product can be created using basic processes in manufacturing systems, including forming, separating, conditioning, assembling, finishing, quality control, and safety. Compare the advantages and disadvantages of human vs. computer control of these processes.