



ADW 5 SCIENCE STANDARDS & INSTRUCTION GUIDE

PHYSICAL SCIENCE (PS)	Standards	Core Concepts	Scientific Terms and Scientists	EdTech Resources
SC.5.PS.1	Develop a model to describe that matter is made of particles too small to be seen.	<ul style="list-style-type: none">• Natural objects exist from the very small to the immensely large.• All of these objects are made of matter.• Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means.• A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects.	<ul style="list-style-type: none">• matter• volume• mass	<ul style="list-style-type: none">• PhEt- https://phet.colorado.edu/en/simulation/build-an-atom• PhEt- https://phet.colorado.edu/en/simulation/states-of-matter-basics• http://www.storyboardthat.com/



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PHYSICAL SCIENCE (PS)	Standards	Core Concepts	Scientific Terms and Scientists	EdTech Resources
SC.5.PS.2	Describe and measure the physical properties of a sample of a given material using metric units.	<ul style="list-style-type: none"> • Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. • Volume, mass, and weight are physical properties of matter that can be measured. • Volume is the amount of space an object occupies. • The volume of a liquid can be determined using a graduated cylinder. • Volume can be determined mathematically or with scientific tools. • The volume of an irregular object can be determined using displacement. • Mass is the amount of matter in a given substance or material. • Mass is measured using a balance. • Weight is the effect of Earth's gravity on an object's mass. • Weight is measured using a scale. 	<ul style="list-style-type: none"> • volume • $V = l \times w \times h$ • displacement • graduated cylinder • ruler/meter stick • mass • weight • scale • spring scale • balance • gravity 	<ul style="list-style-type: none"> • Interactive Periodic Table: http://elements.wlonk.com/ElementsTable.htm



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PHYSICAL SCIENCE (PS)	Standards	Core Concepts	Scientific Terms and Scientists	EdTech Resources
SC.5.PS.3	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating or cooling substances the total amount of matter is conserved.	<ul style="list-style-type: none"> The mass (amount of matter) is conserved when it changes form, even in transitions in which it seems to vanish. No matter what reaction or change in properties occurs, the total weight of the substances does not change (Law of Conservation of Mass). 	<ul style="list-style-type: none"> Law of conservation of mass phase change melting freezing 	<ul style="list-style-type: none"> http://www.bbc.co.uk/schools/scienceclips/ages/8_9/keeping_warm_fs.shtml http://www.softschools.com/measurement/temperature/games/thermometer/thermometer.swf
SC.5.PS.4	Predict the result of combining solids and liquids in pairs. Mix, observe, gather, record, and discuss evidence of whether the result may have different properties than the original materials.	<ul style="list-style-type: none"> When two or more different substances are mixed, a new substance with different properties may be formed. Cause and effect relationships are routinely identified, tested, and used to explain change. When substances with new properties are formed, we call this a chemical change. 	<ul style="list-style-type: none"> dissolving mixing physical change chemical change mixture solution dissolve 	<ul style="list-style-type: none">



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LIFE SCIENCE (LS)	Standards	Core Concepts	Scientific Terms and Scientists	EdTech Resources
SC.5.LS.1	Develop models to describe the flow of matter and energy in living organisms.	<ul style="list-style-type: none"> • All living organisms require inputs of matter and energy. • Plant cells use energy from sunlight and matter from air and water to produce sugars. • Plants, animals, and other organisms break down these sugars and other foods to release energy. • Food provides organisms with the materials they need for cellular repair, growth, to maintain body warmth and for motion. • Multicellular organisms have organ systems that transform, transport, release, and eliminate excess matter and energy. • Anaerobic life, such as bacteria in the gut, functions without air. 	<ul style="list-style-type: none"> • light energy • photosynthesis • potential energy • kinetic energy • circulatory system • respiratory system • digestive system • musculoskeletal system • anaerobic 	<ul style="list-style-type: none"> • https://paperslide.wikispaces.com/Guidelines • http://interactivesites.weebly.com/life-cycles.html



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LIFE SCIENCE (LS)	Standards	Core Concepts	Scientific Terms and Scientists	EdTech Resources
<p>SC.5.LS.2</p>	<p>Analyze evidence that living organisms have traits inherited from parents through sexual or asexual reproduction.</p>	<ul style="list-style-type: none"> • Reproduction is essential to the continued existence of every kind of organism. • Traits of organisms are passed from parent to offspring through the transmission of genetic material. • Offspring produced by sexual reproduction have two parents and may be very much, but not exactly, like their parents or siblings. • Plants can reproduce sexually, through pollination and the production of seeds. • Some plants and other organisms can reproduce asexually, resulting in offspring that are genetically exactly like the parent. • Some inherited traits are influenced by the environment (e.g. trees may not grow as tall as parent trees if sunlight or water are lacking.) 	<ul style="list-style-type: none"> • reproduction • genetic material • pollination • asexual reproduction 	<ul style="list-style-type: none"> •



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LIFE SCIENCE (LS)	Standards	Core Concepts	Scientific Terms and Scientists	EdTech Resources
SC.5.LS.3	Develop a model to describe the movement of matter and energy between plants, animals, decomposers, and the environment.	<ul style="list-style-type: none"> • Matter cycles between the air and soil and between plants, animals, and microbes as these organisms live, release waste, and die. • Some organisms, such as fungi and bacteria, act as decomposers, breaking down dead organisms or parts of organisms (eg. fallen leaves). • Decomposition eventually restores (recycles) some materials back to the soil.. • Nearly all energy that sustains life ultimately comes from the sun. • Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants 	<ul style="list-style-type: none"> • environment • decomposer • fungi • bacteria 	<ul style="list-style-type: none"> • http://interactivesites.weebly.com/clouds--water-cycle.html



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LIFE SCIENCE (LS)	Standards	Core Concepts	Scientific Terms and Scientists	EdTech Resources
SC.5.LS.4	Observe and classify local organisms as producers, consumers, or decomposers based on their relationships and interactions with other organisms in their ecosystem.	<ul style="list-style-type: none"> • Some animals eat plants for food and others eat animals that eat plants. • A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. • Some newly introduced species may become invasive and damage the balance of an ecosystem. 	<ul style="list-style-type: none"> • producer • consumer • predator • prey • food web • ecosystem • invasive species 	<ul style="list-style-type: none"> • http://interactivesites.weebly.com/clouds--water-cycle.html



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EARTH AND SPACE SCIENCE (ESS)	Standards	Core Concepts	Scientific Terms and Scientists	EdTech Resources
SC.5.ESS.1	Analyze the scale of our solar system and its components.	<ul style="list-style-type: none"> The solar system consists of the sun and a collection of objects, including planets, their moons, dwarf planets, comets, and asteroids that are held in orbit around the sun by its gravitational pull on them. The sun is a star that appears larger and brighter than other stars because it is closer. The data comes from Earth-based instruments, space-based telescopes, and spacecraft to determine similarities and differences among solar system objects. The astronomical unit (AU) is the average distance from Earth to the Sun (150 million km) and is used to identify larger distances in the solar system. 	<ul style="list-style-type: none"> gravity solar system stars planets moons revolution rotation orbit orbital radius astronomical units (AU) 	<ul style="list-style-type: none"> https://phet.colorado.edu/en/simulation/legacy/my-solar-system PhEt- https://phet.colorado.edu/en/simulation/gravity-and-orbits



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EARTH AND SPACE SCIENCE (ESS)	Standards	Core Concepts	Scientific Terms and Scientists	EdTech Resources
<p>SC.5.ESS.2</p>	<p>Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p>	<ul style="list-style-type: none"> • The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. • These include day and night, daily changes in the length and direction of shadows, and different positions of the sun, moon, and stars at different times of the day, month, and year. • Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months. 	<ul style="list-style-type: none"> • orbit • rotation • rotation axis • revolution • constellations 	



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EARTH AND SPACE SCIENCE (ESS)	Standards	Core Concepts	Scientific Terms and Scientists	EdTech Resources
SC.5.ESS.3	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	<ul style="list-style-type: none"> • Earth’s major systems are the: geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). • These systems interact in multiple ways to affect Earth’s surface materials and processes. • The geosphere, hydrosphere, atmosphere, and biosphere make up Earth’s system and matter and energy are continuously cycling between the different spheres. • The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. • Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. 	<ul style="list-style-type: none"> • system • geosphere • biosphere • hydrosphere • atmosphere 	<ul style="list-style-type: none"> • PhEt- https://phet.colorado.edu/en/simulation/gravity-and-orbits



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SC.5.ESS.4	Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	<ul style="list-style-type: none"> • Earth's water is found in oceans, lakes, rivers, glaciers, ground water, and polar ice caps. • Nearly all of Earth's available water is in the ocean. • Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. 	<ul style="list-style-type: none"> • water • ground water • reservoir • lake • pond • glacier • river 	<ul style="list-style-type: none"> • PhEt- https://phet.colorado.edu/en/simulation/legacy/soluble-salts
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EARTH AND SPACE SCIENCE (ESS)	Standards	Core Concepts	Scientific Terms and Scientists	EdTech Resources
SC.5.ESS.5	Investigate ways individual communities within the United States protect the Earth's resources and environment.	<ul style="list-style-type: none"> • Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. • But individuals and communities are doing things to help protect Earth's resources and environments 	<ul style="list-style-type: none"> • renewable resource • nonrenewable resource • recycle • reduce • reuse • conservation 	<ul style="list-style-type: none"> •



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Grades 3-5 Engineering Standards (E)

SC.3-5.E.1 Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost.

SC.3-5.E.2 Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

SC.3-5.E.3 Construct and perform fair investigations in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.