



6th Grade Science Standards

Inquiry Technology & Engineering



Interdependence



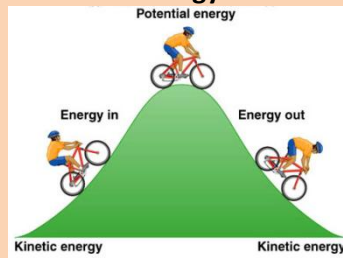
The Universe



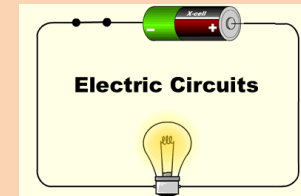
The Atmosphere



Energy



Forces in Nature





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Parent Curriculum

Standard	Inquiry and Technology & Engineering
What are the big ideas?	<ul style="list-style-type: none">Students need to be able to design a scientific investigation with variables.Students need to translate data from graphs, tables, and diagrams.Students need to identify tools that can be used in a moderately complex experiment.Students need to draw conclusions about the evidence of a science experiment and identify the cause and effect.Identify faulty interpretation of data that is due to bias or experimental error.Students need to understand the engineering design process.Identify that there are intended benefits and unintended consequence of new technology.
How can I find more information to help my child?	<p>How to interpret data and graphs website. http://www.mathgoodies.com/lessons/toc_vol11.html</p> <p>6th Grade Science Projects http://www.scholastic.com/resources/article/6th-grade-science-projects/</p> <p>Information on Engineering Design Process http://www.nasa.gov/audience/foreducators/plantgrowth/reference/Eng_Design_5-12.html</p> <ul style="list-style-type: none">Talk with your child about how technology has changed. Show them how technology has changed in your life time with pictures.
Vocabulary	Bias, science methods, observation, hypothesis, data, model, theory, law, technology, engineering, engineering design process, prototype, bioengineering, assistive bioengineering, adaptive bioengineering, meter, area, mass, volume, temperature, SI units, meter, liter, gram, Celsius, Fahrenheit, control variables, adaptive engineering, assistive engineering
Student Websites	<p>Design Roller-coasters and Checkout Skateboarding Engineering : http://www.discoverengineering.org/</p> <p>Design a parachute, bionic arm, or race solar cars: http://www.tryengineering.org/play.php</p> <p>Create your own slime with chemical engineering http://www.discoverengineering.org/</p> <p>Scientific Theory and Evidence http://studyjams.scholastic.com/studyjams/jams/science/scientific-inquiry/scientific-theory-and-evid.htm</p>
Current Events and Real World Application Online Articles	<p>Shrinky Dink Science, Will it Crush? http://cen.acs.org/articles/89/i48/Crush-Shrinky-Dink-Science.html</p> <p>Young Scientists Work Together http://www.sciencenewsforkids.org/2011/11/young-scientists-work-together-and-win/</p> <p>Cars of the Future http://www.sciencenewsforkids.org/2011/10/cars-of-the-future/</p>



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Standard	Interdependence
What are the big ideas?	<ul style="list-style-type: none">• Students need to know food chains and food webs of different ecosystems.• Students must classify living things roll as producers, consumers, scavengers and decomposers.• They also must be able to understand how the matter and energy moves throughout the ecosystem.• When students are given a biome, they must identify the abiotic and biotic elements of that particular environment.• Identify the world's major biomes. Know the environmental conditions in these biomes. Desert, Tundra (Alpine, Polar), Coniferous Forest (Taiga), Rainforest, Temperate Deciduous Forest, Grassland (Temperate and Savanna), Marine Ecosystems (Estuary), Freshwater Ecosystems
How can I find more information to help my child?	We are all in this together! http://www.nhptv.org/natureworks/nwepecosystems.htm The World's Biomes http://www.ucmp.berkeley.edu/glossary/gloss5/biome/ Biology Online: definitions, tutorials and more www.biology-online.org Think Quest biotic and abiotic information http://library.thinkquest.org
Vocabulary	producer, consumer, herbivore, carnivore, omnivore, decomposer, scavenger, food chain, food web, energy pyramid, ecology, ecosystem, habitat, niche, biotic factors, abiotic factors, adaptations, predator, prey, commensalism, mutualism, parasitism, community, population, competition, biosphere, decomposition, biome, savanna, desert, polar tundra, alpine tundra, taiga, coniferous forest, temperate deciduous forest, grassland, rainforest, plankton, estuary, wetland, marine ecosystem, freshwater ecosystem
Student Websites	Build your Own Food Web http://www.gould.edu.au/foodwebs/kids_web.htm Chain Reaction http://www.ecokids.ca/pub/eco_info/topics/frogs/chain_reaction/ Build a Food Web http://teacher.scholastic.com/activities/explorer/ecosystems/be_an_explorer/map/line_experiment14.swf Arctic Ecosystem : videos and interactive food web http://www.jason.org/gated/uploads/gateduploads/orp_curriculum/foodweb_final/foodweb.html Interactive Energy Pyramid http://www.harcourtschool.com/activity/science_up_close/314/deploy/interface.html



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Current Events and Real World Application Online Articles	How Crops Survive http://www.biology-online.org/articles/crops-survive-drought.html Study Explores Carnivores are Most Likely to Kill Other Carnivores http://www.sciencedaily.com/releases/2006/03/060308212037.htm
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Standard	The Atmosphere
What are the big ideas?	<ul style="list-style-type: none">• A skill students need to understand from 5th grade is the heat transfer: conduction, convection and radiation. This will help with some of the atmosphere skills.• Students need to know how heat convection works in the atmosphere.• Recognize the connection between the sun's energy and the wind.• Know how temperature differences in the ocean water create currents.• Students need to be able to look at meteorological data and predict weather conditions.
How can I find more information to help my child?	Bringing More Meaning to Weather Predicting http://www.nasa.gov/centers/langley/pdf/245891main_MeteorologyTeacherRes-Ch15.r3.pdf Visit to an Ocean Planet http://cosee.umaine.edu/cfuser/resources/temp_deep_ocean_circ.pdf
Vocabulary	convection, heat, atmosphere, air pressure, radiation, thermal conduction, wind, ocean current, surface current, weather, humidity, condensation, evaporation, cloud, precipitations, air mass, front, thermometer, barometer, anemometer, thunderstorm, lightening, thunder, tornado, hurricane, occluded front, stationary front, warm front, cold front
Student Websites	Science Songs and Information http://www.kidsgeo.com/geography-for-kids/0145-ocean-currents.php Atmosphere Games http://games.noaa.gov/ Watch Video clips, play games and see real picture slideshows http://studyjams.scholastic.com/studyjams/jams/science/index.htm
Current Events and Real World Application Online Articles	The Hunt for Hurricanes http://www.scholastic.com/browse/article.jsp?id=4902 Weird Weather is Really Normal http://www.scholastic.com/browse/article.jsp?id=4919 Scientist Find a Link between Pollution and Rainfall http://www.sciencenewsforkids.org/2011/11/dirty-clouds-change-rainfall/



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Standard	The Universe
What are the big ideas?	<ul style="list-style-type: none"> Students need to know all the major parts of the universe: Inner Planets, outer planets, Sun, Earth, moon, galaxy, asteroid, comet, meteoroid, meteorite, meteor, universe, solar system, star Students need to know the relative distance of planets from the sun. They need to have the order of the planets memorized. Explain how the positional relationships among the earth, moon and sun control the length of the day, lunar cycle, and year. Explain the different phases of the moon using moon, sun and earth models. Predict the types of tides that occur when the earth and moon occupy various positions. Illustrate the relationships between earth and sun that produce the seasons. Explain the difference between lunar and solar eclipse.
How can I find more information to help my child?	<p>The Seasons and Axis Tilt http://www.enchantedlearning.com/subjects/astronomy/planets/earth/Seasons.shtml</p> <p>The Universe http://starchild.gsfc.nasa.gov/docs/StarChild/universe_level2/universe.html</p> <p>Sun, Earth and Moon http://www.fearofphysics.com/SunMoon/sunmoon1.html</p> <p>Explore the Planets...even dwarf planet Pluto http://kids.nineplanets.org/intro.htm</p> <p>Real World eClipse http://www.nasa.gov/audience/foreducators/nasaclips/search.html?terms=&category=0100</p>
Vocabulary	<p>astronomical unit, rotation, revolution, light-year, moon, orbit, solar, satellite, solar system, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, dwarf planets, terrestrial planet, Jovian planet, comet, asteroid, asteroid belt, meteor, meteorite, meteoroid, universe, galaxy, star</p> <p>Earth, Sun, Moon Relationships Vocabulary: equinox, solstice, phase, eclipse, lunar eclipse, solar eclipse, day, lunar cycle, tide,</p>
Student Websites	<p>Space Junk and Play Space Junk http://www.windows2universe.org/games/junk_intro.html</p> <p>Science Music Video/ The Planets You TUBE http://www.youtube.com/watch?v=uTKes7M7xns</p> <p>Real World eClipse http://www.nasa.gov/audience/foreducators/nasaclips/search.html?terms=&category=0100</p> <p>Study Jams Video Clips, Karaoke, Games http://studyjams.scholastic.com/studyjams/jams/science/index.htm</p>
Current Events and Real World Application Online Articles	<p>Moon Twinkles http://www.sciencenewsforkids.org/2012/02/moon-twinkles-2/</p> <p>Distant Goldilocks World http://www.sciencenewsforkids.org/2011/12/distant-%E2%80%98goldilocks%E2%80%99-world/</p>



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Standard	Energy
What are the big ideas?	<ul style="list-style-type: none">• Compare and contrast the three types of potential energy. (Gravitational potential energy, elastic potential energy and chemical potential energy.• Recognize energy can be <u>transformed</u> from one type to another.• Explain the <u>Law of Conservation of Energy</u>.
How can I find more information to help my child?	Energy Transformation http://www.energyeducation.tx.gov/energy/section_1/topics/energy_transformations/energy_transformations.html Introduction to Energy http://www.need.org/needpdf/infobook_activities/IntInfo/Introl.pdf Bouncing Ball Energy Transfer http://www.sciencekids.co.nz/experiments/bouncingballs.html
Vocabulary	potential energy, gravitational potential energy, elastic potential energy, kinetic energy, heat energy (thermal), light energy (radiant), radiation, chemical, mechanical, and electrical, electromagnetic
Student Websites	Energy Transformation http://www.energyeducation.tx.gov/energy/section_1/topics/energy_transformations/energy_transformations.html Energy for Kids http://www.eia.gov/kids/ Discovery Kids Games Build a Rollercoaster http://kids.discovery.com/games/build-play/build-a-coaster Amusement Park Physics http://www.learner.org/interactives/parkphysics/coaster.html Encyclopedia Rollercoaster http://www.britannica.com/coasters/ride.html?cameFromBol=true
Current Events and Real World Application Online Articles	Coming Soon Zero Gravity Rollercoaster http://www.dogonews.com/2012/2/11/coming-soon-a-zero-gravity-roller-coaster Accidents Raise Questions about Coasters http://www.nytimes.com/2006/03/12/travel/12heads.html?_r=1&ref=rollercoasters



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Standard	Forces in Nature
What are the big ideas?	<ul style="list-style-type: none">• Students need to know parts of simple circuit.• Students need to understand how simple circuits are associated with the transfer of energy when heat, light, sound, and chemical changes are produced.• Identify materials that can conduct electricity.
How can I find more information to help my child?	Charges and Electricity http://education.jlab.org/reading/electrostatics.html What is Electricity? http://www.energyquest.ca.gov/story/chapter02.html Background on Electricity http://www.phys.unsw.edu.au/einsteinlight/jw/module2_EM.htm
Vocabulary	electrical conductor, electrical insulator, static electricity, electric current, cell, electric power, series circuit, parallel circuit, open circuit, closed circuit
Student Websites	Electrified Ben http://sln.fi.edu/franklin/scientst/electric.html Circuits and Conductors http://www.bbc.co.uk/schools/scienceclips/ages/8_9/circuits_conductors.shtml Changing Circuits http://www.bbc.co.uk/schools/scienceclips/ages/10_11/changing_circuits.shtml
Current Events and Real World Application Online Articles	Electricity Basics http://www.eia.gov/kids/energy.cfm?page=electricity_home-basics 100 Watt Bulb Is On Its Way Out http://www.nytimes.com/2011/12/17/business/energy-environment/100-watt-bulb-on-its-way-out-despite-bill.html?ref=electriclightbulbs House Votes to Hold Light Bulb Law http://www.nytimes.com/2011/07/16/business/house-votes-to-withhold-funding-for-light-bulb-law.html?ref=electriclightbulbs