



Instructional Calendar Science/6thGrade₂₀₁₆₋₂₀₁₇

6th Grade Instructional Calendar 2016

1. **Creativity and innovation:** Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
2. **Communication and collaboration:** Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
3. **Research and information fluency:** Students apply digital tools to gather, evaluate, and use information.
4. **Critical thinking, problem solving, and decision making:** Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
5. **Digital citizenship:** Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
6. **Technology Operations and Concepts:** Students demonstrate and sound understanding of technology concepts, systems and operations.

<p style="text-align: center;">Quarter 1</p> <p style="text-align: center;">Standard 1 Nature of Science (Physical Science) PS 4 (Aug.-Oct.)</p>	<p style="text-align: center;">Quarter 2</p> <p style="text-align: center;">Standard 2 (Life Science) Ecosystems & Biodiversity LS 1, LS 2 (Nov.-Dec.)</p>	<p style="text-align: center;">Quarter 3</p> <p style="text-align: center;">Standard 1 Atoms & the Periodic Table (Physical Science) PS 1, PS 2 (Jan. – Feb.)</p> <p style="text-align: center;">Standard 1 Properties of Matter (Physical Science) PS 3, PS 4 (Feb. – Mar.)</p>	<p style="text-align: center;">Quarter 4</p> <p style="text-align: center;">Water & Natural Resources (Earth Science) ES 2, ES 3 (April)</p> <p style="text-align: center;">Earth’s Processes (Earth Science) ES 1 (May)</p>
<p>Key Topics: Making Scientific Observations; Metric Measurements; Scientific Process; Independent and Dependent Variables; Lab Safety; Lab Equipment & Tools; Collecting Data; Graphing Skills; Measuring Mass, Length, Volume and density; Scientific units; [Not: Control group, Controlled variables (constants)]</p> <p><i>NOS Embedded CAS standards PS 4</i></p>	<p>Key Topics: Energy flow; Food Chains; Food Webs; Producers vs. Consumers; Biotic vs. Abiotic Factors; Symbioses (Commensalism, Mutualism, Parasitism, Competition, Predation); Cycling of Matter (Carbon, Nitrogen); Biomes; Endangered species; Changes in the environment (oil spills, water pollution, climate change, loss of species, introduced species); Survivability of populations; Ecosystem equilibrium; Biodiversity; Interaction of Ecosystems and Impact on Global Environment; [Not: Classification of plants and animals]</p>	<p>Key Topics: Building blocks of matter; Elements vs. Compounds and Molecules; History of the Atomic Model, Atomic Structure, Chemical & Physical Properties of Atoms vs. Compounds and Molecules; Introduction to Periodic Table (atomic number, groups, families, physical/chemical properties); [Not: Types of Chemical Bonds, Balancing or Identifying Chemical Reactions]</p> <p>PS 1, PS 2</p> <p>1. All matter is made of atoms, which are far too small to see directly through a light microscope.</p>	<p>Key Topics: Water cycle; Local and World-wide Water Circulation and Distribution (oceans, glaciers, rivers, ground water, atmosphere); Water Quality; Water Pollution Causes and Effects; Personal Water Use and Conservation; Renewable vs. Nonrenewable Resources, Natural Resource Availability; Advantages/Disadvantages of Fossil Fuels vs. Alternative Energy [Not: types of energy, microscopic organisms]</p> <p>ES 2, ES 3</p>



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<p>4. Distinguish among, explain, and apply the relationships among mass, weight, volume, and density</p> <ol style="list-style-type: none"> Explain that the mass of an object does not change, but its weight changes based on the gravitational forces acting upon it (DOK 1) Predict how changes in acceleration due to gravity will affect the mass and weight of an object (DOK 1-2) Predict how mass, weight, and volume affect density (DOK 1-2) Measure mass and volume, and use these quantities to calculate density (DOK 1) Use tools to gather, view, analyze, and report results for scientific investigations about the relationships among mass, weight, volume, and density (DOK 1-2) 	<p>LS 1 LS 2</p> <ol style="list-style-type: none"> Changes in environmental conditions can affect the survival of individual organisms, populations, and entire species <ol style="list-style-type: none"> Interpret and analyze data about changes in environmental conditions – such as climate change – and populations that support a claim describing why a specific population might be increasing or decreasing Develop, communicate, and justify an evidence-based explanation about how ecosystems interact with and impact the global environment (DOK 1-3) Model equilibrium in an ecosystem, including basic inputs and outputs, to predict how a change to that ecosystem such as climate change might impact the organisms, populations, and species within it such as the removal of a top predator or introduction of a new species Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate how environmental conditions affect the survival of individual organisms (DOK 1-2) Organisms interact with each other and their environment in various ways that create a flow of energy and cycling 	<p>Elements have unique atoms and thus, unique properties. Atoms themselves are made of even smaller particles</p> <ol style="list-style-type: none"> Identify evidence that suggests there is a fundamental building block of matter (DOK 1) Use the particle model of matter to illustrate characteristics of different substances (DOK 1-2) Develop an evidence based scientific explanation of the atomic model as the foundation for all chemistry (DOK 1-3) Find and evaluate appropriate information from reference books, journals, magazines, online references, and databases to compare and contrast historical explanations for the nature of matter (DOK 1-2) <p>2. Atoms may stick together in well-defined molecules or be packed together in large arrays. Different arrangements of atoms into groups compose all substances</p> <ol style="list-style-type: none"> Explain the similarities and differences between elements and compounds (DOK 1-2) Identify evidence suggesting that atoms form into molecules with different properties than their components (DOK 1-2) Find and evaluate information from a variety of resources about molecules (DOK 1-2) 	<p>2. Water on Earth is distributed and circulated through oceans, glaciers, rivers, ground water, and the atmosphere</p> <ol style="list-style-type: none"> Gather and analyze data from a variety of print resources and investigations to account for local and world-wide water circulation and distribution patterns (DOK 1-3) Use evidence to model how water is transferred throughout the earth (DOK 1-3) Identify problems, and propose solutions related to water quality, circulation, and distribution – both locally and worldwide (DOK 1-4) Identify the various causes and effects of water pollution in local and world water distributions (DOK 1-2) Describe where water goes after it is used in houses or buildings (DOK 1-2) <p>3. Earth’s natural resources provide the foundation for human society’s physical needs. Many natural resources are nonrenewable on human timescales, while others can be renewed or recycled</p> <ol style="list-style-type: none"> Research and evaluate data and information to learn about the types and availability of various natural resources, and use this knowledge to make evidence-based decisions (DOK 2-3) Identify and evaluate types and availability of renewable and nonrenewable resources (DOK 1-2)
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	<p>of matter in an ecosystem</p> <ul style="list-style-type: none"> a. Develop, communicate, and justify an evidence-based explanation about why there generally are more producers than consumers in an ecosystem (DOK 1-3) b. Design a food web diagram to show the flow of energy through an ecosystem (DOK 1-2) c. Compare and contrast the flow of energy with the cycling of matter in ecosystems (DOK 2) 	<p>Key Topics: States of Matter (solid, liquid, gas); Phases Changes (melting, evaporation, sublimation, freezing, condensation); Changes in state vs. changes in temperature; Kinetic molecular theory, Particulate model; Mass vs. Weight; Measuring Weight, Calculating Density and using Scientific Units; Gravitational force; Volume, [Not: Chemical changes, Chemical Equations, Chemical Formulas]</p> <p>PS 3, PS 4</p> <p>3. The physical characteristics and changes of solid, liquid, and gas states can be explained using the particulate model</p> <ul style="list-style-type: none"> a. Explain how the arrangement and motion of particles in a substance such as water determine its state (DOK 1-2) b. Distinguish between changes in temperature and changes of state using the particle model of matter (DOK 1-2) <p>4. Distinguish among, explain, and apply the relationships among mass, weight, volume, and density</p> <ul style="list-style-type: none"> a. Explain that the mass of an object does not change, but its weight changes based on the gravitational forces acting upon it (DOK 1) b. Predict how changes in acceleration due to gravity will affect the mass and weight of an object (DOK 1-2) c. Predict how mass, weight, and volume affect density (DOK 1-2) d. Measure mass and volume, and use these quantities to calculate density (DOK 1) e. Use tools to gather, view, analyze, and report results for scientific investigations 	<ul style="list-style-type: none"> c. Use direct and indirect evidence to determine the types of resources and their applications used in communities (DOK 1-2) d. Research and critically evaluate data and information about the advantages and disadvantages of using fossil fuels and alternative energy sources (DOK 2-3) <p>Key Topics: Earth's structure; Interaction between constructive and destructive processes (weathering, erosion, deposition); Earth's surface features (harbors, glaciers, geysers) [Review: Plate tectonics, rock cycle, mineral identification]</p> <p>P: ES 1</p> <p>1. Complex interrelationships exist between Earth's structure and natural processes that over time are both constructive and destructive</p> <ul style="list-style-type: none"> a. Gather, analyze, and communicate an evidence-based explanation for the complex interaction between Earth's constructive and destructive forces (DOK 2-3) b. Gather, analyze and communicate evidence form text and other sources that explains the formation of Earth's surface features (DOK 1-3) c. Use a computer simulation for Earth's changing crust (DOK 1-2)
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International Society for Technology in Education Standards

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