

## 8<sup>th</sup> Grade Science Curriculum Bundle #8

<b>Title</b>		<b>Suggested Dates</b>
The Environment: Oceans and Ecosystems		2/1-2/19 (13 days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
<p>Heating of Earth’s surface and atmosphere by the sun drives convection within the atmosphere and ocean, producing wind and ocean currents.</p> <p>As energy flows through systems, at each step more of it becomes unusable.</p>	<p>How do organisms depend on each other and on the cycling of matter and energy in an ecosystem?</p> <p>How do behavioral responses to stimuli ensure individual survival and reproductive success for the species?</p> <p>How do waves travel through different types of media (water) and what is the effect of various wave types on our Texas coast?</p>

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.

<b>Knowledge &amp; Skills with Student Expectations</b>	<b>Specificity &amp; Examples</b>	<b>Suggested Resources</b> (Read the note above)
<p><b>8.12 The student knows that cycles exist in Earth systems.</b></p> <p>8.12B Relate the role of oceans to climatic changes.</p>	<p>Including:</p> <p>--- Surface currents</p> <ul style="list-style-type: none"> <li>• Global winds</li> <li>• Coriolis effect</li> <li>• Continental deflection</li> </ul> <p>---Deep ocean currents such as density currents, turbidity currents.</p> <p><u>Teacher Note:</u> Review TEK 8.7B including properties of a wave and how they travel through water as a medium.</p>	<p><b>VOCABULARY:</b> oceanography, oceanographer, hydrology, hydrologist, aquifer, water table, weathering, erosion, river systems, beach erosion, land subsidence, deflection, currents, continental drift, mountain building, continental shelf, ocean basin, Mid-Ocean Ridge, rift valleys, nitrogen cycle, mutualism, commensalism, parasitism, energy pyramids, symbiotic relationships, predator, prey, producer, consumer, decomposer, food webs, adaptations, food chain, energy flow, herbivore, omnivore, and carnivore.</p> <p>AVID Activity- Writing in Science pages 22-23 “Pre-write and Quickwrite”</p> <p><b>CORE ACTIVITY:</b> Ocean Currents @ <a href="http://science-class.net">http://science-class.net</a></p> <p>Ocean Motion Graphic Organizer</p>
<p><b>8.12 The student knows that cycles exist in Earth systems.</b></p> <p>8.12C Predict the results of modifying the Earth's nitrogen, <u>water</u>, and carbon cycles.</p>	<p>Including:</p> <p>--- Predict how modifications in these cycles would affect human or plant life</p> <p>--- Water pollution (&amp; water cycle)</p>	<p>Pollutant Power ATE p. 479 &amp; CD</p> <p><b>Uncovering Student Ideas in Science</b>, Keeley. Vol. 3, #19, Earth’s Mass</p> <p><b>Pre-AP:</b> 34 How Wet is Our Planet?; <i>LTF Earth/Life</i> pp.</p>

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	<p><u>Teacher Note:</u> Review TEK 6.14B (groundwater, surface water, and watershed). Use combination of all three systems. Describe solar energy as the driving force behind weather and ocean systems.</p>	<p>626 (Technology required: Graphing Cal.)</p> <p><b>Pre-AP:</b> 27 Relative Humidity; <i>LTF Earth/Life</i> pp. 556(Technology required: none)</p> <p><b>Pre-AP:</b> 39 Staying Out of Hot Water; <i>LTF Earth/Life</i> pp. 688(Technology required: none)</p> <p><b>Pre-AP:</b> 40 Density of Turbidity; <i>LTF Earth/Life</i> pp. 696(Technology required: none)</p>
<p><b>8.14 The student knows that natural events and human activities can alter Earth systems.</b></p> <p>8.14A Predict land features resulting from gradual changes such as <u>beach erosion</u>, <u>land subsidence</u>, continental drift and <u>mountain building</u>.</p>	<p>Discuss <u>topographic features</u> within the ocean such as:</p> <ul style="list-style-type: none"> <li>• Continental shelf</li> <li>• Ocean basin</li> <li>• Mid-oceanic ridge</li> <li>• Rift valleys</li> <li>• Plate tectonics</li> <li>• Land subsidence</li> <li>• Beach erosional features</li> </ul> <p><i>Interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering.</i></p> <p><i>Relate plate tectonics to the formation of crustal features.</i></p>	<p><b>CORE ACTIVITY:</b> Physical Characteristics of the Ocean @ <a href="http://science-class.net">http://science-class.net</a></p> <p>Ocean Bag Activity + Rubric</p> <p>Ocean Zones</p> <p>PREAP: LTF # 33: That Sinking Feeling Life/Earth p. 618</p> <p>PREAP: LTF # 38: Slope of the Beach Life/Earth p. 682</p> <p>PREAP: LTF # 37: Sonar Seas-Mapping the Ocean Floor Life/Earth p. 674 (modify as needed)</p> <p><b>Technology Lab:</b> Ocean Floor Mapping; <i>Vernier MS Science</i> pp. 12-1(Technology required: CBL, Graph Cal/Datamate/Motion Sensors)</p> <p>Enchanted Learning: Sea Floor Spreading</p>
<p><b>8.6 The students know that interdependence occurs among living systems.</b></p> <p>8.6C Describe interactions within ecosystems.</p>	<p><u>Including:</u></p> <p>--- Predator-prey / Food Webs</p> <p>--- Symbiotic</p> <ul style="list-style-type: none"> <li>• Mutualism</li> <li>• Commensalism</li> <li>• Parasitism</li> </ul> <p>---Focus on energy flow (energy pyramids)</p> <p><i>Describe producer/consumer, predator/prey, and parasite/host relationships as they occur in food webs within marine, freshwater, and terrestrial ecosystems.</i></p>	<p><b>CORE ACTIVITY:</b> The Good Buddies Lab (modified Project Wild)</p> <p>The Lynx Eats the Hare</p> <p>Symbiosis Graphic Organizer</p> <p><b>Pre-AP:</b> Picture Life; <i>LTF Earth/Life</i> pp. 246(Technology required: none)</p> <p><b>Pre-AP:</b> Can Mosquitoes Transmit HIV?; <i>LTF Earth/Life</i> pp. 262(Technology required: none)</p>

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	<p><i>Investigate how organisms and populations in an ecosystem depend on and may compete for biotic and abiotic factors such as quantity of light, water, range of temperatures, or soil composition.</i></p>	
<p><b>8.14 The student knows that natural events and human activities can alter Earth systems.</b></p> <p>8.14C Describe how human activities have modified soil, <u>water</u>, and air quality.</p>	<p><b>Including:</b>  <b>Environmental problems such as:</b></p> <ul style="list-style-type: none"> <li>• Oil spills</li> <li>• Midnight dumping</li> <li>• Sludge dumping</li> <li>• Medical waste</li> </ul> <p><b>Environmental solutions:</b>          --- Laws          --- Reduce/reuse/recycle          --- Reclamation projects          --- Water treatment &amp; disease reduction</p> <p><i>Recognize human dependence on ocean systems and explain how human activities such as runoff, artificial reefs, or use of resources have modified these systems.</i></p>	<p>Pollution Resources (subfolder)</p>
<p><b>8.1 The student conducts field and laboratory investigations using safe, environmentally appropriate and ethical practices.</b></p> <p>8.1A Demonstrate safe practices during field and laboratory investigations.</p>	<p><b>Including:</b>          --- Lab Cleanup Procedures          --- Chemical and waste disposal          --- Equipment cleaning and storage          --- Safety contract</p> <p><b>In accordance with the Texas Safety Standards:</b>  <u>Pflugerville ISD :: Online Curriculum :: Science</u></p> <p><b>Teacher Note:</b> Safety skills and process TEKS should be embedded and reinforced throughout the year.</p>	<p><a href="#">Texas Safety Standards</a></p>
<p><b>8.1 The student conducts field and laboratory investigations using safe, environmentally appropriate and ethical practices.</b></p> <p>8.1B Make wise choices in the use and conservation of resources and the disposal and recycling of materials.</p>	<p><b>Including:</b>          --- The conservation of marine environments          --- Review point source and non-point source examples</p>	

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<p><b>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</b></p> <p>8.2A Plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology.</p>	<p>Such as:            --- Design their own experiments            --- Emphasis should be on scientific methods and should build understanding of the variety of methods and their suitability for various tasks.</p> <p><u>Teacher Note:</u> It is recommended that students create and design at least 2 labs/experiments.</p>	<p>AVID Activity- Writing in Science pages 55-94            “Experimental Design Lab Report Activities”</p>
<p><b>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</b></p> <p>8.2C Organize, analyze, evaluate, make inferences and predict trends from direct and indirect evidence.</p>	<p>Including:            --- graph interpretation and extrapolation            --- predicting outcomes based on data tables</p> <p>Such as:</p> <ul style="list-style-type: none"> <li>• Earth/water percentages</li> <li>• Freshwater vs. saltwater graphs</li> </ul>	<p>PREAP: LTF # 34: How Wet Is Our Planet Life/Earth p. 626</p> <p>AVID Activity- Writing in Science pages 29-30            “Comparative Analysis”</p>
<p><b>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</b></p> <p>8.2D Communicate valid conclusions.</p>	<p>Including:            --- Experimental conclusions            --- Supporting conclusions with data            --- Analyze error sources and fix experiment to reduce outside variables            --- Graph/Chart/Table extrapolation for conclusion            --- Analysis of graphs</p>	<p>AVID Activity- Reading in Science pages 111-132            “ Additional Active Reading Graphic Organizers”</p>
<p><b>8.2 The student uses scientific inquiry methods during fields and laboratory investigations.</b></p> <p>8.2E Construct simple graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate data.</p>	<p>Such as            --- Bar graphs, line graphs, pie charts, data tables, <u>oceanic topographic maps</u> and determine which is best for each set of data.</p>	<p><b>Science Graphing Pack</b>            -Sea Turtles Graph            -Temperature Range for Fish Graph            -Conserving Water Graph</p> <p>Use of Topographic/Contour Boxes</p> <p>Topographic Maps 2 Power point</p>
<p><b>8.3 The student uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p>8.3C Represent the natural world using models and identify their limitations.</p>	<p>Including:            --- Distinguish between limitations and advantages of models</p> <p>Such as:            --- ocean floor models</p> <p><i>Use models to represent aspects of the natural world such as an atom, a molecule, space, or a geologic feature.</i></p> <p><i>Identify advantages and limitations of models such as size, scale, properties, and materials.</i></p>	

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<p><b>8.3 The student uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p>8.3D Evaluate the impact of research on scientific thought, society, and the environment.</p>	<p><u>Teacher Note:</u></p> <p>Do a current event impact analysis that looks at how scientific research has impacted thought, society and the environment. Such as how marine life is affected by human activities leading to the endangerment of species and ecosystems.</p>	<p><u>AVID Activity:</u> Writing in Science page 24 “Brief Autobiography”.</p>
<p><b>8.3 The student uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p>8.3E Connect Grade 8 science concepts with the history of science and contributions of scientists.</p>	<p>Such as:            --- Jacques Cousteau, Fabian Cousteau, Robert Ballard, Harry Hess</p>	
<p><b>8.4 The student knows how to use a variety of tools and methods to conduct science inquiry.</b></p> <p><b>8.4A</b> Collect, record, and analyze information using tools <b>including</b> beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, water test kits, and timing devices.</p>	<p>Such as:</p> <ul style="list-style-type: none"> <li>• Google Earth</li> <li>• Portable GPS systems</li> </ul> <p><i>Use appropriate tools to collect, record, and analyze information, including lab journals/notebooks, anemometers, psychrometers, spectrosopes, and other equipment as needed to teach the curriculum.</i></p>	
<p><b>8.4 The student knows how to use a variety of tools and methods to conduct science inquiry.</b></p> <p>8.4B Extrapolate from collected information to make predictions.</p>	<p>Such as:            --- extrapolating using graph and data tables to predict expected results.</p>	