

Big Idea: Scientists answer questions by careful observations and investigations

Unit 1.1 How scientists work

<i>Science</i>		<i>Grade: 5</i>		<i>Unit Time Frame: Unit 1.1 – 12 days</i> <i>Time Frame:</i>			
<i>Essential Questions</i>	<i>Suggested Resources</i>	<i>Content (What students will know)</i>	<i>Skills (What students will be able to do)</i>	<i>Key Terms</i>	<i>Assessment</i>	<i>College and Career Readiness Standards</i>	<i>CCCS</i>
<p>1.What is science?</p> <p>2.How do scientists learn through the natural world?</p> <p>3. What are some types of investigation?</p> <p>4. How do you perform a controlled experiment?</p> <p>5. What are some science tools?</p> <p>6.How can scientists learn through investigations?</p> <p>7. What are models?</p>	<p>Science fusion unit 1 Foss models and Designs Investigation on Carts.</p>	<p>1.Science is the study of matter around us.</p> <p>2.Scientists do investigations to find about the natural world.</p> <p>3. Scientific investigations involve observation, inference, communication, classification, ordering, drawing conclusions, and relationships.</p> <p>4.An investigation has well defined elements and valid conclusions.</p> <p>5. Scientists repeat investigations to check results.</p> <p>6. Scientists use the data that they</p>	<p>1. Swbat define science in their own words.</p> <p>Swbat describe the relationship between evidence and opinion in scientific explanations.</p> <p>Swbat demonstrate the ability to observe, infer, investigate, compare, communicate, classify, order, draw conclusions and use relationships.</p> <p>Swbat Identify elements of well defined investigations and valid conclusions.</p> <p>Explain why scientists repeat investigations.</p>	<p>Investigation, science , evidence, opinion, control, scientific method, experiment, control, microscopic, balalnce, spring scale, accurate.</p>	<p>.Unit Assessments</p> <p>3. Performance Assessments</p> <p>Homework</p>		

		collect to draw conclusions. 7. Scientists use models to create a real life object.	Swabats create a 2 dimensional model.				
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Big Idea: Technology is all around us. Engineers apply their knowledge of science to design solutions to practical problems.

Unit 1.2 Engineering Process

<i>Science</i>		<i>Grade: 5</i>		<i>Unit Time Frame: Unit 1.1 – 12 days</i>			
				<i>Time Frame:</i>			
<i>Essential Questions</i>	<i>Suggested Resources</i>	<i>Content (What students will know)</i>	<i>Skills (What students will be able to do)</i>	<i>Key Terms</i>	<i>Assessment</i>	<i>College and Career Readiness Standards</i>	<i>CCCS</i>
1.What is the design process? 2.How can you design a solution to a problem.? 3.How does technology improve our lives? 4.How can you use engineering to solve a problem?	Science fusion unit 2 Foss models and Designs Investigation on Carts.	1.Engineers find a problem. 2. They plan and build. 3. Engineers test and improve on their original design. 4. Engineers redesign their design. 5. Engineers communicate their results.	1.Explain the steps of the design process. 2.Identify a problem and derive a solution. 3. List one way of how technology has improved your life. 4.Name tools that are used to solve problems. Describe how the tool solves the problem.		. engineering, technology, prototype, criteria, biotechnology, bioengineering.		

Big Idea: Machines are systems where forces are magnified through the conservation of Energy.

Unit 1.3 Levers and Pulleys

Science		Grade: 5		Unit Time Frame: Time Frame: 23 days			
Essential Questions	Suggested Resources	Content (What students will know)	Skills (What students will be able to do)	Key Terms	Assessment	College and Career Readiness Standards	CCC
<ol style="list-style-type: none"> 1. What forces Affect Objects on Earth Every Day? 2. How forces can Affect Motion? 3. How can simple machines make work easier? 4. What classes of levers can we find in the real world? 	<p>Science fusion unit 1 Foss models and Designs Investigation on Carts.</p> <p>LC: <i>Measure Up! Experiments, Puzzles, and Games Exploring Measurement.</i> Sandra Markle IR: http://www.ntuافت.com/njcccs/Webpage/contents/Science%20Activities/ SR: Songs/CD's, <i>Scientific Method</i> from <i>Lyrical Life Science</i></p> <p><i>Foss Module:Variables (Investigation 2 – Life Boats)</i> CT: Motion and Design (refer Teachers Resource Guide); FOSS Kit, (<i>Levers and pulleys</i>), Investigations 1-4</p>	<ol style="list-style-type: none"> 1. Motion is controlled by external forces. 2. Energy can transfer from one location to another. 	<ol style="list-style-type: none"> 1. Investigate the principle that force applied to an object changes the motion of that object. 2. Compare and identify the concept of stored energy. 3. Infer the effects of friction and resistance. 4. Analyze lever as a simple machine that people use to gain advantage. 5. Identify and Classify levers into different classes. 6. Analyze common tools and pictures in terms of levers. 7. Investigate pulley systems with one, two pulley systems. 8. Record and compare the distance moved by the load and the effort in four different pulley systems 	<p>force, friction, gravity, gravitational force, magnetic force, position, speed, potential energy, velocity, acceleration, inertia, advantage, Effort, fulcrum, Lever, Lever arm, Load, Newton, inclined plane, Wedge, pulleys</p>	<p>Unit Assessments 3. Performance Assessments Homework</p>	<p>Critical Thinking and Problem Solving Creativity and Innovation Collaboration, Teamwork, and Leadership Communication and Media Fluency</p>	<p>5.2 Physical Science: A students understand that physics science principles including fundamental ideas about matter, energy, and motion powerful conceptual tools for making sense of phenomena in physical living, and Earth system science.</p>

Unit 2: Mixtures and Solutions							
Big Idea: Pure substances have characteristic intrinsic properties, such as density, solubility, boiling point, and melting point, all of which are independent of the amount of the sample							
Science		Grade: 5		Unit Time Frame:			
Essential Questions	Suggested Resources	Content (What students will know)	Skills (What students will be able to do)	Key Terms	Assessment	College and Career Readiness Standards	CCCS
<p>1. How do the properties of materials determine their use?</p> <p>2. How does conservation of mass apply to the interaction of materials in a closed system?</p>	<p>1. Investigation 1: Separating Mixtures</p> <p>2. Investigation 2: Reaching Saturation (See Grade 5 Science Intranet Folder for lab sheets)</p> <p>3. Complete Mystery Substance Activity (See Grade 5 Science Intranet Folder)</p> <p>4. Folder)</p> <p>5. Investigation 4: Fizz Quiz</p> <p>Optional Activities:</p> <ul style="list-style-type: none"> McGraw Hill Quick Lab 	<p>Properties of Matter: All objects and substances in the natural world are composed of matter. Matter has two fundamental properties: matter takes up space, and matter has inertia.</p> <p>Changes in Matter: Substances can undergo physical or chemical changes to form new substances. Each change involves energy.</p>	<p>Utilize various measurement tools, such as graduated cylinders, syringes, scales and beakers, in order to prepare students for lab experiments when measuring mass and volume throughout the unit.</p> <p>Use a screen, filter, or evaporation to separate mixtures based on their physical properties.</p> <p>Describe the properties of mixtures and solutions, including concentration, solubility, and saturation. Identify water and liquids as solvents and solids as solutes.</p> <p>Compare the solubility of citric acid, sodium chloride, baking soda, and Epsom salt.</p> <p>Compare equal volumes of two solutions and</p>	<p>change</p> <p>chemical</p> <p>change</p> <p>chemical</p> <p>reaction</p> <p>concentration</p> <p>crystal dilute</p> <p>dissolve</p> <p>evaporation</p> <p>mixture</p> <p>physical change</p> <p>precipitate</p> <p>product</p> <p>property</p> <p>reactant</p> <p>saturated</p> <p>solution</p> <p>solubility</p> <p>solute</p> <p>solution</p> <p>solvent</p> <p>volume</p>	<p>1. Quizzes (See Grade 5 Science Intranet Folder)</p> <p>2. Written Responses to FOSS prompts</p> <p>3. Science journal</p> <p>4. FossSummative Assessments</p> <p>5. Benchmark Assessments</p>	<p>9.1- Critical Thinking and Problem Solving Creativity and Innovation Collaboration, Teamwork, and Leadership Communication and Media Fluency</p>	<p>5.2 Physical Science: All students will understand that physical science principles, including fundamental ideas about matter, energy and motion, are powerful conceptual tools for making sense of phenomena in physical, living, and Earth system science.</p>

	<p>“Kitchen Colloids” pg. 346-347</p> <ul style="list-style-type: none"> FOSS: Mixtures and Solution Kit <p>Power Points The below are from the State: Annenberg Media’s Teachers’ Resources offer short video courses covering essential science content for K-6 teachers. http://www.learner.org/resources/series200.html</p>		<p>determine that they have different masses. Differentiate between physical and chemical properties. Identify evidence of a chemical reaction. Define matter as anything that has volume and mass. Collect, organize, and interpret the data that results from experiments, Use appropriate safety equipment during lab activities. Work safely and cooperatively with peers. Create a table to record collected data. Use mean, median, and mode to analyze collected data. Know that scientists are men and women from many cultures who have contributed to science and technology.</p>				
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Big Idea:							
Unit 3: Exploring Ecosystems: Big Idea: How do living organisms interact with and fit into their environment? How does each living structure help meet the needs of a plant or animal?What does it mean to be and stay alive?							
Science		Grade: 5		Unit Time Frame:			
Essential Questions	Suggested Resources	Content (What students will know)	Skills (What students will be able to do)	Key Terms	Assessment	College and Career Readiness Standards	CCCS
<p>What can happen to animals and plants when the environment changes?</p> <p>How the ranges of tolerance for environmental factors differ in different organisms?</p> <p>How do we know that an environment changes?</p> <p>What do all living things have in common?</p> <p>How do changes in one part of the Earth system affect other parts of the system and in what ways can</p>	<p>CT:FOSS kit, <i>Environments</i> (Investigation1-parts 1-2;Investigation 2- parts 1-3;Investigation 3, parts1-3;Investigation 5,parts 1-3;Investigation 6,parts 1-2)</p> <p>CT: Lab manual Teacher edition, Investigation - <i>Observing effects of fertilizer</i>; Investigation log- <i>Cleaning water</i>(refer Science Resource Guide)</p> <p>US:TLC Elementary School: People and the environment</p> <p>IR: The New York times, Forest Study is first to show Ozone retards growth of Trees</p> <p>US: Animals, Environments and Adaptations</p> <p>SR: Films, library research on biomes from around the world.</p> <p>Owl Pellet Dissection Lab</p> <p>Construct 3D Energy Pyramid</p> <p>Illustrate 10% Rule for energy transfer</p>	<p>Ecosystems comprised of biotic and abiotic factors, change over time.</p> <p>Human activity influences ecosystems.</p> <p>Living organisms have a variety of observable features that enable them to obtain food and reproduce.</p> <p>Earth's components form systems that have cycles and patterns that allow us to make predictions.</p> <p>These systems continually interact at</p>	<p>Show the flow of energy through an ecosystem</p> <p>Explain how the sun's energy is used in photosynthesis</p> <p>Understand the Law of Conservation of Energy</p> <p>An ecosystem includes all of the plant and animal populations and nonliving resources in a given area.</p> <p>Organisms interact with each other and with other components of an ecosystem</p> <p>Personal activities impact the local and global environment.</p> <p>Determine an organism's optimum condition and environmental preferences.</p> <p>Relate the behavior of an animal to its environmental factors.</p> <p>Observe and factor, isopod, preferred environment, controlled experiment, optimum, range of tolerance, aquarium, carbon dioxide, indicator, Brine Shrimp, salinity, viable</p>	<p>abiotic</p> <p>biotic</p> <p>carnivore</p> <p>consumer</p> <p>energy pyramid</p> <p>food chain</p> <p>food web</p> <p>herbivore</p> <p>omnivore</p> <p>predator</p> <p>prey</p> <p>producer</p> <p>Environment, environmental factor, germinate, terrarium, organisms, adaptations, variable, environmental, Journals and portfolios</p> <p>● Open-ended prompts</p> <p>Lab Reports</p> <p>Posters</p> <p>Projects</p> <p>Quizzes/Tests</p>	<p>Journals and portfolios</p> <p>Open-ended prompts</p> <p>Lab Reports</p> <p>Posters</p> <p>Projects</p> <p>Quizzes/Tests</p> <p>Presentations</p>	<p>9.1 - Critical Thinking & Problem Solving</p> <p>Communication and Media Fluency</p> <p>Creativity and Innovation</p>	<p>5.3 Life Science</p> <p>All students will understand the life science principles are powerful conceptual tools for making sense of the complexity, diversity, and interconnectedness of life on Earth. Order in natural systems arises in accordance with rules that govern the physical world and the order of natural systems can be modeled and predicted through the use of mathematical models.</p> <p>5.4 Earth Systems</p> <p>Science: All</p>

<p>Earth processes be explained as interactions among spheres? How do humans impact the diversity and stability of ecosystems? How can people help restore damaged Ecosystems?</p>	<p>Construct a digital simulation to explain how energy entering the ecosystem as sunlight is transferred by producers into chemical energy through photosynthesis. Create a digital interactive food web that traces energy from light through an ecosystem. Highlight each transfer of energy between organisms, and discuss how the pathway may vary within one ecosystem and between ecosystems.</p> <p>Science Fusion Lessons- 3-7</p>	<p>different rates of time, affecting the Earth locally and globally.</p>	<p>identify factors that make up aquatic environments. Evaluate the affect of living organisms in an environment. Design and Investigate to test the range of salt tolerance for brine shrimp hatching. Determine the range of salt tolerance on plants. Recognize that plants are producers: They use the energy from light to make food (sugar) from carbon dioxide and water. NJCCCS Explain how plants are used as a source of food (energy) for other organisms. NJCCCS Understand that all animals, including humans, are consumers that meet their energy needs by eating other organisms or their products. NJCCCS Understand that all animals, including humans, are consumers that meet their energy needs.</p>	<p>Presentations Benchmarks</p>			<p>students will understand th Earth operate as a set of complex, dynamic, and interconnecte systems, and part of the all-encompass g system of th universe.</p>
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Big Idea: Earth's surface is constantly changing

Unit 4.1 – Changes to Earth Surface

<i>Science</i>		<i>Grade: 5</i>		<i>Unit Time Frame: Time Frame: 23 days</i>			
<i>Essential Questions</i>	<i>Suggested Resources</i>	<i>Content (What students will know)</i>	<i>Skills (What students will be able to do)</i>	<i>Key Terms</i>	<i>Assessment</i>	<i>College and Career Readiness Standards</i>	<i>CCCS</i>
<p>1. How do weathering and erosion change Earth's surface?</p> <p>2. How does water change earth's surface?</p> <p>3. How do movements of the Earth Change the crust?</p> <p>4. How do plates move?</p>	<p>Science fusion unit 8</p> <p>Paper and candy activity.</p>	<p>1. Weathering breaks down rock particles, erosion moves particles and deposition deposits rock particles. All these process changes earth's surface.</p> <p>2. Water enters the rocks by seepage and breaks it. Also extreme pressure breaks the rocks.</p> <p>3. Interacting along tectonic plates, boundaries result in volcanoes and earthquakes.</p> <p>4. All plates move, and plates rise to the surface, and new plates gets formed.</p>	<p>1. Explain the difference between weathering, erosion and deposition and give examples of each.</p> <p>2. Describe how water erodes rocks?</p> <p>3. Explain how the movements of the Earth can change the Earth's surface?</p> <p>4. Demonstrate how plates interact at each type of plate boundry.</p>	<p>Weathering, erosion, deposition, crust, core, plate tectonics, mantle, fault, earthquake, epicenter, volcano</p>	<p>Journals and portfolios</p> <p>Open-ended prompts</p> <p>Lab Reports</p> <p>Posters</p> <p>Projects</p> <p>Quizzes/Tests</p> <p>Presentations</p>	<p>9.1 - Critical Thinking & Problem Solving</p> <p>Communication and Media Fluency</p> <p>Creativity and Innovation</p>	<p>5.4 Earth Systems Science: All students will understand the Earth operates as a set of complex, dynamic, and interconnected systems, and part of the all-encompassing system of the universe.</p>

Big Idea: Oceans are complex systems that interact with Earth's land, air and organism.

Unit 4.2 –

<i>Science</i>		<i>Grade: 5</i>		<i>Unit Time Frame: Time Frame: 23 days</i>			
<i>Essential Questions</i>	<i>Suggested Resources</i>	<i>Content (What students will know)</i>	<i>Skills (What students will be able to do)</i>	<i>Key Terms</i>	<i>Assessment</i>	<i>College and Career Readiness Standards</i>	<i>CCCS</i>
<ol style="list-style-type: none"> 1. What are ocean's like? 2. How does ocean water move? 3. How can you model ocean water? 4. What are some ocean ecosystem? 	<p>Science fusion unit 11</p>	<p>Ocean is made up of different layers.</p> <p>Tides are caused by the moons gravity pull</p> <p>Ocean currents are at the lowest in more concentrated saline water system.</p> <p>Differnt kinds of animals lives in different parts of the ocean layers.</p>	<ol style="list-style-type: none"> 1. Draw a cross section of ocean floor and draw as many features as you can. 2. Explain what causes tides, and when tides are the highest and the lowest. 3. Describe how salinity and ocean currrents affects ocean currents. 4. Explain how ocean's ecosystem change with depth. Give an example of an animal that live in each ecosystem. 	Oceans , tides, currents	<p>Journals and portfolios</p> <p>Open-ended prompts</p> <p>Lab Reports</p> <p>Posters</p> <p>Projects</p> <p>Quizzes/Tests</p> <p>Presentations</p>	<p>9.1 - Critical Thinking & Problem Solving</p> <p>Communication and Media Fluency</p> <p>Creativity and Innovation</p>	<p>5.4 Earth Systems Science: All students will understand the Earth operates as a set of complex, dynamic, and interconnected systems, and part of the all-encompassing system of the universe.</p>

Big Idea:.							
Unit 4.2 –							
Science		Grade: 5		Unit Time Frame: Time Frame: 23 days			
Essential Questions	Suggested Resources	Content (What students will know)	Skills (What students will be able to do)	Key Terms	Assessment	College and Career Readiness Standards	CCCS
<p>1)How do we know that things have energy?</p> <p>2.What predictable, observable patterns occur as a result of the interaction between the Earth, Moon, and Sun?</p> <p>3.What causes these patterns?</p>	<p>CT:FOSS kit(<i>Solar Energy</i>) Investigations 1-4 LC: Global Warming and Green House effect-Colin Hocking, Cary.I.Sneider, John Erickson and Richard Golden.</p> <p>US: Alternate Energy in Action: A Visit to a Solar House IR: http://www.energyquest.ca.gov/teachers_resources/lesson_plans.html : http://www.pbs.org/wgbh/nova/teachers/activities/3507_car.html CT:FOSS (<i>Planetary Science</i>) Investigation 10, part 1-Moving Stars; <i>Sun, Moon and Stars</i>-Investigation 3, refer FOSSWEB</p>	<p>1. 5.2)Energy takes many forms.</p> <p>2. (5.4)These forms can be grouped into types of energy that are associated with the motion of mass (kinetic energy), and types of energy associated with the position of mass and with energy fields (potential energy).</p> <p>3. (5.4)Observable, predictable patterns of movement in the Sun, Earth, and Moon system occur because of gravitational interaction and energy from the Sun.</p> <p>SR:Photographs of constellations</p>	<p>1. Explain the process of nuclear fusion in the sun</p> <p>2. Know that the Sun is the major source of energy for circulating the atmosphere and oceans.</p> <p>3. Explain why the height of the path of the Sun in the sky and the length of a shadow change over the course of a year.</p> <p>4. Review how Earth’s position relative to the Sun and the rotation of Earth on its axis results in patterns and cycles that define time units of days and years.</p> <p>5. Light travels in a straight line until it interacts with an object or material. Light can be absorbed, redirected, bounced back, or allowed to pass through. Predict the path of reflected or refracted light.</p> <p>6. Demonstrate how the mixtures of all colors of</p>	<p>axis equinox spectrum prism refraction solstice</p>	<p>1. Quizzes 2. Journals and Portfolios 3. Open-ended Questions with Scoring Rubrics 4. Assessment Labs 5. Quizzes and Tests 6. Presentations 7. Posters 8. Project Benchmark</p>	<p>9.1 - Critical Thinking & Problem Solving Communication and Media Fluency Creativity and Innovation</p>	<p>5.2 Physical Science: Physics principles including fundamental concepts about matter, energy, and motion, are powerful conceptual tools for making sense of phenomena in physical, living Earth systems and science. 5.4 Earth System Science: The Earth operates as a complex and dynamic interconnected systems, and part of the all-encompassing system of the Universe.</p>

	<p>LC:Backyard Stars: A guide for Home and the Road US: Stargazing: The Cosmos; January to March IR:http://school.discoveryeducation.com/lessonplans/programs/exploringstars.html.</p>		<p>visible light create sunlight (white light).</p>				
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