A Correlation of

Elevate Science

Grade 6, ©2019

To the

Next Generation Science Standards

DCI (Disciplinary Core Idea) Arrangement

Pearson

A Correlation of Elevate Science, Grade 6, ©2019
To the
Next Generation Science Standards, DCI Arrangement

Introduction

This document demonstrates how ***Elevate Science ©2019*** meets the Next Generation Science Standards, grades 6-8. Correlation page references are to the Student and Teacher's Editions and cited at the page level.

Pearson is proud to introduce ***Elevate Science*** Middle Grades – where exploration is the heart of science! Designed to address the rigors of new science standards, students will experience science up close and personal, using real-world, relevant phenomena to solve project-based problems. Our newest program prepares students for the challenges of tomorrow, building strong reasoning skills and critical thinking strategies as they engage in explorations, formulate claims, and gather and analyze data that promote evidence-based arguments. The blended print and digital curriculum covers all Next Generation Science Standards at every grade level.

Elevate Science helps teachers transform learning, promote innovation, and manage their classroom.

Transform science classrooms by immersing students in active, three-dimensional learning.
Elevate Science engages students with real-world tasks, open-ended Quests, uDemonstrate performance-based labs, and in the engineering/design process with uEngineer It! investigations.

- A new 3-D learning model enhances best practices.
- Engineering-focused features infuse STEM learning.
- Phenomena-based activities put students at the heart of a Quest for knowledge.

Innovate learning by focusing on 21st century skills.
Students are encouraged to think, collaborate, and innovate! With ***Elevate Science***, students explore STEM careers, experience engineering activities, and discover our scientific and technological world. The content, strategies, and resources of Elevate Science equip the science classroom for scientific inquiry and science and engineering practices.

- Problem-based learning Quests put students on a journey of discovery.
- STEM connections help integrate curriculum.
- Coding and innovation engage students and build 21st century skills.

Manage the classroom with confidence.
Teachers will lead their class in asking questions and engaging in argumentation. Evidence-based assessments provide new options for monitoring student understanding.

- Professional development offers practical point-of-use support.
- Embedded standards in the program allow for easy integration.
- ELL and differentiated instruction strategies help instructors reach every learner.
- Interdisciplinary connections relate science to other subjects.

Designed for today's classroom, preparing students for tomorrow's world. ***Elevate Science*** promises to:

- Elevate thinking.
- Elevate learning.
- Elevate teaching.

A Correlation of Elevate Science, Grade 6, ©2019
To the
Next Generation Science Standards, DCI Arrangement

Table of Contents

Next Generation Science Standards	Elevate Science ©2019
MS-PS1 Matter and Its Interactions	
Performance Expectation MS-PS1-1.	
Develop models to describe the atomic composition of simple molecules and extended structures.	**SE/TE:** xviii–xix, 4–12, 34–35, 36–37
DISCIPLINARY CORE IDEA	
PS1.A: Structure and Properties of Matter • Substances are made from different types of atoms, which combine with one another in various ways. Atoms form molecules that range in size from two to thousands of atoms. • Solids may be formed from molecules, or they may be extended structures with repeating subunits (e.g., crystals).	**SE/TE:** 4–12
SCIENCE AND ENGINEERING PRACTICE	
Developing and Using Models Develop and/or use a model to predict and/or describe phenomena.	**SE/TE:** 4–12
CROSSCUTTING CONCEPT	
Scale, Proportion, and Quantity Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.	**SE/TE:** 4–12

Next Generation Science Standards	**Elevate Science ©2019**
Performance Expectation 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.	**SE/TE:** xviii–xix, 2–3, 13, 14–21, 22–23, 24–32, 33, 34–35, 38–41
DISCIPLINARY CORE IDEA	
PS1.A: Structure and Properties of Matter Each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it. **PS1.B: Chemical Reactions** Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants.	**SE/TE:** 14–21, 24–32
SCIENCE AND ENGINEERING PRACTICE	
Analyzing and Interpreting Data Analyze and interpret data to determine similarities and differences in findings. **Connections to Nature of Science** Science knowledge is based upon logical and conceptual connections between evidence and explanations.	**SE/TE:** 14–21, 24–32
CROSSCUTTING CONCEPT	
Patterns Macroscopic patterns are related to the nature of microscopic and atomic-level structure.	**SE/TE:** 14–21, 24–32

A Correlation of Elevate Science, Grade 6, ©2019
To the
Next Generation Science Standards, DCI Arrangement

Next Generation Science Standards	Elevate Science ©2019
Performance Expectation MS-PS1-4.	
Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	**SE/TE:** 42–43, 44–45, 46–54, 55, 56–64, 65, 66–75, 76–77, 78–79, 80–81, 82–85, 218–219, 222–229, 268–271
DISCIPLINARY CORE IDEA	
PS1.A: Structure and Properties of Matter • Gases and liquids are made of molecules or inert atoms that are moving about relative to each other. • In a liquid, the molecules are constantly in contact with others; in a gas, they are widely spaced except when they happen to collide. In a solid, atoms are closely spaced and may vibrate in position but do not change relative locations. • The changes of state that occur with variations in temperature or pressure can be described and predicted using these models of matter. **PS3.A: Definitions of Energy** • The term "heat" as used in everyday language refers both to thermal energy (the motion of atoms or molecules within a substance) and the transfer of that thermal energy from one object to another. In science, heat is used only for this second meaning; it refers to the energy transferred due to the temperature difference between two objects. (secondary to MSPS1- 4) • The temperature of a system is proportional to the average internal kinetic energy and potential energy per atom or molecule (whichever is the appropriate building block for the system's material). The details of that relationship depend on the type of atom or molecule and the interactions among the atoms in the material. Temperature is not a direct measure of a system's total thermal energy. The total thermal energy (sometimes called the total internal energy) of a system depends jointly on the temperature, the total number of atoms in the system, and the state of the material. (secondary to MS-PS1-4)	**SE/TE:** 46–54, 56–64, 222–229

Next Generation Science Standards	Elevate Science ©2019
SCIENCE AND ENGINEERING PRACTICE	
Developing and Using Models Develop and/or use a model to predict and/or describe phenomena.	**SE/TE:** 46–54, 56–64, 222–229
CROSSCUTTING CONCEPT	
Cause and Effect Cause and effect relationships may be used to predict phenomena in natural or designed systems.	**SE/TE:** 46–54, 56–64, 222–229
MS-PS3 Energy	
Performance Expectation MS-PS3-1.	
Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	**SE/TE:** 86–87, 100–106, 128–129
DISCIPLINARY CORE IDEA	
PS3.A: Definitions of Energy Motion energy is properly called kinetic energy; it is proportional to the mass of the moving object and grows with the square of its speed.	**SE/TE:** 90–99, 100–106
SCIENCE AND ENGINEERING PRACTICE	
Analyzing and Interpreting Data Construct and interpret graphical displays of data to identify linear and nonlinear relationships.	**SE/TE:** 100–106
CROSSCUTTING CONCEPT	
Scale, Proportion, and Quantity Proportional relationships (e.g. speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes.	**SE/TE:** 100–106

A Correlation of Elevate Science, Grade 6, ©2019
To the
Next Generation Science Standards, DCI Arrangement

Next Generation Science Standards	**Elevate Science ©2019**
Performance Expectation MS-PS3-2.	
Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	**SE/TE:** 86–87, 88–89, 100–106, 107, 117, 128–129, 130–135
DISCIPLINARY CORE IDEA	
PS3.A: Definitions of Energy A system of objects may also contain stored (potential) energy, depending on their relative positions. **PS3.C: Relationship Between Energy and Forces** When two objects interact, each one exerts a force on the other that can cause energy to be transferred to or from the object.	**SE/TE:** 86–87, 88–89, 100–106, 107, 117, 128–129, 130–135
DISCIPLINARY CORE IDEA	
PS3.A: Definitions of Energy A system of objects may also contain stored (potential) energy, depending on their relative positions. **PS3.C: Relationship Between Energy and Forces** When two objects interact, each one exerts a force on the other that can cause energy to be transferred to or from the object.	**SE/TE:** 90–99, 100–106
SCIENCE AND ENGINEERING PRACTICE	
Developing and Using Models Develop a model to describe unobservable mechanisms.	**SE/TE:** 100–106
CROSSCUTTING CONCEPT	
Systems and System Models Models can be used to represent systems and their interactions—such as inputs, processes and outputs—and energy and matter flows within systems.	**SE/TE:** 100–106

Next Generation Science Standards	Elevate Science ©2019
Performance Expectation MS-PS3-3.	
Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	**SE/TE:** 107, 117, 136–139, 166–167, 170–173
DISCIPLINARY CORE IDEA	
PS3.A: Definitions of Energy Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present. **PS3.B: Conservation of Energy and Energy Transfer** Energy is spontaneously transferred out of hotter regions or objects and into colder ones. **ETS1.A: Defining and Delimiting an Engineering Problem** The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that is likely to limit possible solutions. (secondary to MS-PS3-3) **ETS1.B: Developing Possible Solutions** A solution needs to be tested, and then modified on the basis of the test results in order to improve it. There are systematic processes for evaluating solutions with respect to how well they meet criteria and constraints of a problem. (secondary to MS-PS3-3)	**SE/TE:** 88–89, 90–99
SCIENCE AND ENGINEERING PRACTICE	
Constructing Explanations and Designing Solutions Apply scientific ideas or principles to design, construct, and test a design of an object, tool, process or system.	**SE/TE:** 90–99

Next Generation Science Standards	**Elevate Science ©2019**
CROSSCUTTING CONCEPT	
Energy and Matter The transfer of energy can be tracked as energy flows through a designed or natural system.	**SE/TE:** x, xx
Performance Expectation MS-PS3-4.	
Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	**SE/TE:** 136–137, 140–146, 148–154, 156–157, 158–173
DISCIPLINARY CORE IDEA	
PS3.A: Definitions of Energy Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present. **PS3.B: Conservation of Energy and Energy Transfer** The amount of energy transfer needed to change the temperature of a matter sample by a given amount depends on the nature of the matter, the size of the sample, and the environment.	**SE/TE:** 90–99, 140–146, 148–154, 158–165
SCIENCE AND ENGINEERING PRACTICE	
Planning and Carrying Out Investigations Plan an investigation individually and collaboratively, and in the design: identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim. **Connection to Nature of Science** Science knowledge is based upon logical and conceptual connections between evidence and explanations.	**SE/TE:** 140–146, 148–154, 158–165

A Correlation of Elevate Science, Grade 6, ©2019
To the
Next Generation Science Standards, DCI Arrangement

Next Generation Science Standards	Elevate Science ©2019
CROSSCUTTING CONCEPT	
Scale, Proportion, and Quantity Proportional relationships (e.g. speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes.	**SE/TE:** 140–146, 148–154, 158–165
Performance Expectation MS-PS3-5.	
Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	**SE/TE:** 86–87, 108–116, 118–125, 126–127, 128–137, 148–154, 158–169
DISCIPLINARY CORE IDEA	
PS3.B: Conservation of Energy and Energy Transfer When the motion energy of an object changes, there is inevitably some other change in energy at the same time.	**SE/TE:** 108–116, 118–125, 148–154, 156–157, 158–165
SCIENCE AND ENGINEERING PRACTICE	
Engaging in Argument from Evidence Construct, use, and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon. **Connection to Nature of Science** Science knowledge is based upon logical and conceptual connections between evidence and explanations.	**SE/TE:** 108–116, 118–125, 148–154, 158–165
CROSSCUTTING CONCEPT	
Energy and Matter Energy may take different forms (e.g. energy in fields, thermal energy, energy of motion).	**SE/TE:** 108–116, 118–125, 148–154, 158–165

Next Generation Science Standards	**Elevate Science ©2019**
MS-LS1 From Molecules to Organisms: Structures and Processes	
Performance Expectation MS-LS1-1.	
Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	**SE/TE:** 434–435, 438–449, 460–471, 472–483, 484–491
DISCIPLINARY CORE IDEA **LS1.A: Structure and Function** All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).	**SE/TE:** 438–447, 460–470, 472–483
SCIENCE AND ENGINEERING PRACTICE	
Planning and Carrying Out Investigations Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation.	**SE/TE:** 438–447, 460–470, 472–483
CROSSCUTTING CONCEPT	
Scale, Proportion, and Quantity Phenomena that can be observed at one scale may not be observable at another scale. **Connections to Engineering, Technology, and Applications of Science** Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems.	**SE/TE:** 438–447, 460–470, 472–483

A Correlation of Elevate Science, Grade 6, ©2019
To the
Next Generation Science Standards, DCI Arrangement

Next Generation Science Standards	Elevate Science ©2019
Performance Expectation MS-LS1-2.	
Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	**SE/TE:** 472–483, 484–487
DISCIPLINARY CORE IDEA	
LS1.A: Structure and Function Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell.	**SE/TE:** 472–483
SCIENCE AND ENGINEERING PRACTICE	
Developing and Using Models Develop and use a model to describe phenomena.	**SE/TE:** 472–483
CROSSCUTTING CONCEPT	
Structure and Function Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the relationships among its parts, therefore complex natural structures/systems can be analyzed to determine how they function.	**SE/TE:** 472–483

A Correlation of Elevate Science, Grade 6, ©2019
To the
Next Generation Science Standards, DCI Arrangement

Next Generation Science Standards	Elevate Science ©2019
Performance Expectation MS-LS1-3.	
Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	**SE/TE:** 472–483, 484–487
DISCIPLINARY CORE IDEA	
LS1.A: Structure and Function In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.	**SE/TE:** 472–483
SCIENCE AND ENGINEERING PRACTICE	
Engaging in Argument from Evidence Use an oral and written argument supported by evidence to support or refute an explanation or a model for a phenomenon.	**SE/TE:** 472–483
CROSSCUTTING CONCEPT	
Systems and System Models Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems. **Connections to Nature of Science** Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.	**SE/TE:** 472–483

Next Generation Science Standards	Elevate Science ©2019
MS-LS4 Biological Evolution: Unity and Diversity	
Performance Expectation MS-LS4-2.	
Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.	**SE/TE:** 436–447, 459, 484–485
DISCIPLINARY CORE IDEA	
LS4.A: Evidence of Common Ancestry and Diversity Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record, enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent.	**SE/TE:** 436–447, 459, 484–485
SCIENCE AND ENGINEERING PRACTICE	
Constructing Explanations and Designing Solutions Apply scientific ideas to construct an explanation for real-world phenomena, examples, or events.	**SE/TE:** 459
CROSSCUTTING CONCEPT	
Patterns Patterns can be used to identify cause and effect relationships. **Connections to Nature of Science** Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation.	**SE/TE:** 459

Next Generation Science Standards	Elevate Science ©2019
MS-ESS2 Earth's Systems	
Performance Expectation MS-ESS2-1.	
Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	**SE/TE:** 174–185, 210–211, 276–291, 292–300, 302–309, 310–317, 318–325
DISCIPLINARY CORE IDEA	
ESS2.A: Earth's Materials and Systems All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms.	**SE/TE:** 178–184, 280–290, 292–300, 302–309, 310–315
SCIENCE AND ENGINEERING PRACTICE	
Developing and Using Models Develop and use a model to describe phenomena.	**SE/TE:** 178–184, 280–290, 292–300, 302–309, 310–315
CROSSCUTTING CONCEPT	
Stability and Change Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and forces at different scales, including the atomic scale.	**SE/TE:** 178–184, 280–290, 292–300, 302–309, 310–315

Next Generation Science Standards	**Elevate Science ©2019**
Performance Expectation MS-ESS2-2.	
Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	**SE/TE:** 326–329, 340–351, 352–362, 364–381, 382–395, 396–403, 404–415, 416–425, 426–433
DISCIPLINARY CORE IDEA	
ESS2.A: Earth's Materials and Systems The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. **ESS2.C: The Roles of Water in Earth's Surface Processes** Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations.	**SE/TE:** 340–349, 352–362, 364–373, 386–394, 396–402, 404–413, 416–425
SCIENCE AND ENGINEERING PRACTICE	
Constructing Explanations and Designing Solutions Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.	**SE/TE:** 340–349, 352–362, 364–373, 386–394, 396–402, 404–413, 416–425
CROSSCUTTING CONCEPT	
Scale, Proportion, and Quantity Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.	**SE/TE:** 340–349, 352–362, 364–373, 386–394, 396–402, 404–413, 416–425

Next Generation Science Standards	**Elevate Science ©2019**
Performance Expectation MS-ESS2-3.	
Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.	**SE/TE:** 326–329, 330–338, 374–375, 378–381
DISCIPLINARY CORE IDEA	
ESS2.B: Plate Tectonics and Large-Scale System Interactions Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart. **ESS1.C: The History of Planet Earth** Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches. *(HS.ESS1.C GBE) (secondary to MS-ESS2-3)*	**SE/TE:** 330–338
SCIENCE AND ENGINEERING PRACTICE	
Analyzing and Interpreting Data Analyze and interpret data to provide evidence for phenomena. **Connections to Nature of Science** Science findings are frequently revised and/or reinterpreted based on new evidence.	**SE/TE:** 330–338
CROSSCUTTING CONCEPT	
Patterns Patterns in rates of change and other numerical relationships can provide information about natural systems.	**SE/TE:** 330–338

Next Generation Science Standards	**Elevate Science ©2019**
Performance Expectation MS-ESS2-4.	
Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	**SE/TE:** 174–177, 198–209, 210–217, 218–219, 230–238, 268–269, 272–275
DISCIPLINARY CORE IDEA	
ESS2.C: The Roles of Water in Earth's Surface Processes • Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land. • Global movements of water and its changes in form are propelled by sunlight and gravity.	**SE/TE:** 198–207, 230–238
SCIENCE AND ENGINEERING PRACTICE	
Developing and Using Models Develop a model to describe unobservable mechanisms.	**SE/TE:** 198–207, 230–238
CROSSCUTTING CONCEPT	
Energy and Matter Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter.	**SE/TE:** 198–207, 230–238

Next Generation Science Standards	**Elevate Science ©2019**
Performance Expectation MS-ESS2-5.	
Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.	**SE/TE:** 218–221, 222–229, 240–247, 248–255, 266–271
DISCIPLINARY CORE IDEA	
ESS2.C: The Roles of Water in Earth's Surface Processes The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns. **ESS2.D: Weather and Climate** Because these patterns are so complex, weather can only be predicted probabilistically.	**SE/TE:** 222–229, 240–247, 248–254
SCIENCE AND ENGINEERING PRACTICE	
Planning and Carrying Out Investigations Collect data to produce data to serve as the basis for evidence to answer scientific questions or test design solutions under a range of conditions.	**SE/TE:** 240–247, 248–254
CROSSCUTTING CONCEPT	
Cause and Effect: Mechanism and Prediction Cause and effect relationships may be used to predict phenomena in natural or designed systems.	**SE/TE:** 222–229, 240–247, 248–254

Next Generation Science Standards	**Elevate Science ©2019**
Performance Expectation MS-ESS2-6.	
Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	**SE/TE:** 218–219, 222–229, 248–255, 268–271
DISCIPLINARY CORE IDEA	
ESS2.C: The Roles of Water in Earth's Surface Processes Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents. **ESS2.D: Weather and Climate** • Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns. • The ocean exerts a major influence on weather and climate by absorbing energy from the sun, releasing it over time, and globally redistributing it through ocean currents.	**SE/TE:** 248–254
SCIENCE AND ENGINEERING PRACTICE	
Developing and Using Models Develop and use a model to describe phenomena.	**SE/TE:** 222–229 , 248–254
CROSSCUTTING CONCEPT	
Systems and System Models Models can be used to represent systems and their interactions—such as inputs, processes and outputs—and energy, matter, and information flows within systems.	**SE/TE:** 222–229, 248–254

Next Generation Science Standards	**Elevate Science ©2019**
MS_ESS3 Earth and Human Activity	
Performance Expectation MS-ESS3-2.	
Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	**SE/TE:** 218–229, 256–271, 326–329, 352–362, 364–381, 382–385, 396–403, 426–433
DISCIPLINARY CORE IDEA	
ESS3.B: Natural Hazards Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events.	**SE/TE:** 256–265, 352–362, 364–373, 396–402
SCIENCE AND ENGINEERING PRACTICE	
Analyzing and Interpreting Data Analyze and interpret data to determine similarities and differences in findings.	**SE/TE:** 256–265, 352–362, 364–373, 396–402
CROSSCUTTING CONCEPT	
Patterns Graphs, charts, and images can be used to identify patterns in data. **Connections to Engineering, Technology, and Applications of Science** The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus technology use varies from region to region and over time.	**SE/TE:** 222–229, 256–265, 352–362, 364–373, 396–402

Next Generation Science Standards	Elevate Science ©2019
MS-ETS1 Engineering Design	
Performance Expectation MS-ETS1-1.	
Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	**SE/TE:** 38–41, 55, 106, 322–325
DISCIPLINARY CORE IDEA	
ETS1.A: Defining and Delimiting Engineering Problems The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions.	**SE/TE:** 38–41, 55, 106, 322–325
SCIENCE AND ENGINEERING PRACTICE	
Asking Questions and Defining Problems Define a design problem that can be solved through the development of an object, tool, process or system and includes multiple criteria and constraints, including scientific knowledge that may limit possible solutions.	**SE/TE:** 38–41, 55, 106, 322–325

Next Generation Science Standards	Elevate Science ©2019
CROSSCUTTING CONCEPT	
Influence of Science, Engineering, and Technology on Society and the Natural World • All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment. • The uses of technologies and limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions.	**SE/TE:** 38–41, 55, 322–325
Performance Expectation MS-ETS1-2.	
Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	**SE/TE:** 55, 106, 125, 165, 322–325
DISCIPLINARY CORE IDEA	
ETS1.B: Developing Possible Solutions There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.	**SE/TE:** 55, 106, 125, 165, 322–325
SCIENCE AND ENGINEERING PRACTICE	
Engaging in Argument from Evidence Evaluate competing design solutions based on jointly developed and agreed-upon design criteria.	**SE/TE:** 55, 106, 125, 165, 322–325

Next Generation Science Standards	Elevate Science ©2019
Performance Expectation MS-ETS1-3.	
Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	**SE/TE:** 33, 116, 165, 170–173, 413, 430–433
DISCIPLINARY CORE IDEA	
ETS1.B: Developing Possible Solutions • There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. • Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors.	**SE/TE:** 33, 116, 165, 170–173, 413, 430–433
SCIENCE AND ENGINEERING PRACTICE	
Analyzing and Interpreting Data Analyze and interpret data to determine similarities and differences in findings.	**SE/TE:** 33, 116, 165, 170–173, 413, 430–433
Performance Expectation MS-ETS1-4.	
Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	**SE/TE:** 33, 82–85, 106, 132–135, 154, 174–175, 378–381, 382–383, 413, 425, 430–433
DISCIPLINARY CORE IDEA	
ETS1.B: Developing Possible Solutions • A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. (MS-ETS1-4) • Models of all kinds are important for testing solutions. (MSETS1-4)	**SE/TE:** 33, 82–85, 106, 132–135, 154, 174–175, 378–381, 382–383, 413, 425, 430–433
SCIENCE AND ENGINEERING PRACTICE	
Developing and Using Models Develop a model to generate data to test ideas about designed systems, including those representing inputs and outputs.	**SE/TE:** 33, 82–85, 106, 132–135, 154, 174–175, 378–381, 382–383, 413, 425, 430–433