Sixth Grade Science Curriculum Bundle # 8

Title	Suggested Dates
Water	February 1-February 19 (13 days)

Big Idea/Enduring Understanding	Guiding Questions
Water cycles through the environment.	How is energy transferred through the water cycle? Where does water come from? How does pollution affect surface water? How do surface water and groundwater interact?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	Specificity & Examples	Suggested Resources (Read the note above)
6.8 The student knows that complex interactions occur between matter and energy. **6.8B** Explain and illustrate the interactions between matter and energy in the water cycle and in the decay of biomass.	Including: --- Precipitation • conversion of gravitational potential energy to kinetic energy --- Condensation • release of heat energy during change of state --- Evaporation • absorption of heat energy in change of state --- Transpiration --- Decay of biomass Such as: --- Decomposition (in a compost bin) ---Show energy change using thermometers Teacher Note: Discuss energy interactions with: • The sun as the major source of energy for the earth • Water as a solvent and dissolving minerals and carrying them to the ocean.	**Vocabulary:** water cycle, biomass, condensation, evaporation, precipitation, transpiration, decomposition, watershed, groundwater, surface water, Recharge zones, Aquifers, Water table, Divides, Percolation, Runoff, Streams, Springs, Porosity, Permeability, AVID Activity- Writing in Science pages 22-23 "Pre-write and Quickwrite" http://www.picadome.fcps.net/lab/currl/water_cycle/ Water Cycle Resources http://www-k12.atmos.washington.edu/k12/pilot/water_cycle/grabber2.html Water Cycle Technology: http://www.mhhe.com/biosci/genbio/tlw3/eBridge/Chp29/animations/ch29/1_nitrogen_cycle.swf Nitrogen Cycle Animation http://www.naturenextdoor.org/PDF%20Files/thenitecycle.pdf Nitrogen Cycle Game http://www.windows.ucar.edu/earth/climate/carbon_cycle

		.html Carbon Cycle http://www.eol.ucar.edu/apol/activity4.pdf Carbon Cycle Game http://www.howstuffworks.com/composting2.htm How composting works? Gateway Book- SE pages 142-152, TE pages 98-100
6.14 The student knows the structures and functions of Earth systems. **6.14B** Identify relationships between groundwater and surface water in a watershed.	Including: --- Structures: • Recharge zones • Aquifers • Water table • Divides --- Processes: • Water cycle • Percolation • Runoff --- Identify sources of water in a watershed: • Streams • Runoff • Springs • Precipitation – all forms --- Characteristics: • Porosity • Permeability	**Uncovering Student Ideas in Science**, Keeley,Vol. 3, #21, Where did the water come from? Create own Water Cycle http://www.swfwmd.state.fl.us/education/splash/hydro-cycle_works.html Create an Aquifer Model: http://www.ngwa.org/programs/educator/lessonplans/aquifermodel.aspx Permeability/ Porosity Lab found in Laying the Foundations Book or Quick Lab "Degree of Permeability" Page 495 in text http://www.swfwmd.state.fl.us/education/interactive/watershed/pdf/teachguide.pdf - Watershed Activity http://www.edwardsaquifer.net/intro.html Edward Aquifer http://www.spokaneaquifer.org/vft/tr.htm Aquifer Resources

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6.6 The student knows that there is a relationship between force and motion. **6.6C** Identify forces that shape features of the Earth.	**Including** **--- Uplifting** **--- Movement of water** **--- Volcanic activity** --- Erosion --- Deposition Teacher Note: Focus on the movement of water, the rest will be covered in next bundle	Playdough folding/faulting lab "Oh the Pressure!" Page 474 in text Research Mountains from various locations and create a travel brochure See 6th Grade Activities Shared file for "Plate Boundary foldable" activity http://www.lessonsnips.com/docs/pdf/platemovement.pdf Pangea http://www.understandingplanetearth.in/doc/Landforms.pdf Article http://www.lessonsnips.com/docs/pdf/windwatererosion.pdf Wind, Water and Erosion
6.1 Conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices. **6.1A** Demonstrate safe practices during field and laboratory investigations.	Including: --- Safe practices with lab equipment --- Continue to follow District Safety Contract --- Continue to operate in accordance with the Texas Safety Standards Teacher Note: Safety skills and process TEKS should be embedded and reinforced throughout the year.	Texas Safety Standards
6.1 Conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices. **6.1B** Make wise choices in the use and conservation of resources and the disposal and recycling of materials.	Including: --- Recycling of lab material	
6.2 Uses scientific methods during fields and laboratory investigations. **6.2A** Plan and implement descriptive and simple experimental investigations, including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology.	Including: --- Independent and dependent variables --- Controls --- Procedures --- Materials --- Using a standard lab report format --- Emphasis should be on scientific methods and should build understanding of the variety of methods and their suitability for various tasks.	AVID Activity- Writing in Science pages 55-94 "Experimental Design Lab Report Activities"

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6.2 Uses scientific methods during fields and laboratory investigations. **6.2B** Collect information by observing and measuring**.**	Including: --- Collecting information using the metric system • Introduce metric system --- Pre-AP: Emphasis on using probe ware in a variety of situations Teacher Note: New TEK 2010-2011-*Collect and record data using the International System of Units (SI) and qualitative means, such as label drawings, writing, and graphic organizers.*	AVID Activity- Writing in Science pages 26-28 " Observation Narrative"
6.2 Uses scientific methods during fields and laboratory investigations. **6.2C** Analyze and interpret information to construct reasonable explanations from direct and indirect evidence.	Including: --- Look for trends and/or patterns specific in the data and/or graph	AVID Activity- Writing in Science pages 29-30 "Comparative Analysis"
6.2 Uses scientific methods during fields and laboratory investigations. **6.2D** Communicate valid conclusions.	Including: --- Relate conclusion to hypothesis/problem --- Identify sources of error/ways to improve investigation --- Communicate conclusion effectively in writing	AVID Activity- Reading in Science pages 111-132 " Additional Active Reading Graphic Organizers"
6.2 Uses scientific methods during fields and laboratory investigations. **6.2E** Construct simple graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate data.	Including: --- Organization of data • data charts --- Graphing data-bar graph & line graph • label each axis with name and units • provide a descriptive title --- Identify appropriate use of different types of data representation	http://www.lewistonpublicschools.org/~lhaines/FOV1-0002F396/FOV1-0002F492/S016AD1BE.1/plate%20boundary%20activity%20.pdf Graphing Data
6.3 Uses critical thinking and scientific problem solving to make informed decisions. **6.3A** Analyze, review, and critique scientific explanations, including hypotheses and theories as to their strengths and weaknesses using scientific evidence and information.	Teacher Note: Relate to labs throughout the year. Should emphasize the nature of scientific explanations: testability, repeatability, evidence, predictive nature	

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6.3 Uses critical thinking and scientific problem solving to make informed decisions. **6.3B** Draw inferences based on information related to promotional materials for products and services.	Such as: ---Promotional materials about water conservation	
6.3 Uses critical thinking and scientific problem solving to make informed decisions. **6.3C** Represent the natural world using models and identify their limitations.	Such as: --- Conceptual • Water Cycle • Scientific Method --- Mathematical • Graphs to make predictions --- Physical • Watershed • Aquifers Teacher Note: *Use models to represent aspects of the natural world and identify advantages and limitations of models such as size, scale, properties, and materials*	http://destiny.mbhs.edu/riverweb/jigsaw/CLOZ.pdf Water cycle concept map http://www.wviz.org/water/conceptmap7.pdf Watershed concept map
6.3 Uses critical thinking and scientific problem solving to make informed decisions. **6.3D** Evaluate the impact of research on scientific thought, society, and the environment.	Such as: --- Current events relating to water conservation & movement	AVID Activity: Writing in Science page 24 "Brief Autobiography".
6.3 Uses critical thinking and scientific problem solving to make informed decisions. **6.3E** Connect Grade 6 science concepts with the history of science and contributions of scientists.	Such as: ---jobs involving hydrology	
6.4 Knows how to use a variety of tools and methods to conduct science inquiry. **6.4A** Collect, analyze, and record information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, timing devices, hot plates, test tubes, safety goggles, spring scales, magnets, balances, microscopes, telescopes, thermometers, calculators, field equipment, compasses, computers, and computer probes.	Including: --- Journals/notebooks --- Data collection tools as appropriate	

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6.4 Knows how to use a variety of tools and methods to conduct science inquiry. **6.4B** Identify patterns in collected information using percent, average, range, and frequency.	Including: --- Use descriptive statistics including frequency, range, mean, median, and mode Teacher Note: Data needs to be in metric system and decimals rather than fractions	
6.5 The student knows that systems may combine with other systems to form a larger system. **6.5B** Describe how the properties of a system are different from the properties of its parts.	Including: --- Systems -properties of parts and properties of whole: • Nitrogen Cycle • Water cycle • Carbon Cycle	